

**MACHINES FOR CLEANING ESCALATORS  
AND MOTORIZED WALKWAYS**

## **INSTRUCTIONS FOR USE AND MAINTENANCE**



**Duplex Escalator Kit for  
DP420 Part #420497  
(Machine Sold Separately)**

# INTRODUCTION

Thanks to their original washing features and versatility of use, **DUPLEX** floor-washing machines have attracted the interest of many machine users in the cleaning sector since the moment they were first introduced onto the market in 1980.

The centrifugal system, patented for its real-time automatic recovery of dirt, together with its bi-directional function, has created the possibility of cleaning every type of floor including carpets, going right along the wall edges, into corners and deep down into grooves and joints.

Since its creation, this new piece of equipment has been simple, light, and flexible to use, and can be used by anyone, effortlessly, without the need for pushing or pulling, by just orientating the handle, even with just two fingers, to clean wherever necessary: under furniture, in corners, in tight spaces, under tables, without limits.

Over the years, tens of thousands of these machines, in various models, have been distributed to every corner of the world to be used in all types of climatic conditions.

We have evaluated a great number of these machines in an ongoing manner, and during their diverse and specific uses we have been able to ascertain a variety of operational results, thus gaining precious knowledge which together with the skill of our technicians has allowed us to carry out more and more quality improvements with innumerable benefits.

The outstanding features of these machines do not exclude the possibility of experimenting with them, using them to **clean the deep grooves in escalator steps** while these are in motion, reaching into the furthest edges. This is a task that has always been extremely difficult to carry out with other machines.

Every trial carried out along the way, and the experience gained from these, gave surprising and increasingly satisfying results.

While working silently, the machines remained still and stable in their position, controlled by the self-guiding system invented and patented by our company.

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.

## BASE Model

## Duplex Escalator Kit for DP420 Part #420497

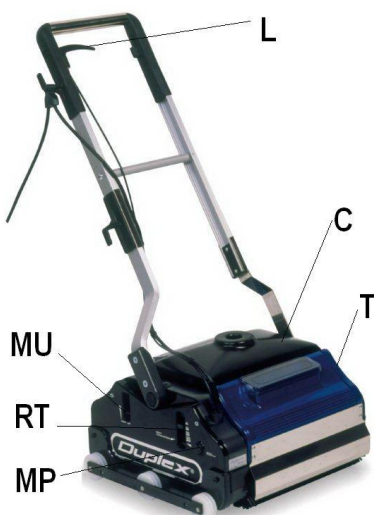
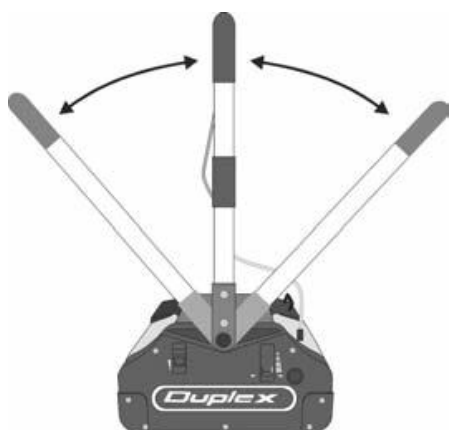


# DUPLEX ESCALATOR KIT for DP420

## GENERAL FEATURES AND FUNCTIONS

- \* Upgraded electric motor.
- \* Rotating belts in special oil-resistant rubber.
- \* 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.
- \* Lid with outlet that can be adapted to any vacuum cleaner
- \* Three-wheeled transport trolley.
- \* Samples of special DUPLEX DETEX detergent for escalators

THE ORIGINALITY OF THE "DUPLEX ESCALATOR" MACHINE HANDLE THAT CAN REVERSE ITS WORKING POSITION ALLOWS FOR THE THOROUGH CLEANING AND WASHING OF ESCALATORS AND MOTORIZED WALKWAYS, EVEN INTO THE FURTHEST CORNERS.



- L** Liquid detergent dispenser lever  
**RT** "Rest Translation" register  
**MU** "Mop Up" lever for activation/deactivation of dirt recovery  
**MP** "Motor Protector"  
**C** Recovery tank lid with an opening for the attachment of the suction tube  
**T** Tanks for liquid detergent

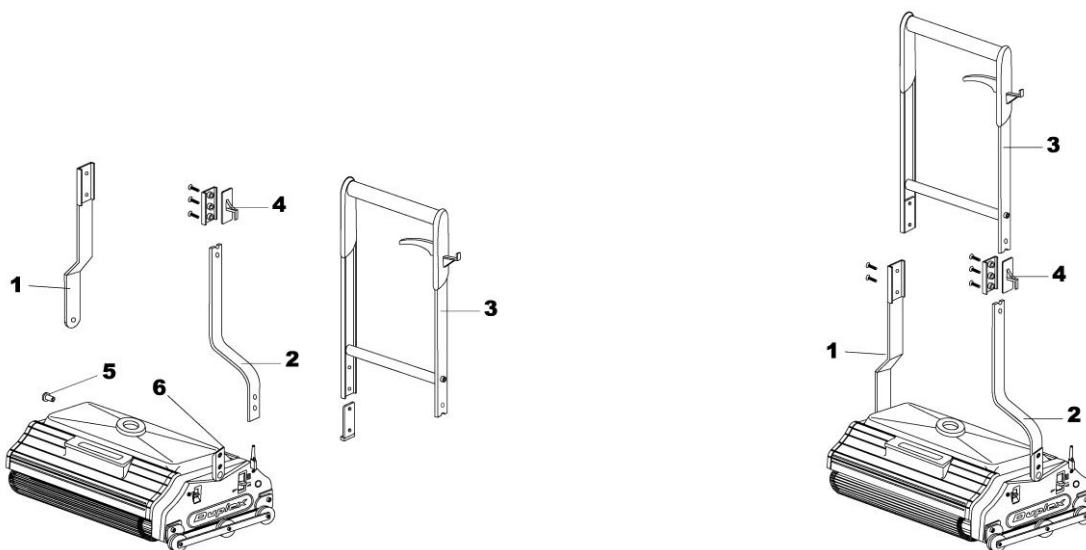
# ASSEMBLY

The machine is shipped packed in 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.

Assembling the machine

- 1** Stainless steel rear elbow
- 2** Front elbow
- 3** Handle
- 4** Cable hook
- 5** Stainless steel rear elbow anchoring pin
- 6** Connection for front elbow



After removing the central recovery tank placed under the lid with the central opening, unscrew the nut holding the pin **5** against the rear panel and remove it.

Then carry out the assembly of the rear elbow **1** using the pin and nut that you have just unscrewed.

After this operation it will be possible to put the recovery tank back into place.

Then assemble the front elbow **2** using the screws supplied, and insert it into the connection point **6**.

Join the handle **3** onto the elbow **2** using the cable wrap and casing **4**, making sure the screws are inserted into the inner side of the handle/elbow and the cable holder arm is positioned downwards.

Once this task is complete, also attach the other arm of the handle to the stainless steel rear elbow **1** with the two screws supplied.

Make sure all screws used are screwed tightly.

# STARTING UP

## **WARNING:**

Before inserting the cable plug into a power socket, which must be earthed, ensure that the handle is in the upright position.  
IT IS RECOMMENDED THAT YOU LUBRICATE THE ROTATING BELTS WITH COMMERCIAL **SILICONE SPRAY** BEFORE STARTING UP THE MACHINE.

## **HOW TO CLEAN AND WASH ESCALATORS AND MOTORIZED WALKWAYS**

Use a Duplex ESCALATOR BASIC 420 (comes with kit) with an external dust/liquid suction system (not supplied with the Basic model)

2) - Attach the special brushes, with their equidistant bristles for reaching right down into the tracks forming the stair tread of the escalators, to the machine .



The pitch of these tracks or channels will vary from manufacturer to manufacturer. We can supply you with extra OTIS/KONE – THYSSEN – SCHINDLER brushes on request.

Not using appropriate brushes will result in imperfect cleaning and the brushes may be ruined. A good cleaning result and a longer brush life can only be obtained when the bristles fit with perfect pitch into the channels of the stairs.

The brushes of the DUPLEX BASIC ESCALATOR are made from a combination of special plastic materials with no abrasive action, ensuring that no damage is caused to the metallic steps of escalators or motorized walkways.

**IMPORTANT: Before removing or inserting the brushes, disconnect the cable plug from the power supply.**



**MP** MOTOR PROTECTOR

**RT** "REST TRANSLATION" regulator of the pressure applied to surfaces by the brushes.  
Keep the dial on the highest setting (**=**) both for the brushing and washing phase.

**MU** "Mop-Up" : transporting ribbons activator.  
Keep this switch in the low position (**7**) for the simultaneous recovery of dirt.

# Automatic protection of the motor of the "Motor protector" MP

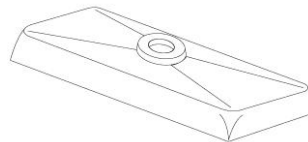
In the event of certain conditions causing overload of the electric motor (foreign bodies picked up by the brushes that could obstruct their rotation, fluctuations in the power supply, overheating, etc.) the "Motor Protector" will intervene and stop the machine. Correct operation can be restored by waiting sixty seconds after the machine has stopped and then pressing the appropriate button.

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

**All dry dirt will be sucked up using this procedure, something that is indispensable for obtaining thorough cleaning and preventing dust from turning into mud when the washing phase is carried out.**

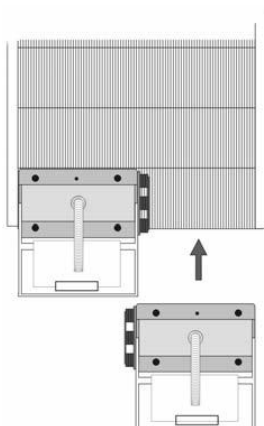
IMPORTANT: DURING DRY BRUSHING IT IS RECOMMENDED THAT WATER IS ADDED TO THE CENTRAL RECOVERY TANK .

- Position the machine at the foot of the escalator (preferably on the bottom floor).
- Equip yourself with a liquid suction system and insert the suction tube into the appropriate opening in the lid supplied **8**.
- Place the machine on the first step making sure that the narrow side is lined up against the edge of the step, and that the stabilizing wheels are in the channels, regardless of the position of the machine, which can be either on the right or the left hand side.



(8)

- Start up the external liquid suction system and the machine at the same time by lowering the handle. Start the escalator or motorised walkway.
- Keep a good grip on the machine by way of the handle and let it complete at least **three full rotations** of the stair.
- Stop the machine by raising the handle.
- Move the machine to the other side of the step and carry out the same procedure, following the same sequence as above.



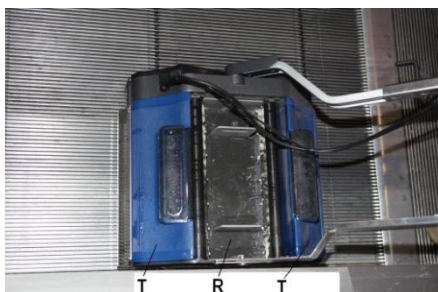
- When the work is completed remove lid **8**, adapted for the attachment of a vacuum cleaner, and proceed to empty the recovery tank and clean every part of the machine.

**For a better cleaning result it is recommended that the operator works with the escalator or motorized walkway moving towards him rather than away from him.**

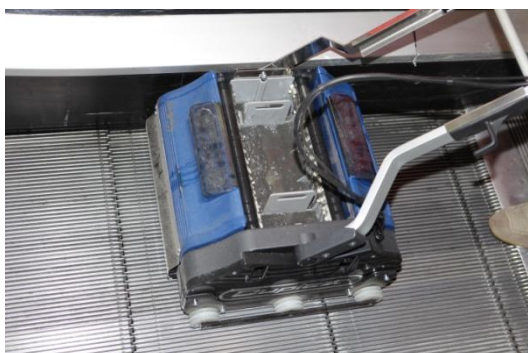
## 2<sup>nd</sup> PHASE – “WASHING”

- Prepare a detergent solution using the specific product for cleaning escalators **Detex** (5%) and water (95%). (See technical card)
- Fill up the two tanks **T** with the special detergent solution provided.

DETEX, specially designed and formulated to provide a specific chemical detergent action for escalators and motorised walkways, will not harm the surfaces, the mechanical, metallic and rubber parts or the paintwork of the machine itself. The use of products other than those specified will invalidate any guarantee pertaining to DUPLEX ESCALATOR and free us from any liability deriving from damage that could be caused by the use of inappropriate products.



- Place the machine on the first step and start the machine by lowering the handle. Start the escalator or motorized walkway. Preferably so that it is moving towards the operator. It is important for all three stabilizing guiding wheels to be inserted into the same channel or track, otherwise the machine could move sideways and work in an irregular manner.



- Dispense the detergent solution by moving the appropriate lever found under the handle (**L**) and allow it to complete as many rotations as necessary on the stair until all the dirt is removed.
- From time to time, empty the recovery tank (**R**) to prevent it from overfilling.

The results obtained from cleaning the surfaces of escalators and motorised walkways using the patented DUPLEX ESCALATOR CLEANERS are very satisfactory, providing a complete and simple solution to the problem.

It must be pointed out that a certain amount of time will be required in order to remove solidified dirt that has built up over the years, and although the first cleaning attempts will last longer, positive results can still easily be obtained. The structures go back to looking brand new and, if carried out periodically, their maintenance will become simple, quick and economical.

**The knack of positioning the machine on the escalator or motorized walkway when they are in motion requires a certain amount of dexterity, which is easily achieved after the first few attempts.**

#### USEFUL ADVICE

In order to check when a full rotation has been completed and the number of rotations of the escalator or motorized walkway, attach a simple sticker to the supporting rubber arm which rotates with the system itself, and when it reappears this indicates that a full rotation has been completed.

## OPTIONAL "LEAVING TO SOAK" PHASE

Very often, older walkway systems may have greasy black deposits in the corners and along the sides of the steps which have built up over the years, due to the use of lubricants for the escalator mechanisms, and have become impregnated with dust and dirt.

In this case the washing procedure may be preceded by an **initial 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 uniformly over the entire surface to be treated while the walkway is turned on.

## GENERAL MAINTENANCE

### CLEANING THE MACHINE

**These procedures should be carried out at the end of each use of the machine**

#### Important precautions

Never use hydro cleaner machines to clean the Duplex Escalator. Be careful not to let the water used for cleaning enter the inside of the plastic safety guard (gear lid).

### CLEANING OF THE TANKS AND ROTATING 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, in order to prevent the dirt from obstructing the closing of the valves and causing liquids to leak. Clean the holes of the drip channel with a needle and always keep the recovery tank scrapers clean

With a damp cloth carefully clean the rotating belts and every part of the machine. Use a paintbrush to remove every trace of dirt from the corners, then dry the machine with a dry cloth.

Lubricate the rotating belts with a standard commercial silicone spray.

### Cleaning and maintenance of the brushes

The brushes of the DUPLEX ESCALATOR do not require much maintenance since the high rotational speed manages to centrifuge the dirt and keep the brushes efficient.

From time to time, leave the brushes to soak in cold or lukewarm water (never hot), with the same detergent used for washing the escalators. After having been rinsed and dried, their bristles will regain renewed strength and elasticity.

#### How to remove the brushes:

Remove the brushes with the spanner supplied with the machine.

Unscrew the two screws anchoring the stainless steel safety guard and extract the brushes.

#### Assembling the brushes

While assembling the brushes it is recommended that you turn them to face the opposite direction from what they have been doing since, if they are left to keep turning in the same direction the bristles tend to become bent.



Protection of the brushes

After use, attach the machine to the transport trolley provided, in order to avoid the brushes being in contact with the floor and possibly becoming damaged.

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

## **Electrical cord/ important precautions**

On occasion, it is possible that the electrical cable may get caught underneath the brushes of the machine. Never try to extract it while the machine is still turned on. Instead, immediately stop the machine, disconnect the cable plug from the power supply and before reconnecting it again check that the cord has not been damaged. If the cord shows any sign of damage after having been underneath the machine, never try to mend it with masking tape as it must be checked and repaired by an expert technician.

## **Exclusive use**

The machine is designed exclusively for washing escalators and motorized walkways and must never be used for any other purposes.

When the machine is not longer able to operate after years of work, it must be dismantled and rendered unusable, ready for disposal in compliance with the indications on page

## **Storing the machine**

As with all electrical products, the machine must be stored in a dry environment. Never leave it outdoors in the rain or snow. Never let it get wet.

# **TROUBLESHOOTING TIPS**

## **The brushes fail to start up:**

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.

## **The dirt is not picked up**

Brushes worn out (replace them).

Recovery tank scrapers dirty or worn out. (replace)

## **It is not possible to dispense the liquid washing solution**

Absence of the detergent solution: fill up the two lateral tanks used to hold water and detergent.

DUPLEX S.R.L. DECLINES ALL RESPONSIBILITY FOR ANY DAMAGE DERIVING FROM INCORRECT USE OF THE MACHINE

<b>WARNING:</b> DURING THE CLEANING AND MAINTENANCE OPERATIONS THE MACHINE MUST ALWAYS BE DISCONNECTED FROM THE MAINS SUPPLY
--

## DISMANTLING THE MACHINE AND DIFFERENTIATED SUBDIVISION OF THE MATERIALS

At the time of demolishing / disposing of the machine it is sufficient to observe the following instructions:  
Disconnect the electrical connections and entrust the dismantling operations to qualified and authorised personnel.

### Electronic components:

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

### Mechanical components:

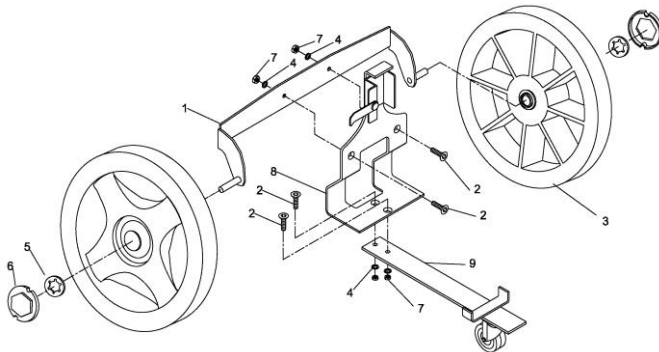
The machine is built with aluminium, steel and plastic materials. Steel and aluminium will not damage the environment if recycled by qualified and authorised companies.

**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.

## TRANSPORT TROLLEY ASSEMBLY

Assemble in the following order:

washers (9), wheels (3), locking ring (5), cap (6), wheel (4)  
upper frame (8) by anchoring onto the base frame (1) with two nuts (7).



Position	Description	quantity
1 )	Base frame	1
2 )	Threaded pins	2
3 )	Rubber wheels	2
4 )	Pivoting Wheel	1
5 )	Locking ring	2
6 )	Wheel cap	2
7 )	Lock nuts	2
8 )	Base frame	1
9 )	Washers	2

## WARRANTY

The machine is guaranteed by the manufacturer for a 12 months period from the date of delivery (in order for the warranty to be recognized it is necessary to present a photocopy of the receipt of delivery or of the invoice and the serial number found on the machine)

**IMPORTANT:** Without these documents the warranty will not be recognized.

The warranty does not cover expendable components such as: brushes, scrapers, rotating belts, flexible tubes, cables, ON/OFF switches, transport trolley wheels,

The following are excluded from the warranty:  
the suction motor, the pump, plastic or metal parts broken due to negligent use.

The warranty will be voided if the machine is used incorrectly or for other purposes, and if the instructions laid out in this manual are not complied with or it is damaged due to the use of detergents differing from the one especially designed for this use ("Duplex Detex").

## SELF-GUIDING SUPPORT "INTERNATIONAL PATENT"

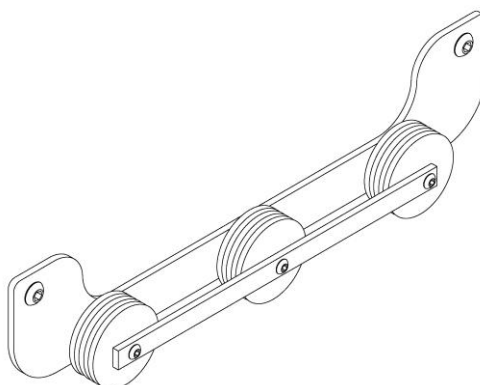
**The DUPLEX ESCALATOR machines are protected by INTERNATIONAL PATENTS.**

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

The counterfeit manufacture of these guiding supports, the use of a greater or smaller number of wheels, or the manufacturing of these wheels with different dimensions or a different number of guiding channels, and the use of the stabilizing wheels on other machines (whether attached in front of or behind the brushes) all represent a form of patent infringement.

The international "DUPLEX ESCALATOR" patents anticipate numerous claims, including the illicit use or application of the same invention concept to other machines, entitling DUPLEX Srl to full protection by the national and international rights for industrial inventions.

It is to be noted that all those who infringe the patent rights shall be LEGALLY PROSECUTED.



**COMPARISON OF WASHING AND CLEANING RESULTS BETWEEN A DIRTY STEP  
AND ONE WASHED WITH THE "DUPLEX ESCALATOR"**

**BEFORE**



**AFTER**



## TECHNICAL FEATURES .

Escalator		DP 420
Length	Inch	18,5
Working width	inch	18
Weight when empty	lbs	66
Detergent tank capacity	gallon	1.58
Recovery tank capacity	gallon	0.92
Brush diameter	inch	4.7
Brush width	inch	13.8
Electric Induction Motor		
Tropicalized Winding	Mono-phase	
Insulation Class	1a	
Voltage	Volt	115
Frequency	Herz	60
Maximum power of the brush motor	Watt	1250

Built in compliance with EN 30335-2-07-1998 - 2006/42/EC

Duplex machines have been

approved by the following Quality control bodies: CE - ENEC – SEV - QPS