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SCRUBBER-DRYER

S43-B

S43-E

USE AND MAINTENANCE MANUAL



WARNING!

Read the instructions manual before using the equipment.

This manual is subject to international copyright laws.

Any unauthorised disclosure, in whole or in part, may be prosecuted according to the law!

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USE AND MAINTENANCE MANUAL



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1/0 – GENERAL INSTRUCTIONS

MANUFACTURER'S RESPONSIBILITY

The manufacturer will not be responsible for problems, breakages, accidents etc caused by the ignorance of or failure to apply the instructions contained in this manual.

The same holds for the carrying out of modifications, variations and/or the installation of unauthorised accessories.

In particular, the manufacturer declines any responsibility for damages deriving from:

- Natural calamities
- Improper use
- Incorrect manoeuvres
- Lack of maintenance
- Technical operation by non-qualified personnel
- Use of non-original spares

SPARES

When replacing parts, only use ORIGINAL SPARES which have been tested and are appropriate for that specific use.

Do not wait for the components to become worn from use, as replacing a component at the correct moment makes for a better functioning of the machine, and also a saving because of avoiding anomalous attrition of wear to associated components.

TECHNICAL ASSISTANCE

The manufacturer, through its own commercial/technical network, provides its clients with a technical assistance service for resolving any problems whatsoever regarding the use and maintenance of the machine.

REQUESTING ASSISTANCE

Any requests must be made indicating the type of fault or failure encountered.

It is obviously necessary to indicate the model and registration number of the machine.

Ask for assistance from the manufacturer or from the area dealer.

WARNING

The manufacturer reserves the right to modify the machines at any moment owing to technical or commercial requirements. There may therefore be slight differences between that which is reported in the commercial catalogues and the machine as delivered.

2/0 – TECHNICAL SPECIFICATIONS

2/1 - NAME, IDENTIFICATION AND DESCRIPTION

	S43-B	S43-E
POWER SUPPLY (by battery/by lead)	By battery	By lead
Number of brushes	1	1
Traction motor	NO	NO

MACHINE NAME AND DESCRIPTION

Floor scrubber-dryer pedestrian machine, electromechanical, suitable to wash and dry smooth uniform floors (maximum gradient 2%) without steps or obstacles paved with sandstone, brick, marble, ceramic, clinker, concrete, PVC, linoleum, etc.

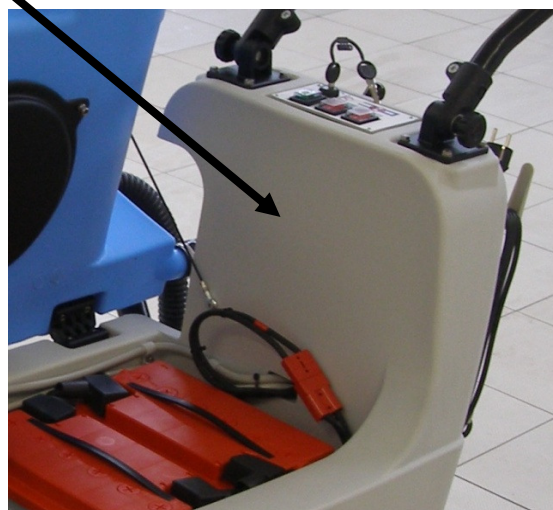
This is characterised by a forward washing part and a rear drying part.

The detergent action is provided by the mechanical action of one or two rotating brushes and the chemical action of the detergent contained in the wash water supplied through the brush itself.

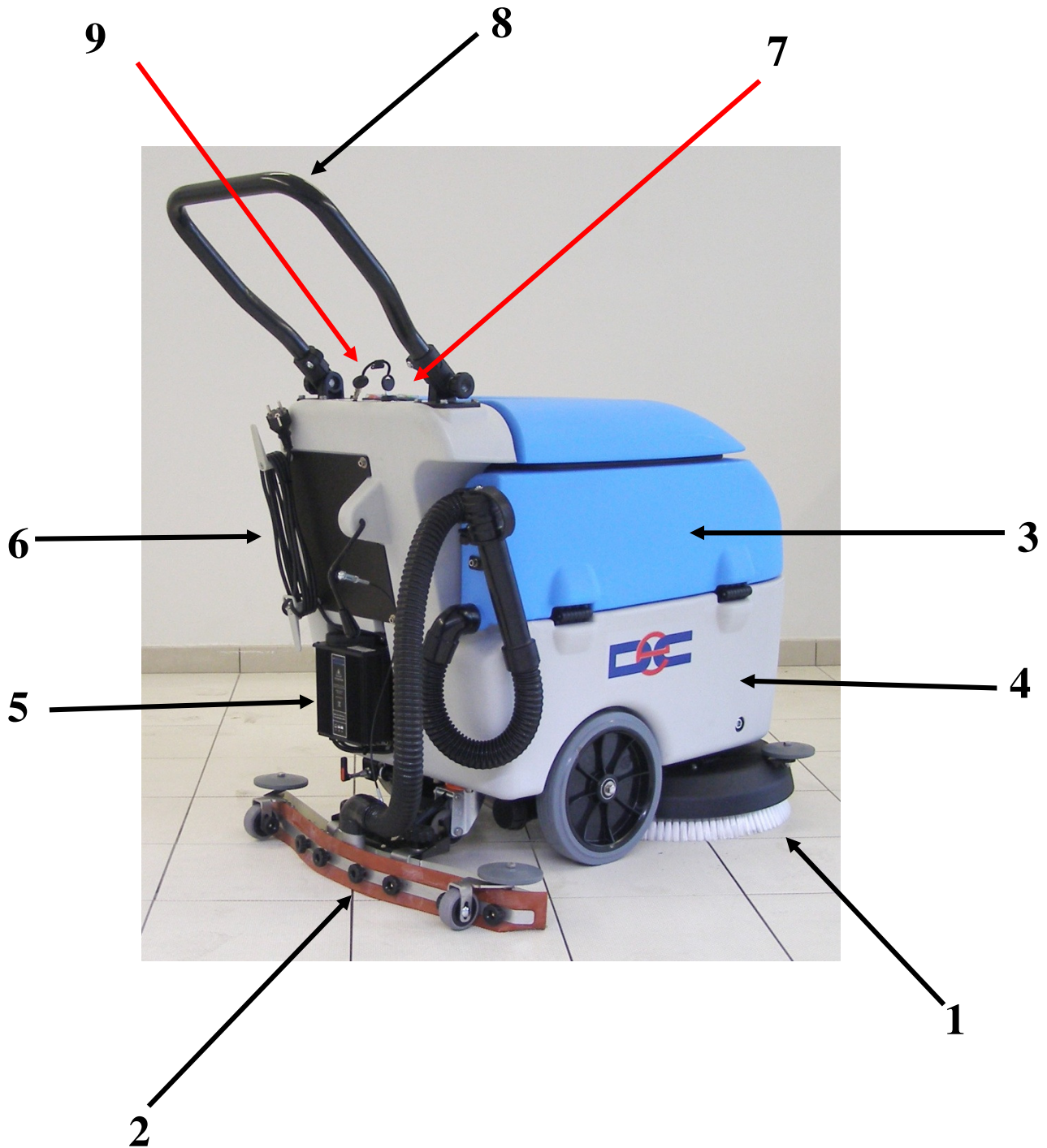
A pair of wiper blades in a suitable soft material scrape the floor surface and, via the depression between the two blades, allows the floor wiper to absorb the resulting wash water, leaving the floor surface clean and dry.

IDENTIFICATION

Label placed on the inner part of the detergent solution tank.

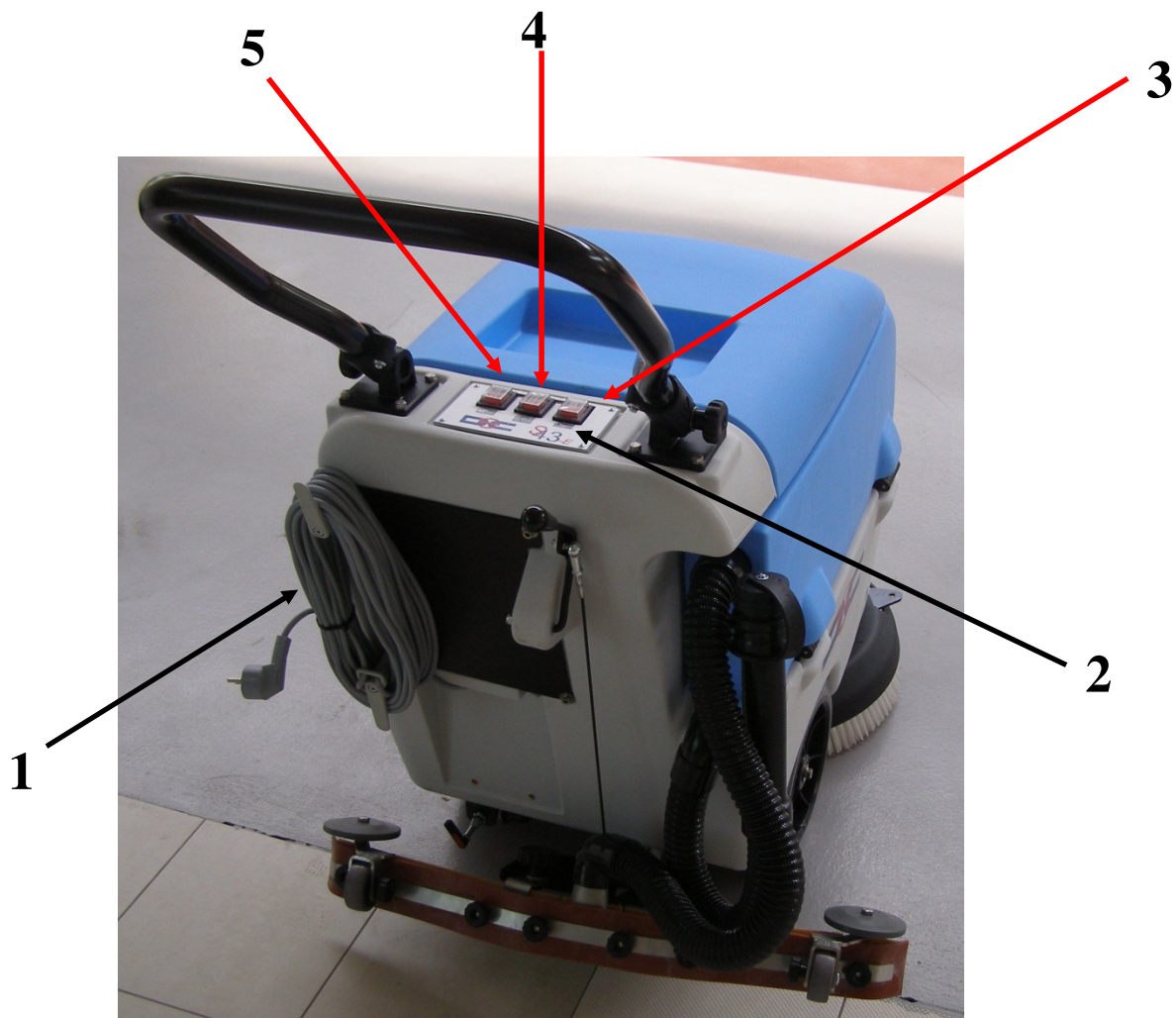


2/2 – COMPONENTS DESCRIPTION S 43-B





Position	Description
1	Rotating brushes
2	Floor wiper
3	Recovery tank
4	Detergent solution tank
5	Built-in battery charger
6	Cable for built-in battery charger
7	Controls
8	Handle
9	Key switch

2/3 – COMPONENTS DESCRIPTION S 43-B FUNCTIONAL PARTS



Position	Description
1	Mains cable
2	Instrument panel
3	Switch mechanism (ON-OFF)
4	Brush rotation control
5	Suction control

2/4 – TECHNICAL DATA AND DIMENSIONS

	S43-B	S43-E
Width of cleaning corridor (mm)	430	430
Width of floor wiper (mm)	720	720
Work capacity (m ² /h)	1,376	1,200
Power supply (V)	24	230
Suction motor power (W)	300	550
Suction pressure (kPa)	11	13
Air flow capacity (l/sec)	25	36
Brush motor power (W)	400	450
Brushes pressure (N)	240	230
Brushes speed (rev./min)	140	140
Length (without handle) (mm)	960	960
Width (without floor wiper) (mm)	550	550
Height without/with tilted handle (mm)	750/785	750/785
Cleaning solution tank capacity (l)	24	24
Water flow capacity min-max (l/sec)	0-1	0-1
Unloaded weight (without batteries) (Kg)	65	64
Capacity of 2 batteries each 12 V (on request) (Ah-5h)	85	-----
Weight of batteries (Kg)	55	-----
Built-in battery charger	Input 100-240Vac+/-10% 50-60 Hz	-----
Max input current to battery charger	5.3A at 100Vac	-----
Autonomy (h)	2.25	2.25
IP Code	IP 23	IP 23
Maximum operational tilt		
Level of continuous acoustic pressure measured	$A \leq 70 \text{ dB(A).}$	$A \leq 70 \text{ dB(A).}$
Maximum acceleration value for the operator's hand/arm system (vibrations)	$< 2.5 \text{ m/s}^2$	$< 2.5 \text{ m/s}^2$

2/5 – TRANSPORT, LOADING AND UNLOADING

The machine is intended to be moved using a fork-lift truck.

The whole machine, closed in a packing complete of stand, has :

	S43-B	S43-E
Mass total with batteries and packaging (kg)	135	-----
Mass total without batteries (kg)	80	79
Package sizes: heightxwidthxlength(cm)	100x63x110	100x63x110

Check that the packing includes:

- The scrubber-dryer machine
- The floor wiper
- The brush
- The use and maintenance manual / CE certificate

It is advisable to keep the packaging for future relocation, otherwise dispose of it according to recycling programmes.

3/0 – GENERAL INFORMATION

3/1 – AIM OF THE MANUAL AND CONSULTATION GUIDE

Read the warnings contained in this manual carefully because they provide important information concerning safe installation, use and maintenance.

The aim of this manual is to present the operation of the scrubber-dryer so that the operator can use it in the correct way. Failure to follow the rules of use and maintenance, and of safety, could cause harm to the user of the machine, to the machine, to the surfaces treated, and to the environment and could possibly also invalidate the guarantee. In the manual you will notice a symbol meaning: “WARNING” that must be interpreted as follows:



WARNING: *symbol used during a manoeuvre, command, fitting, etc., if the indications given therein are not adhered to it may lead to damage to personnel, goods or to the machine and its equipment.*

3/2 –SAFETY WARNINGS



WARNING!

The scrubber-dryer must be used within the limits indicated and, in particular, the following must be avoided: improper use, incorrect manoeuvres, technical operations by unqualified members of staff, use of non-original spares. The necessary maintenance must also be carried out.

Before use

- Having removed all packaging, ensure that the machine has not been damaged. Particularly it is recommended to pay attention to the vacuum motor and brush rotation motor and to the condition of the two tanks.
- Scrubber-driers have to be operated only by properly skilled personnel
- The operator must demonstrate his or her ability to use the machine and his or her specific knowledge of the machine being entrusted to him or her and of the contents of the instruction manual.
- Before using the machine, ascertain its efficiency. Pay special attention to switches (particularly Emergency ones), indicators, battery and electric system in general, wheels and propeller unit status.
- The doors and covers must be positioned as indicated in the instruction manual before using the machine.



Warnings for use

WARNING !

- **Do not use the machine in explosive atmospheres.**
- **Do not gather dangerous powders. Do not vacuum flammable liquids or combustible compounds, for example solvents, fuels, alcohol, even if diluted. There is a real danger of explosion. Do not operate the machinery in the presence of solvents or other combustible substances.**
- **Do not use the machine in dangerous environments.**
- **In case of fire, use a powder extinguisher. Do not use a water extinguisher**
- Pay most attention to safety devices, danger and warning signs
- If it is noticed that a safety mechanism is damaged, or that the machine requires repair, or if some operational defect arise during use, cease using the machine, do not carry out any attempt to repair and inform the person responsible.
Do not use the machine until it is completely repaired.
- The operator cannot in any case deactivate the safety devices of the machine.
- **The machine is equipped with a built-in battery-charger: note the battery works at 100-240 Vac +/- 10% 50-60 Hz, with a max. input current of 5.3A at 100Vac. Only use earthed distribution systems fitted with magnetic heat switches with differential.**
- **Only use earthed distribution systems fitted with magnetic heat switches with differential.**
- **In case of danger quickly turn the machine off operating:
On the general ON-OFF (S 43-E) switch or
On the key switch (S43-B)**
- **Carrying persons is not permitted**
- The operator is responsible for the machine during work hours. He or she must prohibit non-operators from driving or using the machine.
- The machine speed has to be proportioned to the possible presence of persons in the machine area and the type of floor. In any case the machine has to run at a speed that allows stopping in safety.
- The operator has to check during the scrubber-dryer handling that in the working area nobody is under risk due to the scrubber-dryer movement and equipment. **It is necessary to take into consideration that the floor wiper device protrudes laterally from the machine body.**
- The operator has to stop immediately the operations being performed with the scrubber-dryer in case persons, notwithstanding signalling or warnings, have not moved away from the dangerous area.

- Use only the **brushes** supplied with the machine or indicated by the manufacturer on the manual (see table at page 21, **chap. 6** of the manual). Use of other brushes can compromise safety.
- Avoid having the brushes working while the machine is stationary, as this may cause damage to the floor surface.
- **Use only non-foaming detergents.**
- Do not mix detergents of different types, so as to avoid the production of harmful gases.
- Do not use acidic solutions, which may damage the machine.
- Do not wash the machine with scrubber-dryers: even if the equipment are protected, it is possible that a small amount of water could seep in the electrical system causing a probable malfunction.



Work and storage areas

WARNING !

- Operation is permitted only in work areas which have been pre-established and indicated. The machine is suitable exclusively for use indoors: it should not be used outdoors or kept outside in humid conditions.
- Indicate areas of wet floor surfaces with appropriate notice signs.
- The optimal working temperature must be between 0 °C and 40 °C.
- During use of the machine, humidity must be between 30% and 95%.
- The temperature for storage must be between -5 °C and +45 °C.



Movement on sloping segments

WARNING !

- Do **not** use the machine on surfaces with a gradient **greater** than that indicated by the manufacturer **(2%)**
- When working on gradient areas, it is necessary to move slowly and with prudence, both in rise and descent, with special attention to turns and reversal of direction. Avoid in any case sudden turns and reversals of direction.
- Manoeuvre the scrubber-dryer with care when in proximity to the edges of ramps, of pavements or of raised platforms.



Transport in lifts and freight elevators

WARNING !

- Before taking the machine inside a lift or freight elevator, ensure that the lift is capable of tolerating the total mass of the machine and the operator.
- The machine has to be approached slowly to the elevator or lift and enter in it only when it is perfectly at the same level of the floor.
- After the machine is settled in the lift, the related control units have to be moved to zero, also the electric energy source (for S 43-B) connection has to be interrupted and the ignition key removed.



Parking

WARNING !

- When the machine is parked without surveillance, the control units have to be positioned on zero, the electric energy source has to be interrupted, the key has to be removed (for S 43-B) and any accidental or not authorized movement of the vehicle has to be impeded.
- When parking the machine, avoid obstructing access to safety exits, stairways and fire safety equipment.
- **Do not park the machine on a slope.**
- When parking the machine, the brush should always be hoisted from the floor.



Assistance and Spares

WARNING !

- If in any doubt, do not use the machine but instead ask for assistance from the nearest Assistance Centre.
- If approaching the nearest Assistance Centre always requires the use of original spare parts, which guarantees the duration of the equipment and your safety.
- Do not carry out repairs, modifications or adjustments to the machine, unless you are qualified and expressly authorised to carry them out.



Scrapping

WARNING!

- **When the machine is being scrapped, it must not be abandoned due to the presence of toxic and harmful materials, subject to laws which envisage disposal at appropriate recycling centres.**

Safety

Warning and instruction labels



(Carrying passengers is prohibited)



(No unauthorised use)



(Danger of crushing)



(Do not repair or record when moving)

FOR THE BATTERY:



No smoking, no using naked flames
Do not create electric arcs or sparks



Danger of explosions



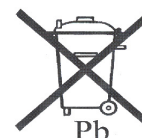
Protect eyes



Danger: corrosive substances



Follow the instructions
in the use manual carefully
provided by the manufacturer.

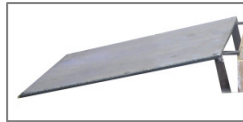


Lead batteries may not be discarded in normal solid waste but as they are made of harmful materials they must be collected, disposed of and/or recycled under the protection of current laws.

4/0 – PREPARING TO WORK

4/1 – PUTTING TO WORK **S 43-B**

When the machine is shipped it is packaged positioned on a pallet and fixed to it by two folded metal sheets that stop the wheels. The machine is then protected by means of a cardboard box. Upon receipt remove the box; remove the metal sheets by unloosing the 4 bolts under the pallet with a wrench 13, and let the machine come down from the pallet using a ramp.



In order to make a safe package with reduced dimensions the machine is delivered with floor wipers and brush/brushes removed; and batteries (option) assembled.

CONNECTING BATTERIES

In case of delivery with batteries, connect the two plug-sockets in the battery compartment.

In case it was ordered without batteries, fit them positioning as shown in the figure below.

Note that the battery plug-socket is the connection point between it and the machine's electric system.

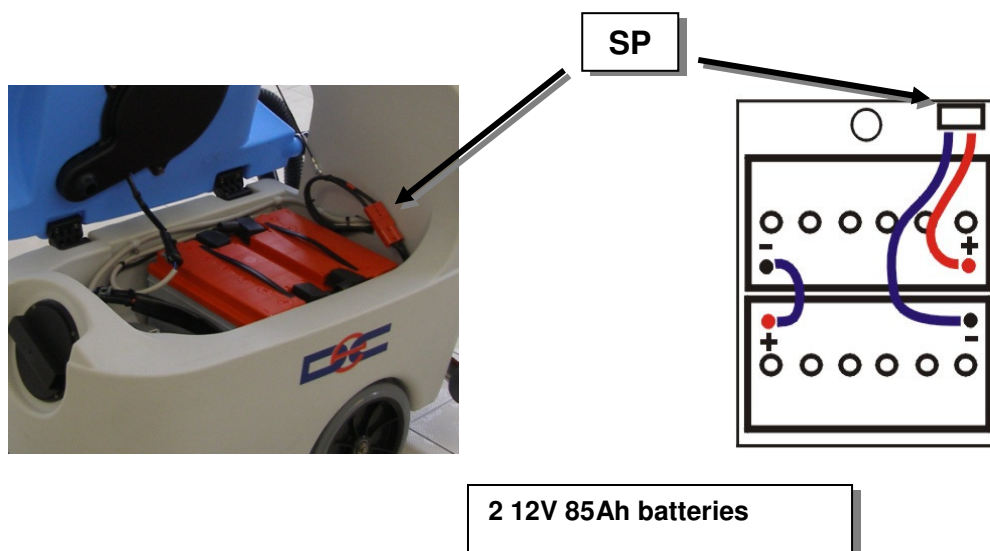
The socket and the plug are inserted with pressure in a mandatory direction.

After replacement, connect the cables provided taking **great care** when connecting the poles.

Follow the diagram below.

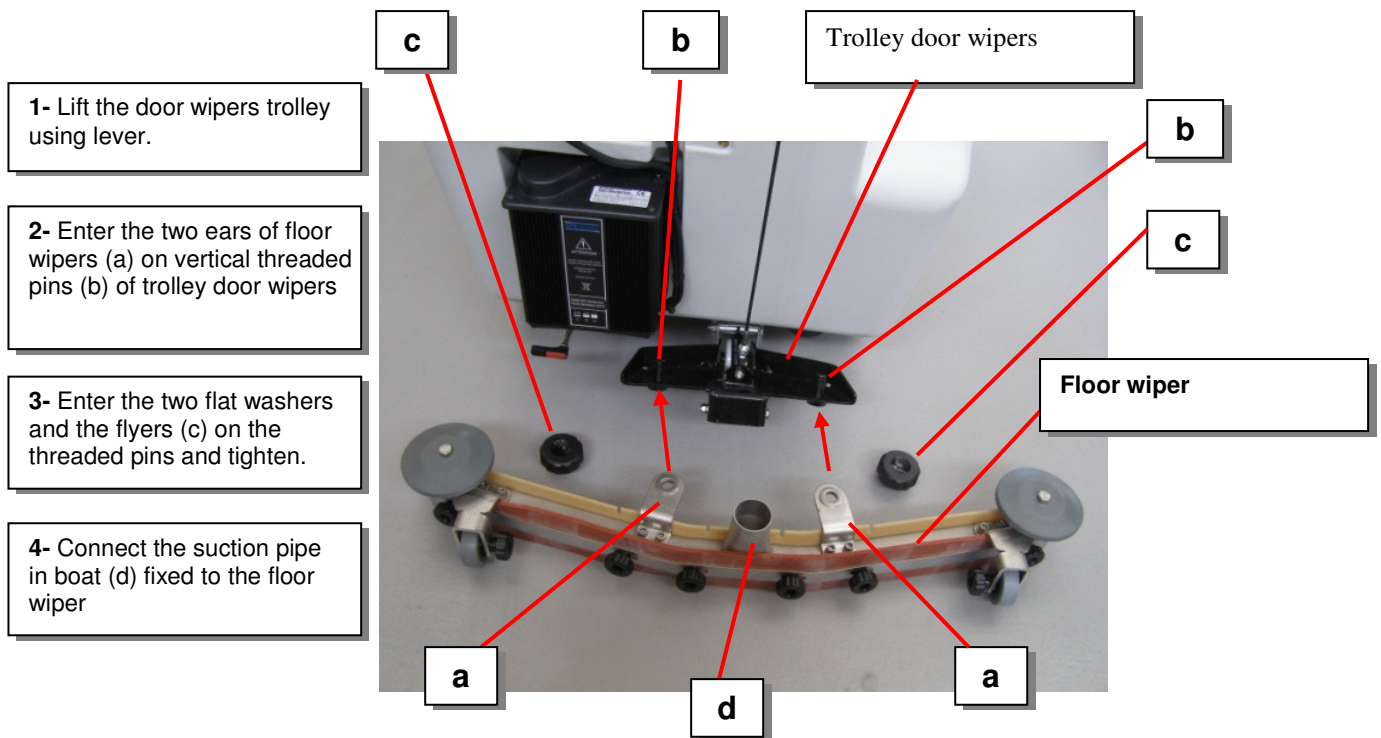


WARNING: Incorrect connection will irreparably damage the electronic system.



TO MOUNT THE VARIOUS PARTS, FOLLOW THESE INSTRUCTIONS:

A – Floor wiper



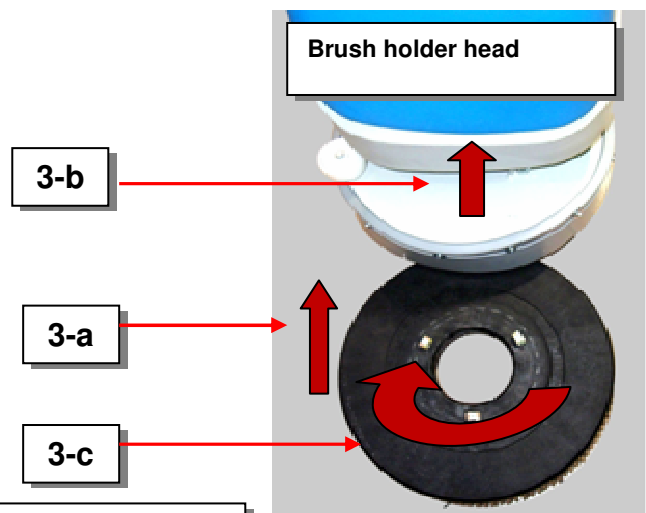
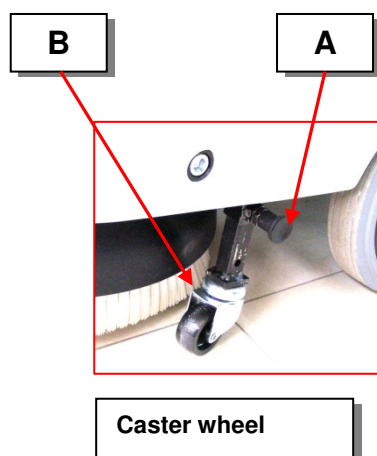
B – Brush: Fitting and Removal

Fitting:

1-Raise the brush holder head manually and simultaneously pull towards the outside of knob B to pivot to the wheel spring pin on the left side of the machine

2- Release knob **A**. The spring pin is inserted in the upper hole of the pivoting wheel shank and will keep the head permanently raised

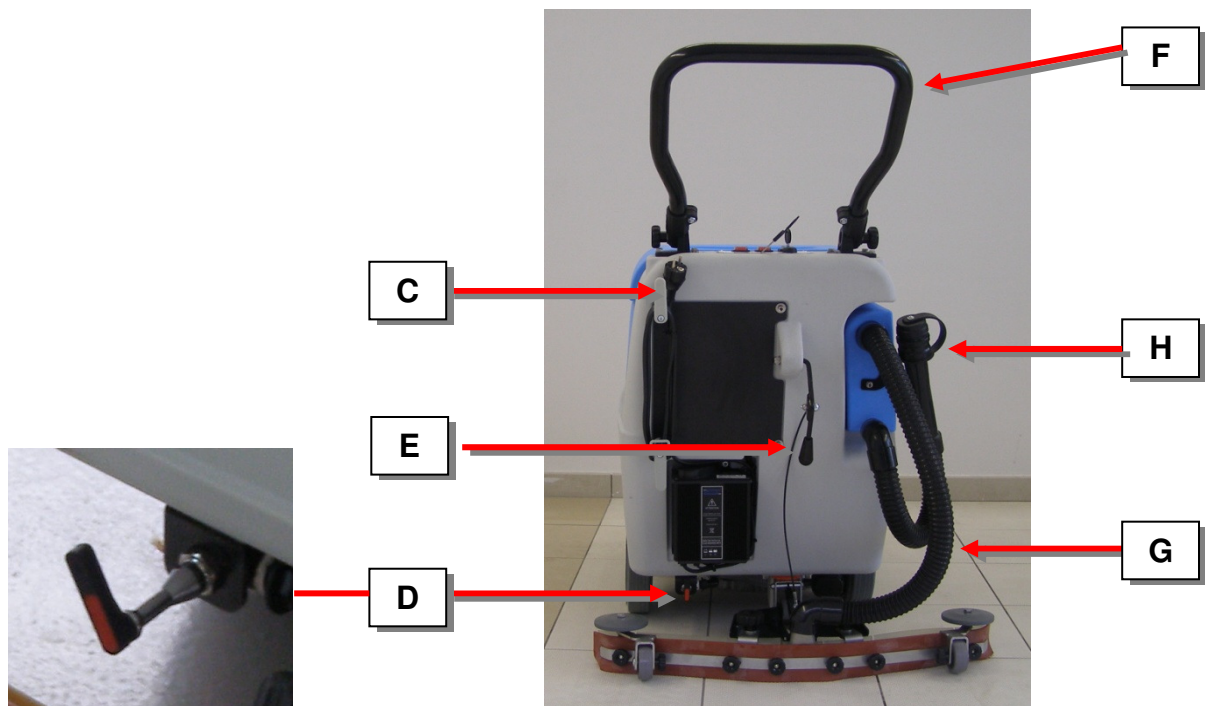
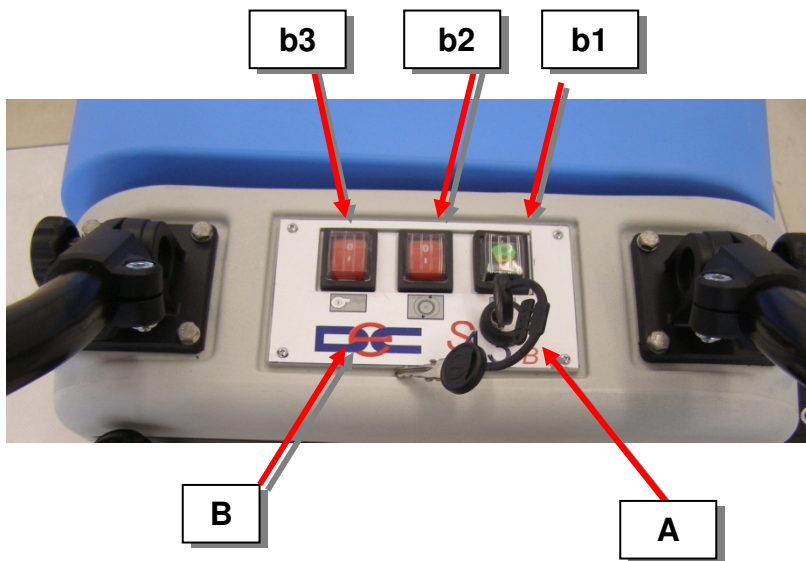
3- Place(a) the brush on the head ,in line with the same head. **Lift(b)** the brush to insert it i the head and **turn it (c)** clockwise to secure it.



Removal: Removal takes place electrical by using switch b2 as described in paragraph 4/2

4/2 – CONTROLS

- A. Ignition key
- B. Instrument panel
 - b1 Battery charge status indicator
 - b2 Brush rotation and release
 - B3 Suction
- C. Plug for built-in battery charger
- D. Solution dispensing adjustment tap
- E. Floor wiper lifting lever
- F. Handle
- G. Dirty water waste tube
- H. Emptying the recovery tank pipe unions



A) IGNITION:

The key placed on the instrument panel inhibits any operation of the machine; it is good practice to position this to off when the machine is not in use, it is mandatory when parked in open public spaces, e.g. supermarkets.

B) INSTRUMENT PANEL:

The instrument panel is fitted with 2 switches (b2 and b3) plus one indicator (b1).

The indicator (b1) using the gradual turning on and off of 3 leds shows the battery's charge status. **It only needs recharging when the red led is on.**



WARNING!

Continued use of the machine with the red led on causes a reduction in the battery's lifespan and the electric system in its entirety.

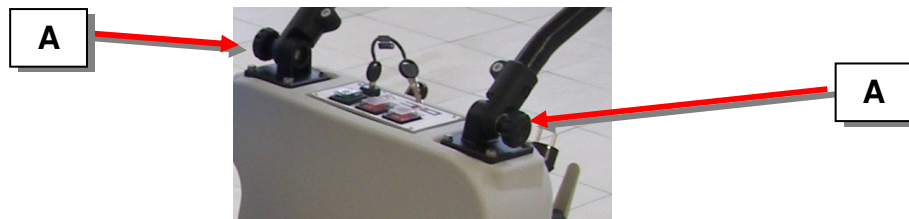
Switch (2b) controls the rotation of the brush and enables automatic removal of the brush/es.

Automatic removal of the brush takes place by turning switch **b2 from position 1 to position 0** with the machine on and the head raised off the ground. Raising the head is done simply by turning handle **C** towards the base.

Switch (b3) controls the suction of the detergent solution from the floor to the tank

C) HANDLE

Enables the machine to move. To tilt the handle to the desired position loosen flywheels **A**, turn the handle and clasp them and again.



To move the machine after having raised the floor wipers just push towards the lower handle to raise the front part of the machine and move it without effort. For longer transfer hoist the front part of the machine in stable way with the front left caster wheel as for ph. 4/1 letter B.

D) ADJUSTMENT OF SOLUTION RELEASE

The knob rotates clockwise to regulate the release to floor of the solution, from 0 l/min to 1.0 l/min. The consent to release is then given by an electronic valve conditioned by the appropriate switch and by the gear request (lever pressed).

F) FLOOR WIPER LIFTING LEVER

During transfer, it is necessary to raise the head and the wipers. This is easily achieved

G) BATTERY CHARGER PLUG

During the recharge phase, the plug needs to be inserted in a mains power socket.

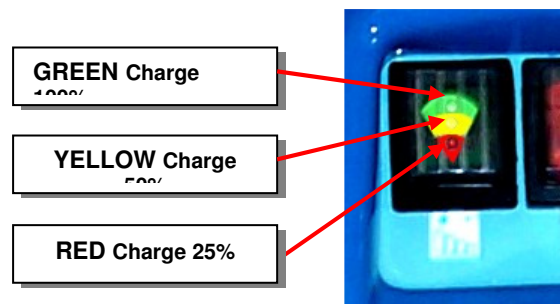
PRESSURE AND RETURN LINES

Connects the floor wiper to the recovery tank

H) RECOVERY TANK PIPE UNIONS

Enables the recovery tank to be emptied.

4/3-USE AND BATTERY CHARGING (S 43-B)



OPERATION

SM 45–52- 45T-52T scrubber-dryers are powered by batteries. The batteries are accumulators of electrical energy which is transferred to the motors little by little, as required. The battery charge status indicator is the instrument which allows the operator to use the machine correctly: with the batteries charged, the 3 LED are illuminated. It is possible to work up until just one remains illuminated. After which, arrangements need to be made for recharging the battery.

Before starting work therefore, check on the battery charge status, keeping in mind that just one motor running will provide the correct indication of the charge status.

- Do not discharge the batteries more than 75 % of the nominal capacity.
- For the first 4 – 5 cycles, carry out the battery recharge process after 3 – 4 work hours. New batteries reach their maximum capacity after approximately 10 work cycles.
- Never leave the batteries discharged. The batteries need to be recharged after a lengthy period of inactivity.
- In low temperature conditions, do not hesitate to recharge the batteries as the electrolyte could freeze over.

CHARGING AND REPLACING BATTERIES



WARNING: RISK OF BURNS !

- The batteries contain acid which must never come into contact with the eyes, the skin or clothing. Immediately wash thoroughly any splashes of acid, using clean water. If necessary, consult a doctor. Always wear protective clothing and eyewear during operations on the batteries.
- Do not spill or touch the battery acid. Accidentally-spilt battery acid can be neutralised with a solution of sodium hydroxide (SODA).



WARNING: RISK OF EXPLOSION !

- The batteries emit hydrogen during operation and more so during charging : this is a gas which is highly explosive in the presence of naked flames. This is why presence of free flames, sparks or electric arcs has to be avoided in the areas where the battery is recharged, and it is forbidden to smoke.
It is necessary to operate in a ventilated room.
The battery compartment hood has to be open to allow gas and heat dispersion.
- The batteries recharge and replacement have to be made by properly instructed and appointed personnel, and following the battery or machine manufacturer's instructions.

Following specific authorisation, these operations can be carried out by the operator of the machine.

- Always ensure that the mains power is suitable for the uptake of the battery charger.
- Before beginning the battery recharge phase, ensure that the machine has been switched off correctly, the ignition key removed and the cover of the battery compartment has been raised.
- Before tipping the water recovery tank to inspect batteries and charge them, make sure the tank itself is empty.
- **Keep tools and other metal objects away from uncovered batteries upper surface.**
- Check on the correct level of electrolyte. If one or more of the battery elements has an electrolyte level less than the minimum, top it up to the minimum level, i.e. until the plates are covered. This is because recharging batteries includes heating electrolyte and a consequent increase of volume with a risk of leakage.
- **During the battery charge, it is necessary to keep the element plugs in their seats to avoid electrolyte overflow. Ensure that the caps allow air to escape regularly.**
- The charging process commences on insertion of the plug (see par. 4/1 of the manual) in the battery charger or, where the machine is fitted with a built-in battery charger, on connection of plug G (par. 4/2) to the mains. During the battery recharge phase, it is not possible to start up and use the machine.
- Do not carry out any operation on the machine while the batteries are recharging.
- Ensure that the temperature of the electrolyte does not exceed 40 °C (pay particular attention during summertime and in areas subject to higher room temperature).
- **It is necessary to keep dry the upper surface of elements and battery clamps clean, slightly covered with Vaseline and properly tightened.**
- **If necessary following the recharging of the batteries, top up the electrolyte levels with distilled or demineralised water**
- Put the water recovery tank back in position, check that all discharge and supply tubes are located in their appropriate housings and that the respective pipe unions are inflated. Check that the cover of the recovery water tank is correctly closed and kept closed.

4/4 – OPERATION **S 43-E.**

When it is delivered in its packaging, the machine is positioned on a pallet and fixed to it through two tie-rods which hold the wheels to the pallet itself. Using a spanner, unfasten the four bolts beneath the pallet, and then raise it, placing the machine on the floor.

So as to make up a safe package with small dimensions, the machine is delivered with the floor wiper and brush(es) removed.

TO MOUNT THE VARIOUS PARTS, FOLLOW THESE INSTRUCTIONS:

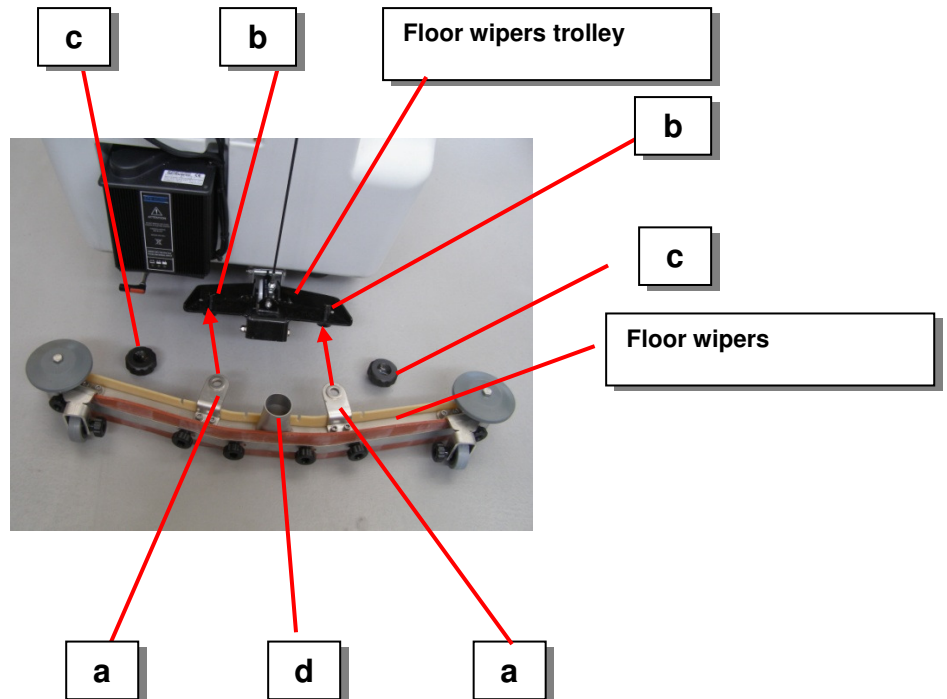
A – Floor wiper

1- Lift the door wipers trolley using lever.

2- Insert the two ears of floor wipers (a) on vertical threaded pins (b) of trolley door wipers

3- Insert the two flat washers and the flyers (c) on the threaded pins and tighten.

4- Connect the suction pipe in boat (d) fixed to the floor wiper



B – Brush: Fitting and removal

Fitting:

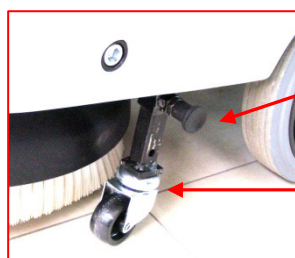
1-Raise the brush holder head manually and simultaneously pull towards the outside of knob B to pivot to the wheel spring pin on the left side of the machine

2- Release knob A. The spring pin is inserted in the upper hole of the pivoting wheel shank and will keep the head permanently raised

3- Place (a) the brush on the head ,in line with the same head. Lift (b) the brush to insert it i the head and turn it (c) clockwise to secure it.

Brush holder head

Caster wheel



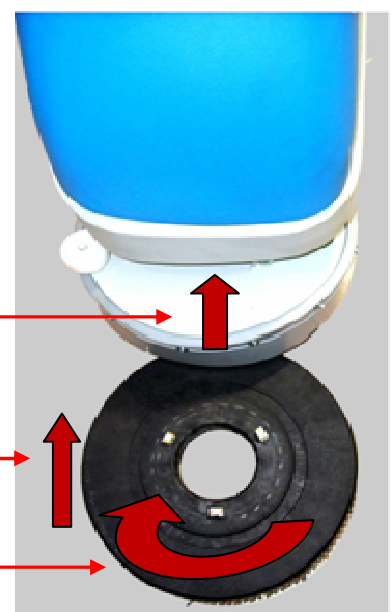
A

B

3-b

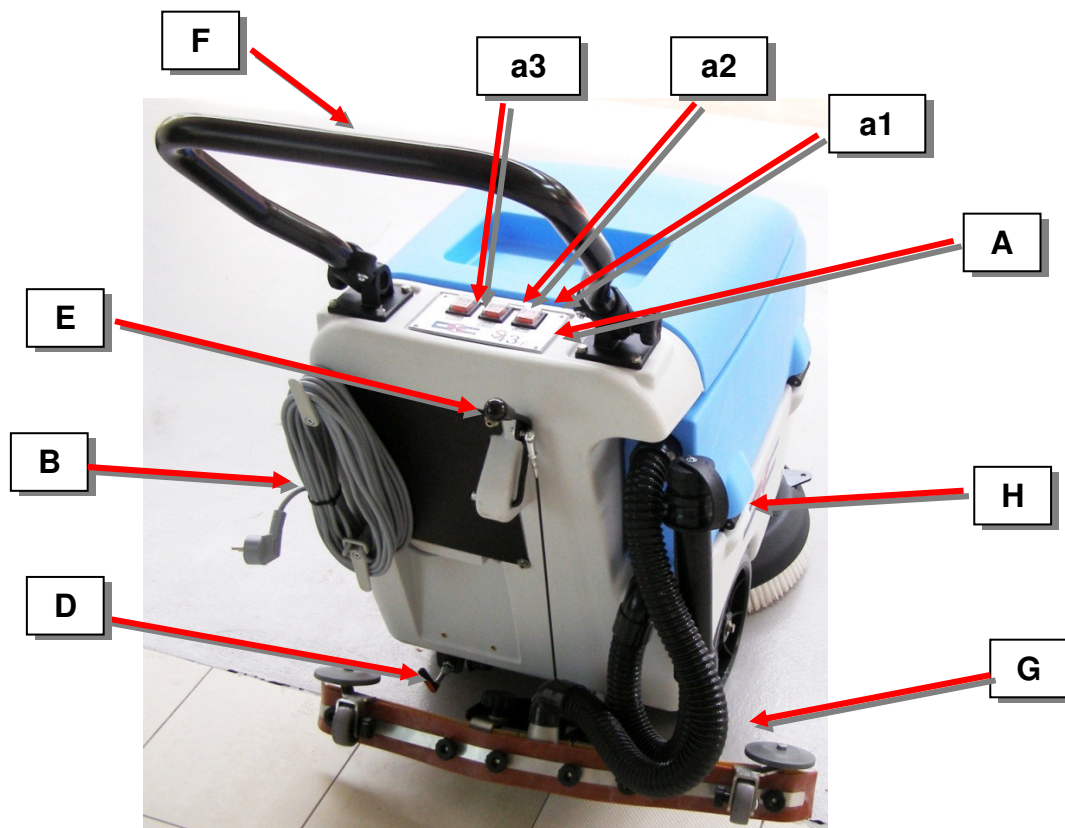
3-a

3-c



Removal: manually lift the head then with both hands, turn the brush in a clockwise direction until it falls to the ground.

4/5 – CONTROLS S 43-E



A) Instrument panel

- a1 General ON-OFF switch:
- a2 Brush rotation switch
- A3 Suction solution switch

B) Power cable

D) Adjustment of solution release tap

E) Raise floor wiper lever

F) Handle

G) Dirty water waste tube

H) Emptying the recovery tank pipe union

A) INSTRUMENT PANEL:

Switch **a1** placed on the instrument panel inhibits any operation of the machine; it is good practice to position this to off when the machine is not in use:

a1 – With the switch at position 1, (ON) the machine is powered up

a2 – Putting the switch in position 1 (ON) starts the brush rotation

a3 – The switch controls the suction of the detergent solution from the floor to the tank.

B) POWER CABLE (230V 50Hz)



WARNING!

REMOVE THE PLUG WHEN THE MACHINE IS PARKED IN A PUBLIC AREA (eg SUPERMARKETS)

D) ADJUSTMENT OF SOLUTION RELEASE TAP

Positioned at the rear, under the left part of the tank

The knob rotates clockwise to regulate the release to floor of the solution, from 0 l/min to 1.0 l/min. The consent to release is then given by an electronic valve conditioned by the brush rotation switch **a2**.

E) FLOOR WIPER LIFTING LEVER

During transfer, it is necessary to raise the head and the wipers. This is easily achieved by lifting the lever.

F) HANDLE

Enables the machine to move. To tilt the handle to the desired position loosen handwheels **A**, turn the handle and clasp them and again.



To move the machine after having raised the floor wipers just push towards the lower handle to raise the front part of the machine and move it without effort. For longer transfer hoist the front part of the machine in stable way with the front left caster wheel as for ph. 4/4 letter B.

G) FLEXIBLE SUCTION TUBE

Connects the floor wipers to the recovery tank

H) RECOVERY TANK PIPE UNION

Enables the recovery tank solution to be unloaded and emptied.

4/6 – PREPARATION OF DETERGENT SOLUTION

Up until now, we have been preparing the machine and we have learned the use of its controls. Now, before we begin to use it, we need to fill the water tank, perhaps directly from the tap using a tube, so as to prevent impurities entering into the circuit; the water must have a temperature no higher than 40 degrees. Add anti-foamy detergent specific for floor scrubber-dryer machines (PH between 5 and 9), considering that each kind of dirt or type of floor needs a specific detergent. Do not use acid, corrosive or inflammable products in a percentage greater than the percentage indicated by the related manufacturer.

Achieve the concentration advised by the detergent manufacturer considering that the tank capacity is of approx 35 litres.



WARNING: before beginning the cleaning work, ensure that the brush fitted to the machine is suitable for the type of floor surface to be cleaned: too soft would not have much cleaning power, whereas too hard would damage the floor surface. Our technician/salesman can certainly be of assistance on this and any other matters.

5/0 – SCRUBBER-DRYER USE

5/1 - MACHINE TURNING ON

For S 43-B: After having followed the aforementioned tips, the machine has a charged battery, assembled brush/brushes, assembled wiper, solution in the tank and naturally empty waste tank. Lower the head and the floor wiper, put the **key in the ON position**.

Put **switches** for turning the brush and suction **in position 1** to go forward and start the scrubbing-drying operation.

For S 43-E: Having followed the prompts given so far, the machine will be connected to the mains, the brush(es) will be mounted, the wiper mounted, there will be detergent solution in the tank and of course the recovery tank empty. Lower the head and the floor wiper, put **switch a1 in position I – ON**.

Put **switches** for turning the brush and suction **in position 1** to go forward and start the scrubbing-drying operation.

5/2 – ADJUSTING THE WORK

By operating the brush turning switch after having turned the machine on, at the same time water drops down.

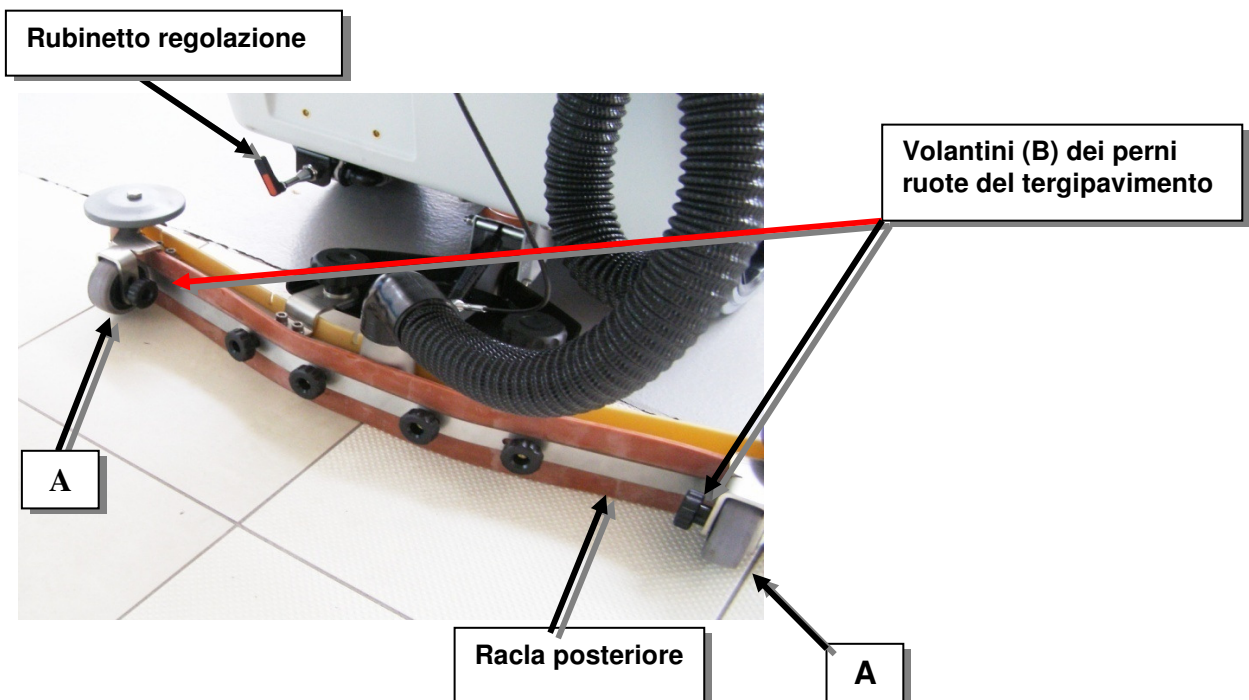
The floor wiper suction is obtained by operating the correct switch.

The amount of water that drops to the ground, selected by the correct tap, will be adjusted by the in accordance to the kind of floor and the dirt to be sucked up. Shiny surfaces that have become slightly dusty require little water; very dirty concrete paving will, on the other hand, require much more.

Also the shifting speed during working is determined by the type of floor and dirt to be sucked up. Where there are marks on the ground or points where it is necessary to work harder, it is possible to stop the machine in the desired position.

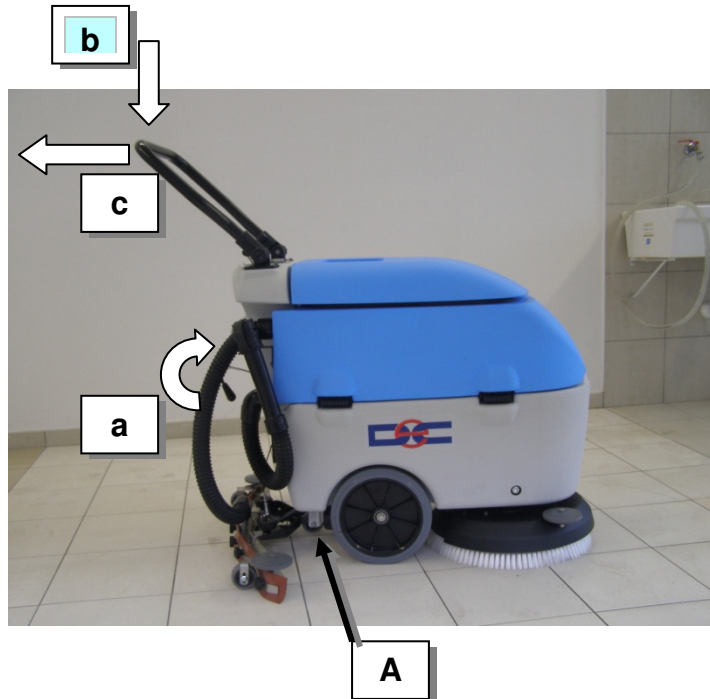
In order to obtain good drying, the rear wiper blade needs to be angled at approximately 45 °C along its entire length. The machine is pre-set by us to this angle.

The variation of the angle is obtained by varying the height from the ground of the wheels (A). To do this loosen handwheels (B), lift or lower wheels (A) and clasp the handwheels again.



5/3 – WORK OPTIMISATION

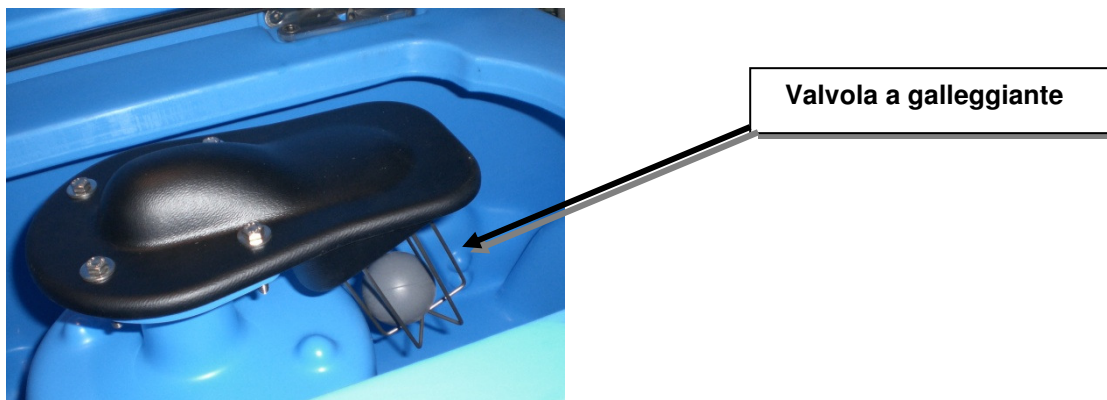
The floor wipers of our machines are even capable of collecting dirty water during curved movements or manoeuvres. There is, however, a certain limit – if the curve is too tight, there may remain uncollected water on the outside of the curve. It is advisable to carry out the straightest possible movements, or to carry out the broadest possible curves. **It is moreover advisable to move backwards with the floor wiper lowered** as little as possible, so as not to damage the blades. If a prolonged reverse is required, **lift floor wiper (a)** with the correct lever, **lift head (b)** pushing towards the lower handle and and **pull (c)** the machine on the rear pivoting wheel (A).



Our machines have been designed to release little water at the end of the work cycle. To obtain perfect results, however, close the water release via the appropriate switch, then proceed for 2-3 metres. In this way, the water remaining in the tubes will also be collected.

The operator has to empty the waste tank when water does not go down to the floor.

The machine is equipped of a floating valve that closes automatically and avoids that dirty water is vacuumed by the electric fan.



5/4 – EMPTYING THE RECOVERY TANK

To empty the liquid, remove **pipe union (H in par. 4/2 or 4/5)** from its housing, bring the end of the collection container then undo the cap. **Expendable materials disposal is allowed only by complying with the legal regulations in force.**

It is a good practice, even if it is necessary to continue working, to fill the tank with clean water again, in order to rinse the empty waste tank; this operation helps keep the machine in good condition.

5/5 WORK'S END

At the end of the work it is necessary to completely empty the dirty water tank, rinse it throughout, and at least once every 10 uses it is recommended to remove it from the machine and in an area where it is easy to clean it, splash water inside the overturned tank to remove all residues of deposited dirt.



WARNING: Expendable materials disposal is allowed only by complying with the legal regulations in force.

As for the clean water tank, empty any remaining water by removing the cap for the **water filter (-2- in par. 7.2)**, placed below the rear right side, then rinse and reclose. It is advisable to operate the machine for several minutes using only water, without detergent, to avoid having any detergent residue crystallise and obstruct the holes or components.

For S43-B: Recharge the batteries, as they need to be kept charged. If it is likely that the machine will be re-used shortly, it is sufficient to raise the floor wiper and the brush head, and deactivate the ignition key. If, on the other hand, it is not likely that the machine will be used for at least one week, disconnect the batteries via the two plugs placed on top of the batteries (SP **par.4/1**).

6/0 – BRUSHES AND FEEDERS

TABLE OF BRUSHES

Cleaning services	Type of floor surface	Type of bristle	Code
Cleaning	Brick	PPN 30	S 43-B / S43-E
	Sandstone		58.01.04.038
	Ceramic		
	Clinker		
	Marble		
	Granite		
	Linoleum		
Maintenance cleaning	Brick	PPN 60	58.01.04.037
	Sandstone		
	Ceramic		
	Clinker		
	Marble		
	Granite		
	Linoleum		
Aggressive cleaning	Palladian	Tynex	58.01.04.039
	Cement		
	Granite		
	Porphyry		
	Bio-brick ceramic		

TABLE OF DRAGS

DRAGS	S 43-B / S43-E
Drags code	58.01.04.040

7/0 – Maintenance

ROUTINE MAINTENANCE

This is maintenance which must be carried out by the user of the scrubber-dryer, or by the operator, in order to keep the machine efficient and safe.

EXTRAORDINARY MAINTENANCE

This is maintenance which may be carried out only by an operator approved by the manufacturer.

7/1 – GENERAL RULES

It is indispensable for a correct operation of the machine to carry out regular maintenance operations; these works, even if minor, increase the machine's life, improve the quality of the work performed and allow it to work more safely.

These rules on maintenance presuppose the following requirements:

- ✓ **Use on a single shift**
- ✓ **Normal environmental conditions**



WARNING – RISK OF SERIOUS ACCIDENTS

- **Do not perform maintenance without having the necessary preparation and authorisation from the person in charge**
- **Before performing any operations on the machine turn it off and disconnect the battery charger plug from the mains and any battery contacts (1) or disconnect the mains plug (2).**
- **Carry out the checks in a level, dry and obstacle-free area.**
- **Use an insulating material to cover the battery and protect it from short circuits (1).**
- **Do not substitute, adapt or remove any safety systems.**
- **If a safety mechanism is damaged, the vehicle cannot be used until the mechanism has been repaired and inspected by qualified technicians.**
Apply a sign to it with the indication "OUT OF SERVICE" and, for S43-B, remove the ignition key, disconnect the plug of the battery-charger from the mains and contact with batteries, for S43-E disconnect the plug from the socket after put the general switch in the OFF position.
- **If a malfunction is discovered, switch off the scrubber-dryer immediately and inform your superior.**
- **During maintenance, some parts of the machine (motors, electrical components) may still be hot. Use gloves and appropriate work clothes.**
- **Ensure that labels and plates are complete and legible.**

(1) For scrubber-dryer S 43-B; (2) For Scrubber-dryer S43-E.

7/2 – ROUTINE MAINTENANCE

MACHINE CLEANING

Clean the machine with water and not aggressive detergents, absolutely avoid solvents or hydrocarbons that could damage plastic parts like tanks and soundproof casing, avoid also jets of vapour that could damage plastic parts too. Do not spray water on the motors or on the electric parts.

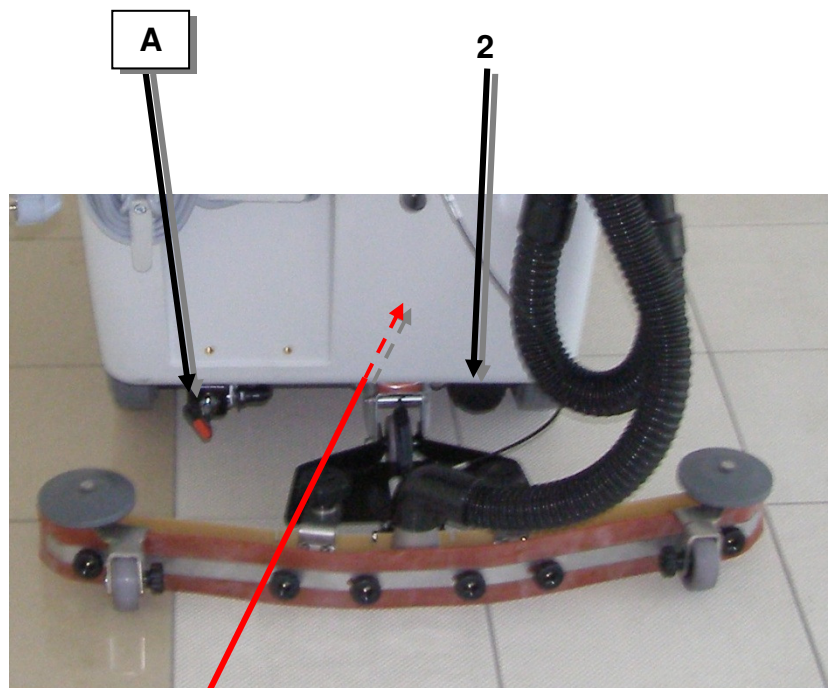
MAIN COMPONENTS CLEANING AND CHECK

- 1) **FLOATING VALVE.** Make sure **the floating valve ball** (par. 5/3) slides freely in its own housing. If not clean the housing until free movement is achieved.
- 2) **FILTER FOR DETERGENT SOLUTION** Periodically check the cleanliness of the **filter cartridge** inside.

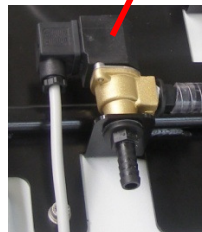
2a) Close tap(A) to interrupt the flow of water from the cleaning solution tank

2b) Turn filter cover (2) anti-clockwise

2c) Remove the filter cartridge and check if all residue various have been removed and in this case clean and rinse



B

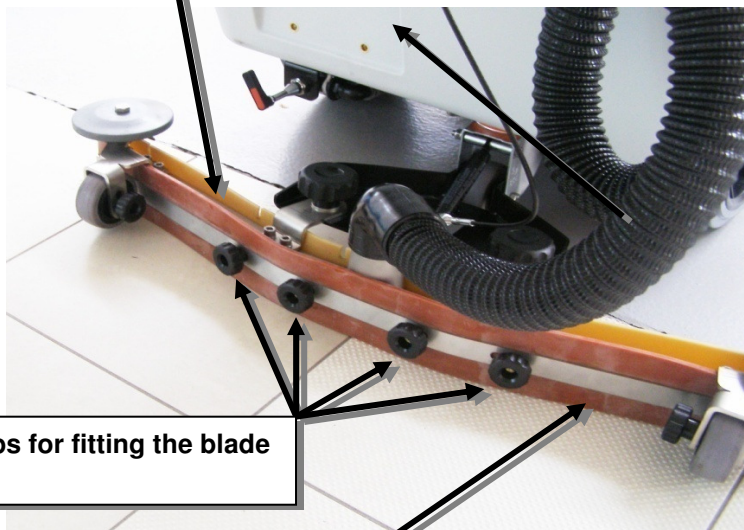


If you notice that ELECTRIC VALVE (B) is open when the switch operated to turn the brush and is used to prevent the detergent solution leaking from the tank with the machine off without having to close the supply tap.

3) FLOOR WIPER

Periodically check whether residues are stuck in the wipers or in the tube wipers.

Periodically it's good to check that there is no thread or cord wrapped around the pins or the bearings for all the machine's wheels. This problem would tend to make the floor wipers work abnormally and impede movement.



Knobs for fitting the blade

The blades should be periodically cleaned and must not have tears or be ripped that would lead to abnormal drying. In the case the blades were not perfectly repositioned them in order to make the 4 blade edges work one after another. Finally replace them

4) CARRYING TROLLEY-FLOOR WIPERS

To vary the height of the track and therefore the floor wiper, following **wear and tear of the knife**, refer to paragraph 5/2:

5) OTHER DEVICES

OTHER DAILY (OR EIGHT-HOURLY INSPECTIONS / ROUTINE MAINTENANCE)

Part	Action
Ignition key (S 43-B)	Turn the key clockwise and check the operation of the indicators (see par. 4/2-4/3).
Labels, Plates	Make sure that they are complete and legible
Pipe reducers Brush rotation	Check for possible grease leakage: if found provide for <u>Extraordinary Maintenance</u> .

7/3 – BATTERIES MAINTENANCE (S 43-B)



WARNING!

- Check the batteries **according to the manufacturer's instructions and the warnings from the manual in paragraphs 3/2.**
- The battery maintenance operations must be carried out in safe conditions, wearing protective gloves and eyewear.
- Keep tools and other metal objects away from uncovered batteries upper surface.
- **Check the electrolyte levels of the batteries once a week, for normal use of the machine twice a week in summertime or in high temperature environments.**
- Never add any type of acid to the electrolyte.
- Never allow the electrolyte to spill over.
- Check the battery compartment for any possible leaks of electrolyte.
- Clean the batteries to avoid the formation of salts or dissipation of current:
 - clean the upper part of the batteries without removing the caps;
 - dry with compressed air or with a clean cloth;
 - It is necessary to keep dry the upper surface of elements and battery clamps clean, slightly covered with Vaseline and properly tightened.
- Never leave discharged batteries at rest.
- The batteries must be removed from the machine before its disposal.
- The machine must be disconnected from the mains when the batteries are removed.



WARNING!

- When acid from a container is used, use a support that can be inclined or a siphon. When the sulphuric acid is being diluted to prepare the electrolyte, it is always necessary to add the acid to the water and not the water to the acid. **(EXTRAORDINARY MAINTENANCE)**
- The batteries replacement has to be made by properly instructed and appointed personnel, and following the battery or machine manufacturer's instructions.
- Before performing the battery replacement it is necessary to properly position the machine and remove the key from the power supply switch.
- Never replace the machine battery with other battering having different voltage, earth and dimensions.

7/4 EXTRAORDINARY MAINTENANCE

Over and above the checks and inspections given in the previous paragraph, regular maintenance and checks must be carried out according to the following intervals:

- Every two months or 200 hours of use*
- Every six months or 500 hours of use*
- Yearly or every 1,000 hours of use*

*which of the two expiry dates occurs first

Make sure that these intervals are not exceeded.

Maintenance and inspection work requires expertise and experience and must **not** be done by the operator, but instead by a trained and authorised technician who knows well the latest version of the maintenance manual.



WARNING – RISK OF ACCIDENTS

Improper or erroneous maintenance can bring about the malfunction of important safety components!

EXTRAORDINARY MAINTENANCE SCHEDULE

Maintenance Item	Every 200h / 2 months	Every 500h / 6 months	Every 1,000h / 1 year
Scrubber-dryer		General check	
Brush	Check the fastening system	Check on the condition	Replacement
Brush		Check from the point of contact and any adjustment of the screws for transversal and longitudinal tilt	
Floor wiper	Check for wear and tear	Clean, check and adjust	
Brush rotation motor Suction motor		Check on the condition: dismantling and cleaning Check electrical connection cables	Check possibly replace carbon brushes
Clean and dirty solution tanks	Check for any leaks		

7/5 TROUBLESHOOTING

Problem		Cause	Remedy
1	The machine doesn't work	Ignition key off (1)	Turn it
		Battery connector is disconnected (1)	Connect it
		Main or secondary fuse interrupted	Replace them after the cause has been resolved by a technical
2	Brushes don't turn	Brush not attached	Attach it
		Switch not on	Turn it on
		Engine doesn't work/ electrical system	See (6)
3	Solution doesn't drop	Tap closed	Open it
		Brush rotation switch not on	Turn it on
		Tap or filter closed	Call Assistance
		Electric valve not working	Call Assistance
4	Not drying or not drying well	Suction motor not working	See (7)
		Wipers or tubes blocked	Clean again
		Tubes not connected	Connect
		Incorrect wipers adjustment	Follow adjustment instructions
		Wiper blades worn out or broken	Replace
		Recovery tank full	Empty
5	Reduced autonomy (1)	Wires or terminals not connected	Clean, tighten, grease
		Not enough electrolyte	Add distilled water
		Battery elements with different densities (test with densimeter)	Battery damaged
		Inefficient battery charger	Check green light after charging
6	Brush motor doesn't work	Battery flat(1)	Charge the battery
		Motor temperature too high	Cool the motor
		Faulty switch	Replace
		Brush motor switch interrupted	Seek the cause of the breakage and replace
7	Suction motor doesn't work	Battery flat(1)	Charge the battery
		Motor temperature too high	Cool the motor
		Suction motor switch fuse interrupted	Seek the cause of the breakage and replace
		Faulty switch	Replace

(1) For scrubber-dryer S 43-B

8/0 - DISPOSAL AND ENVIRONMENTAL SAFETY

- DISPOSAL AND DEMOLITION OF THE SCRUBBER-DRYER

USER INFORMATION



WARNING!

Pursuant to Article 13 of Legislative Decree of 25.07.05, No. 151 “Implementing Directive 2002/95/EC, 2002/96/EC and 2003/108/EC on reducing the use of harmful substances in electrical and electronic equipment as well as waste disposal”

Users are informed that the symbol of the crossed out bin



shown on the equipment indicates that at the end of the product's useful life it must be disposed of separately from other waste.

Differentiated collection of this equipment at the end of its life is organised and managed by the producer. Any user who wants to dispose of this equipment should then contact the manufacturer and follow the system that they have adopted to enable separate collection of the equipment at the end of its life.

Proper separate collection for the next beginning for equipment disposed for recycling, treatment and environmental compatible disposal contributes to avoiding any negative effects on the environment and health and promotes the re-use and/or recycling of materials of which the equipment comprises.

Abusive disposal of the product by the owner leads to the application of administrative sanctions prescribed by the regulations in force.

DISPOSAL AND ENVIRONMENTAL SAFETY

- **BATTERY DISPOSAL (S 43-B)**



WARNING!

The batteries must be removed and disposed of in a safe manner. The disposal of batteries is only permitted when paying attention to the regulations of the laws in force.

Used batteries are dangerous.

The transport, removal or recycling of used batteries are regulated by special regulations.

Follow national and international legislation regarding batteries filled with acid.

Failure to observe the safety regulations can cause serious damage to people and materials transported.

Ask your carrier for the necessary safety requirements.

WARNING

It is necessary to remove the batteries before moving the scrubber-dryer.

This prevents any possible leakage of battery acid inside the battery compartment of the scrubber-dryer and therefore any damage to people or objects.

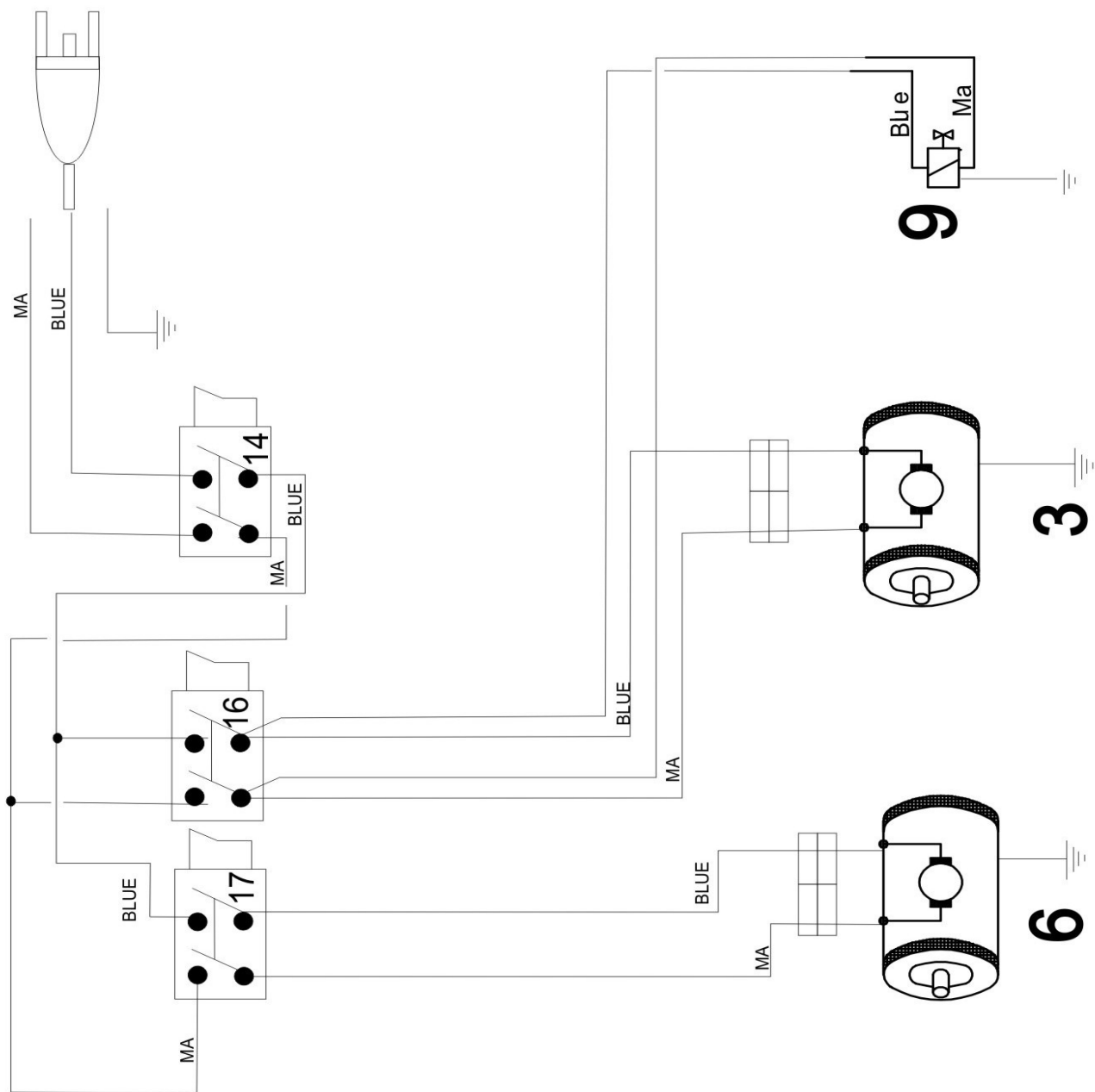
- **DISPOSAL OF HAZARDOUS SUBSTANCES EMPLOYED IN THE SCRUBBER-DRYER USE AND CLEANING.**

Please do not release these pollutants into the environment but act responsibly:

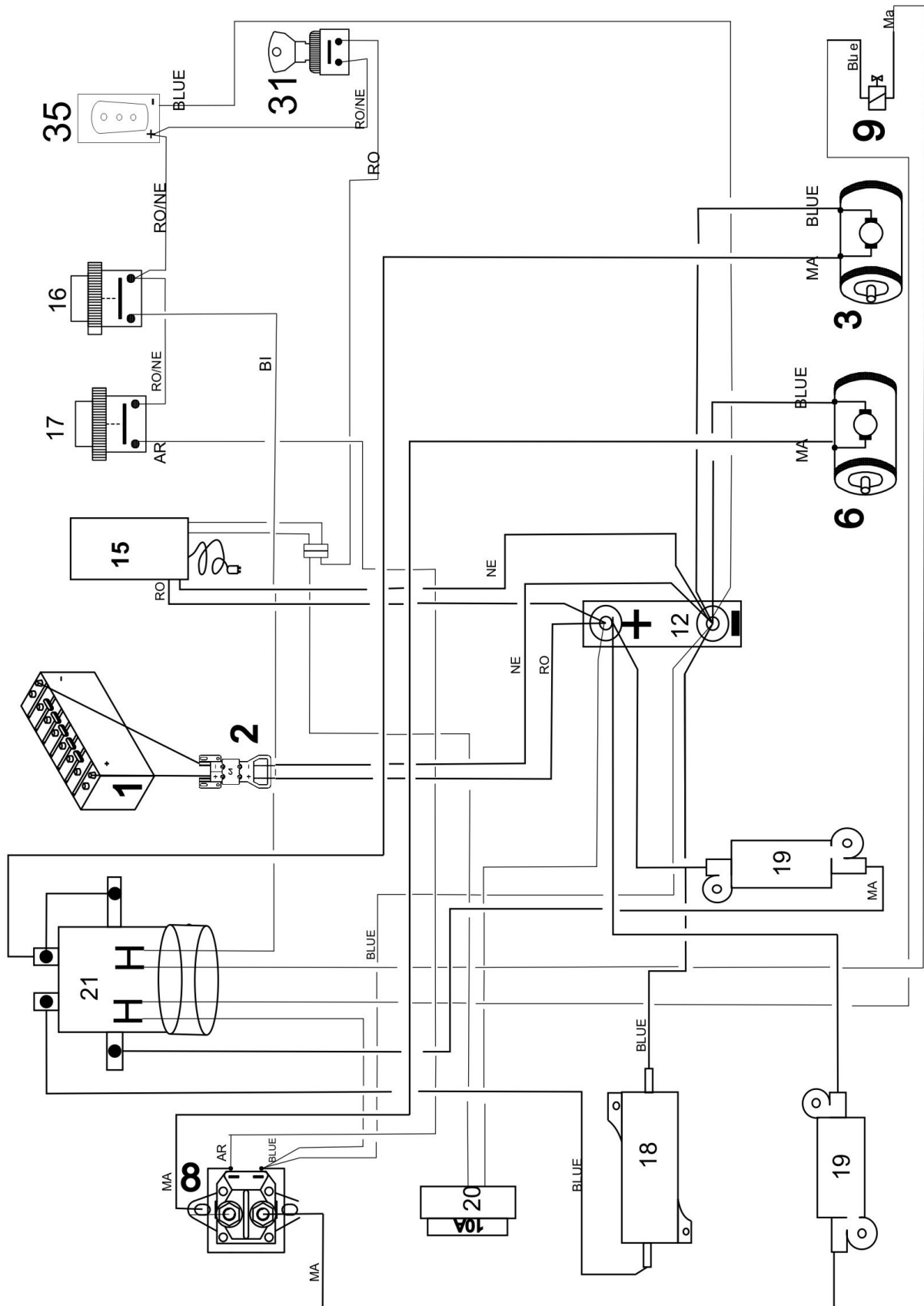
- Only clean and lubricate the scrubber-dryer in prearranged areas which are equipped for the collection of hazardous substances and oils.
- Only check batteries in suitable areas.
- Damaged batteries, electrolytes and greases are special refuse. Handle with care and send to authorised recycling centres.
- If stripping paint, ensure that the paint flakes are properly disposed off.

9/0 – ELECTRIC WIRING

9/1 – ELECTRIC WIRING: S 43-E



9/2 – ELECTRIC WIRING: S 43-B



9/3 – ELECTRIC WIRING KEY S 43-B:

COMPONENTS

Ref.	Description		Ref.	Description
1	Battery		16	Brush switch
2	Battery plug-socket		17	Suction switch
3	Brush motor		18	Resistance
6	Suction motor		19	40 A fuse
8	Suction remote control		20	10 A fuse
9	Electric valve		21	Remote control
12	Insulator		31	Ignition key
14	Switch mechanism		35	Batt. charge indicator
15	Battery Charger			

ELECTRICAL WIRES

	Ref.	Wire colour		Ref.	Wire colour
*	BI	White	*	BI/NE	White-Black
*	BLUE	Blue	*	BI/RO	White-Red
*	MA	Brown	*	BI/VE	White-Green
*	NE	Black	*	BLEU/NE	Blue-Black
*	R	Pink	*	GI/VE	Yellow-Green
*	RO	Red	*	GI/RO	Yellow-Red
*	AR/MA	Orange-Brown	*	MA/NE	Brown-Black
*	BI/BLEU	White-Blue	*	RO/NE	Red/Black
*	BI/GI	White-Yellow	*	AR	Orange