



CASUS_{ns}



SCRUBBING MACHINES

USE AND MAINTENANCE MANUAL



CONTENTS

CONTENTS.....	3
GENERAL DESCRIPTION	5
GENERAL SAFETY REGULATIONS.....	5
SYMBOLS USED IN THE MANUAL	5
MAIN MACHINE COMPONENTS.....	6
ESSENTIAL VERSION CONTROL PANEL COMPONENTS.....	7
PURPOSE AND CONTENT OF THE MANUAL.....	7
TARGET GROUP	7
STORING THE USE AND MAINTENANCE MANUAL.....	7
ON CONSIGNMENT OF THE MACHINE	7
INTRODUCTORY COMMENT.....	7
IDENTIFICATION DATA.....	7
TECHNICAL DESCRIPTION.....	7
INTENDED USE.....	8
SAFETY	8
REGULATIONS.....	8
LABELS USED ON THE MACHINE.....	8
SERIAL NUMBER PLATE.....	9
TECHNICAL DATA.....	10
HANDLING THE PACKAGED MACHINE	10
PREPARATION OF MACHINE.....	11
HOW TO UNPACK THE MACHINE	11
HOW TO MOVE THE MACHINE	11
MACHINE SAFETY.....	11
PREPARATION OF MACHINE.....	12
TYPE OF BATTERY TO BE USED	12
BATTERY MAINTENANCE AND DISPOSAL.....	12
INSERTING THE BATTERIES IN THE MACHINE.....	12
RECHARGING THE BATTERIES.....	12
FILLING WITH DETERGENT SOLUTION.....	13
INSERTING WATER SYSTEM FILTER	13
ASSEMBLING THE BRUSH HEAD BODY BRUSHES.....	14
FITTING THE SIDE BRUSH (OPTIONAL).....	14
USER SEAT ADJUSTMENT	14
PREPARING TO WORK	15
WORK.....	15
GENERAL HOUR METER.....	16
DETERGENT SOLUTION RECYCLING SYSTEM HOUR METER.....	16
BATTERY CHARGE LEVEL INDICATOR	16
SELECTING THE OPERATING DIRECTION	16
ADJUSTING THE OPERATING SPEED.....	17
BUZZER.....	17
ADJUSTMENT OF THE DETERGENT SOLUTION FLOW.....	17
WORKING HEADLIGHTS.....	17
EXTRA PRESSURE.....	17
EMERGENCY STOP.....	17

ALARM SCREEN.....	18
DETERGENT SOLUTION RECYCLING SYSTEM ALARM SCREEN.....	18
BRAKING CONTROL.....	19
SOLUTION TANK CAPACITY LOW.....	19
WORK MODE WITHOUT DETERGENT SOLUTION RECYCLING.....	19
AT THE END OF THE WORK.....	20
COMPULSORY MAINTENANCE OPERATIONS.....	20
CLEANING THE SQUEEGEE BODY.....	21
EMPTYING THE DEBRIS HOPPER.....	21
CLEANING THE BRUSH HEAD BODY BRUSHES.....	21
CLEANING THE SIDE BRUSH (OPTIONAL).....	22
DRAINING THE RECOVERY TANK.....	22
EMPTYING THE SOLUTION TANK.....	22
EMPTYING THE MEMBRANE SETTLING TANK.....	22
EMPTYING THE DEGREASER SETTLING TANK.....	22
CLEANING THE WATER SYSTEM FILTER.....	23
CLEANING THE VACUUM TUBE.....	23
EXTRAORDINARY MAINTENANCE WORK.....	23
REPLACING THE SQUEEGEE BODY RUBBER BLADES.....	23
REPLACING THE BRUSH HEAD BODY BRUSHES.....	24
REPLACING THE SIDE BRUSH (OPTIONAL).....	24
ADJUSTMENT INTERVENTIONS.....	24
ADJUSTING THE SQUEEGEE BODY'S RUBBER BLADES.....	24
DISPOSAL.....	25
CHOOSING AND USING BRUSHES.....	25
TROUBLESHOOTING.....	26
EC DECLARATION OF CONFORMITY.....	27

GENERAL DESCRIPTION

The descriptions contained in this document are not binding. The company therefore reserves the right to make any modifications at any time to elements, details, or accessory supply, as considered necessary for reasons of improvement or manufacturing/commercial requirements. The reproduction, even partial, of the text and drawings contained in this document is prohibited by law.

The company reserves the right to make any technical and/or supply modifications. The images are for reference purposes only, and are not binding in terms of design and supply.

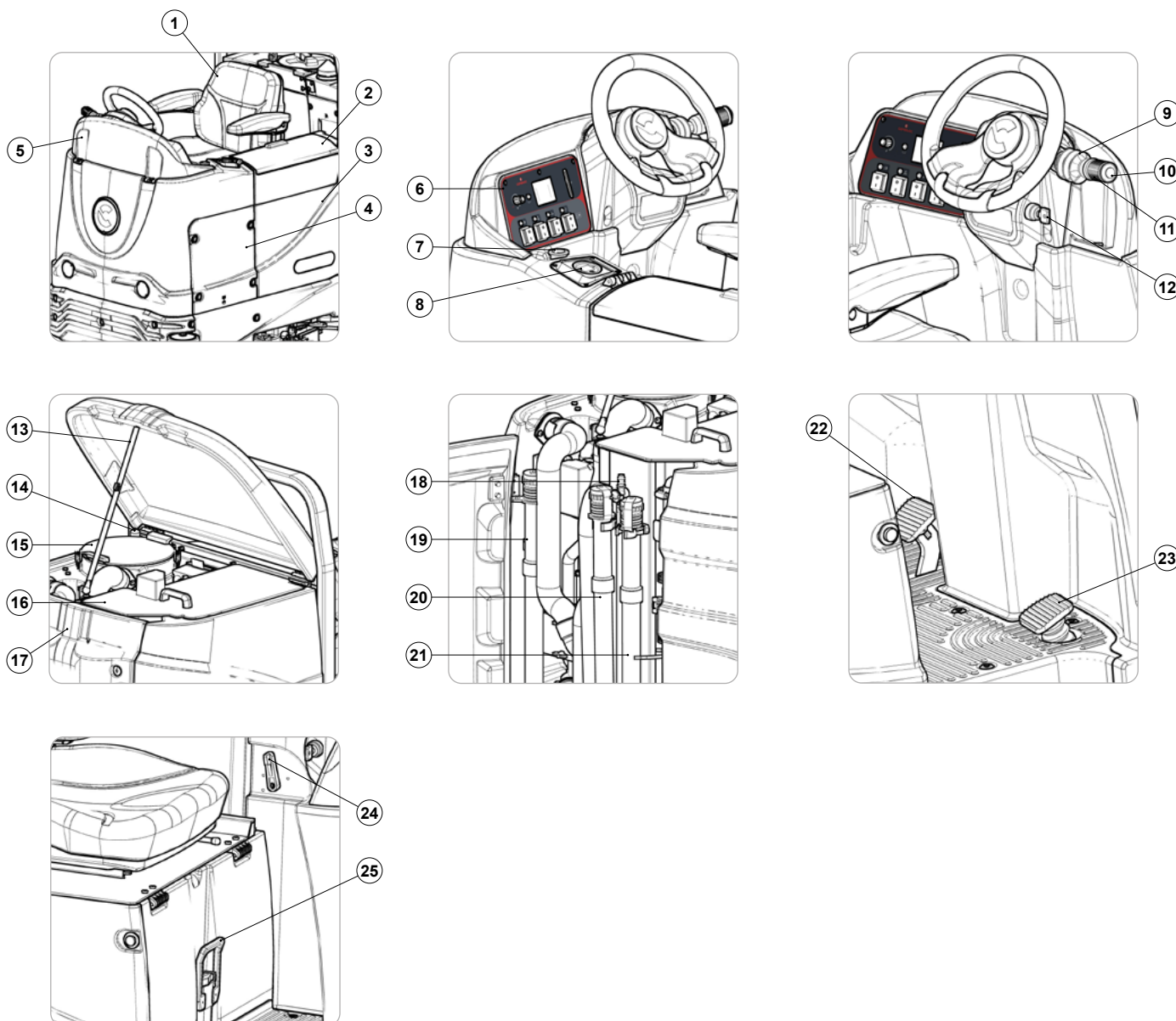
GENERAL SAFETY REGULATIONS

Before using the machine, please read the following document carefully and follow the instructions contained herein, along with the instructions in the document supplied with the machine itself, "GENERAL SAFETY REGULATIONS" (document code 10083659).

SYMBOLS USED IN THE MANUAL

	Open book symbol with an "i": Indicates the need to consult the instruction manual.
	Open book symbol: Tells the operator to read the user manual before using the device.
	Covered place symbol: The operations preceded by this symbol must always be carried out in a dry, covered area.
	Information symbol: Indicates additional information for the operator, to improve the use of the device.
	Warning symbol: Carefully read the sections preceded by this symbol meticulously following the instructions indicated for the safety of the operator and the device.
	Danger symbol (corrosive substances): The operator should always wear protective gloves to avoid the risk of serious injury to the hands caused by corrosive substances.
	Danger symbol (battery acid leakage): Indicates the danger of leaking acid or acid fumes from the batteries while they are being recharged.
	Danger symbol (moving carriages): Indicates that the packed product should be handled with suitable carriages that conform to legal requirements.
	Mandatory room ventilation symbol: Informs the operator that the room must be ventilated while the batteries are being recharged.
	Symbol indicating the compulsory use of protective gloves: Indicates that the operator should always wear protective gloves, to avoid the risk of serious injury to his hands from sharp objects.
	Symbol indicating the compulsory use of tools: Informs the operator of the need to use tools not included with the machine.
	Symbol indicating a treading ban: Informs the operator that it is forbidden to tread on machine components, as this could lead to serious injury.
	Recycling symbol: Tells the operator to carry out the operations in compliance with environmental regulations in force in the place where the appliance is being used.
	Disposal symbol: Carefully read the sections marked with this symbol for disposing of the appliance.

MAIN MACHINE COMPONENTS

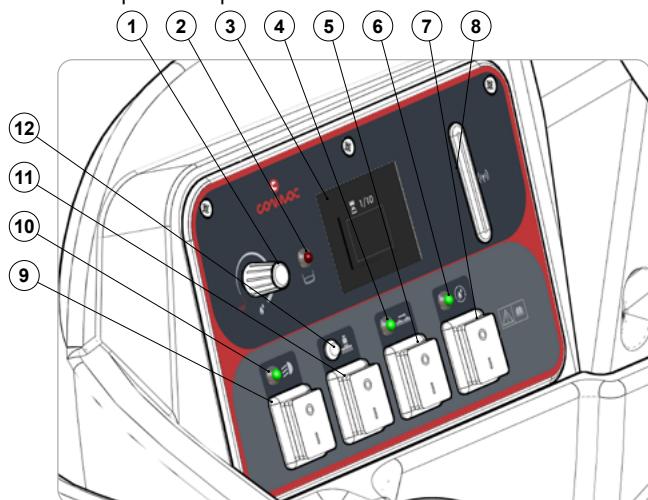


The machine's main components are the following:

1. Seat
2. Storage compartment cover
3. Battery compartment carter
4. Electrical system panel carter
5. Instrument panel carter
6. Control panel
7. Emergency stop
8. Working program display
9. Travel direction selector lever
10. Buzzer button
11. Forward speed selector knob
12. Main key switch
13. Tank cover support
14. Recovery tank filling quick connector
15. Recovery tank cover
16. Settling tank cover
17. Rear panel
18. Settling tank drainage tube (degreaser)
19. Recovery tank drainage tube
20. Settling tank drainage tube (membrane)
21. Solution tank drain hose
22. Brake pedal
23. Drive pedal
24. Detergent solution flow adjustment lever
25. Battery connector

ESSENTIAL VERSION CONTROL PANEL COMPONENTS

The control panel components on the Essential version are as follows:



1. Detergent solution flow adjustment knob.
2. Red indicator light signalling detergent solution level low.
3. Control display.
4. Green indicator light signalling activation of brush head body lateral movement.
5. Command switch for brush head body lateral movement.
6. Green indicator light signalling activation of recycling system.
7. Recycling system command switch.
8. Badge slot (valid for versions with automatic fleet management system).
9. Working headlights command switch.
10. Green indicator light signalling activation of working headlights.
11. Command switch for activation of brush head body extra pressure function.
12. Green indicator light signalling activation of brush head body extra pressure function.

PURPOSE AND CONTENT OF THE MANUAL

The aim of this manual is to provide customers with all the information needed to use the machine in the safest, most appropriate and most autonomous way. This includes information concerning technical aspects, safety, operation, downtime, maintenance, spare parts and scrapping. The operators and qualified technicians must carefully read the instructions in this manual before carrying out any operations on the machine. If in doubt about the correct interpretation of instructions, contact your nearest Customer Service Centre to obtain the necessary clarifications.

TARGET GROUP

This manual is written both for operators and for qualified machine maintenance technicians. Operators must not perform operations that should be carried out by qualified technicians. The manufacturer is not liable for damages resulting from failure to comply with this veto.

STORING THE USE AND MAINTENANCE MANUAL

The Use and Maintenance Manual must be stored in its special pouch close to the machine, protected from liquids and anything else that could compromise its legibility.

ON CONSIGNMENT OF THE MACHINE

When the machine is consigned to the customer, an immediate check must be performed to ensure all the material mentioned in the shipping documents has been received, and also to check the machine has not suffered damage during transportation. If this is the case, the carrier must ascertain the extent of the damage at once, informing our customer service office. It is only by prompt action of this type that the missing material can be obtained, and compensation for damage successfully claimed.

INTRODUCTORY COMMENT

Any floor scrubbing machine can only work properly and effectively if used correctly and kept in full working order by performing the maintenance operations described in the attached documentation. We therefore suggest you read this instruction booklet carefully and read it again whenever difficulties arise while using the machine. If necessary, remember that our assistance service (organised in collaboration with our dealers) is always available for advice or direct intervention.

IDENTIFICATION DATA

For technical assistance or to request replacement parts, always give the model, the version and the serial number (written on the relevant plate).

TECHNICAL DESCRIPTION

The **C85 2018 BS NSC** is a floor scrubbing machine that can handle a wide variety of floors and types of dirt with the mechanical action of two cylindrical brushes and the chemical action of a water-detergent solution. As it advances, it collects the dirt removed and the detergent solution not absorbed by the floor. **The machine must only be used for this purpose.**

INTENDED USE

This scrubbing machine was designed and built for the cleaning (scrubbing and drying) of smooth, compact flooring in the commercial, residential and industrial sectors by a qualified operator in proven safety conditions. The scrubbing machine is not suitable for cleaning rugs or carpet floors. It is only suitable for use in closed (or at least covered) places.



ATTENTION: the machine is not suitable for use in the rain, or under water jets.



IT IS FORBIDDEN to use the machine for picking up dangerous dusts or inflammable liquids in places with an explosive atmosphere. In addition, it is not suitable as a means of transport for people or objects.

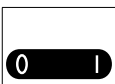
SAFETY

Operator cooperation is paramount for accident prevention. No accident prevention programme can be effective without the full cooperation of the person directly responsible for machine operation. The majority of occupational accidents that happen either in the workplace or whilst moving are caused by failure to respect the most basic safety rules. An attentive, careful operator is most effective guarantee against accidents and is fundamental in order to implement any prevention programme.

REGULATIONS

All references to forwards and backwards, front and rear, right and left indicated in this manual should be understood as referring to the operator in a driving position with his hands on the steering wheel.

LABELS USED ON THE MACHINE



Main switch symbol:

Applied to the control panel, positioned on the front of the machine, to indicate the main switch.



Acoustic signalling device control label:

Applied in the vicinity of the steering column to indicate the acoustic signalling device's control button.



Label for detergent solution tap command:

Applied in the vicinity of the control column to identify the detergent solution tap's control lever.



Label indicating the need to read the Use and Maintenance Manual:

Applied in the vicinity of the steering column in order to remind the operator to read the user and maintenance manual before using the machine.



Treading ban label:

Located on the machine, to identify the surfaces that must not be trodden on (risk of personal injury or damage to the machine).



Label warning about the risk of crushed hands:

Indicates danger to hands due to crushing between two surfaces.



Warning label:

Affixed to the machine in order to warn the operator to read the user and maintenance manual (this document) before using the machine for the first time.



Forbidden to vacuum - collect label:

Affixed to the machine in order to warn the operator that it is forbidden to use the machine to collect and/or vacuum powders and/or liquids that are flammable and/or explosive, or incandescent particles.



Battery charging warning label:

Affixed to the machine to advise the operator how to recharge the batteries.



Battery charging warning label:

Affixed to the machine to warn the operator of the danger of leakage of flammable gases during battery charging.



Solution tank filter daily care warning label:

Applied to the machine to remind the operator to clean the solution tank after each use.



Braking system oil level check label:

Located near the braking system oil basin, to remind the operator to check the level of oil in the basin. The bottom part of the label shows the recommended oil for the braking system.

Service brake pedal positioning label:

Affixed to the machine to indicate the position of the service brake pedal.

Label indicating maximum temperature for filling the solution tank:

Located on the upper part of the solution tank, to indicate the maximum temperature of the water for filling the solution tank safely.

Brush head in motion danger warning label:

Affixed to the brush head to warn the operator that the brush head could move sideways.

Label indicating machine direction selector button:

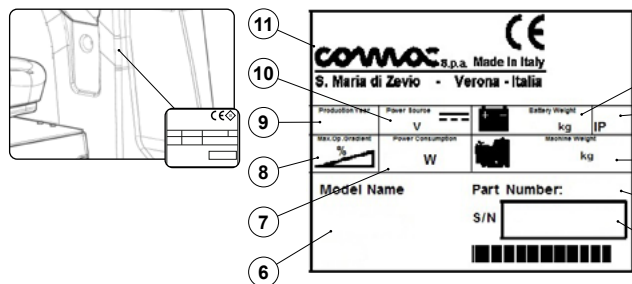
Affixed near the steering wheel to indicate how to move the machine travel direction control lever.

Label indicating positioning of the cornering speed adjustment sensor:

Affixed to the machine to explain how to correctly position the sensor which enables machine speed around corners to be reduced.

SERIAL NUMBER PLATE

The serial number plate is located at the rear of the steering column, and indicates the machine's general characteristics, including its serial number. The serial number is a very important piece of information and should always be provided together with any request for assistance or when purchasing spare parts. The serial number plate contains the following:

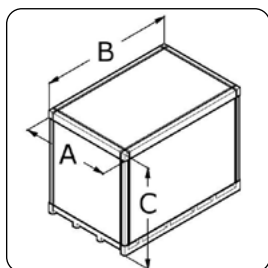


1. The weight of the batteries used to power the appliance (expressed in Kg).
2. The IP protection rating of the appliance.
3. The gross weight of the appliance (expressed in Kg).
4. The identification code of the appliance.
5. The serial number of the appliance.
6. The name of the appliance.
7. The nominal power consumed by the appliance (expressed in W).
8. The maximum grade that the appliance can handle during work activities (expressed in %).
9. The year in which the appliance was manufactured.
10. The nominal voltage of the appliance (expressed in V).
11. The commercial name of the appliance and the manufacturer's address.

TECHNICAL DATA

TECHNICAL DATA	U/M [KMS]	C85 2018 BS NSC BASIC	C85 2018 BS NSC PREMIUM
Rated machine power	KW	4	4
Theoretical working capacity up to	m ² /h	5726	5726
Minimum working width	mm	810	810
Maximum working width	mm	1002	1002
Squeegee width	mm	1080	1080
Central brush head brush (Ø external bristles - length)	mm	Ø210 - 810	Ø210 - 810
Electrical characteristics of the central brush head motor	V / W	36 - 750	36 - 750
Rpm of the individual brush on the central brush head	rpm	550	550
Lateral movement of central brush head unit	mm	120	120
Maximum weight exerted by the central brush head	kg	45	45
Lateral brush head brush (Ø external bristles)	mm	Ø290	Ø290
Electrical characteristics of the side brush head motor	V / W	36 - 200	36 - 200
Rotations of single lateral brush head brush	rpm	140	140
Maximum weight exerted by the lateral brush head	kg	20	20
Traction motor electrical properties (voltage - power)	V / W	36 - 1200	36 - 1200
Maximum slope during work (GVW)	%	10	10
Maximum working speed	km/h	6,3	6,3
Suction motor electrical properties (voltage - power)	V / W	36 - 650	36 - 650
Vacuum on vacuum head	KPa	14	14
Maximum solution tank capacity	l	70	70
Maximum recovery tank capacity	l	95	95
Maximum settling tank capacity	l	70	70
Maximum debris hopper capacity	l	12	12
Minimum inversion footprint	mm	2110	2110
Machine dimensions (length - height - width)	mm	1920 1645 960	1920 1645 960
Battery compartment dimensions (length - height - width)	mm	725 505 515	725 505 515
Machine weight when empty	kg	590	605
Transported machine weight	kg	990	1005
GVW	kg	1305	1320
Sound pressure level in operator seat [ISO 11201] (L _{pA})	dB	<70	<70
Uncertainty K _{pA}	dB	1,5	1,5
Hand-arm vibrations [IEC 60335-2-72; IEC 62885-9; ISO 5349-1]	m/s ²	<2.5	<2.5
Whole body vibrations [IEC 60335-2-72; IEC 62885-9; ISO 2631-1]	m/s ²	<0,5	<0,5
Vibration measurement uncertainty		4%	4%

HANDLING THE PACKAGED MACHINE



The overall machine weight including packaging is 715kg for the basic version, or 730kg for the premium version. The overall dimensions of the package are: width = 133cm length = 214cm height = 180cm



ATTENTION: It is recommended that all the packaging components be kept for any future machine transportation.



ATTENTION: Move the packaged product with handling equipment that complies with legal requirements regarding the size and mass of the packaging.

PREPARATION OF MACHINE

HOW TO UNPACK THE MACHINE

The machine is shipped in specific packaging. To remove it, proceed as follows:

1. Place the lower part of the outer packaging in contact with the floor.

 **N.B.:** use the pictograms printed on the box as a reference.

2. Remove the outer package.

 **WARNING:** the machine is contained in specific packaging materials, whose elements (plastic bags, staples, etc.) can pose potential hazards, and must not be left within reach of children, disabled persons, etc.

 **CAUTION:** it is recommended to wear the appropriate PPE (Personal Protective Equipment) for the work to be carried out.

3. Insert a ramp in the rear part of the machine.

 **ATTENTION :** the ramp gradient must not be such as to cause damage to the machine as it comes down.

4. The machine is fastened to the platform with wedges, remove these wedges.
5. Take the machine off the pallet via the ramp.

 **CAUTION:** during this operation, check there are no people or objects near the machine.

HOW TO MOVE THE MACHINE

To transport the machine safely, proceed as follows:

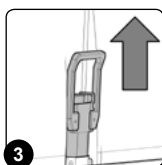
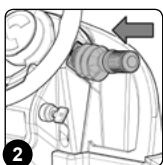
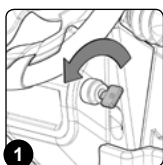
1. Check that all the machine tanks are empty; if this is not the case, empty them (see "[EMPTYING THE RECOVERY TANK](#)" and also "[EMPTYING THE SOLUTION TANK](#)" and "[EMPTYING THE MEMBRANE SETTLING TANK](#)" and "[EMPTYING THE DEGREASER SETTLING TANK](#)").
2. Place the machine on the transport vehicle.

 **WARNING:** secure the device according to the directives in force in the country of use (ex. 2014/47/EU), , so that it cannot slide or tip over.

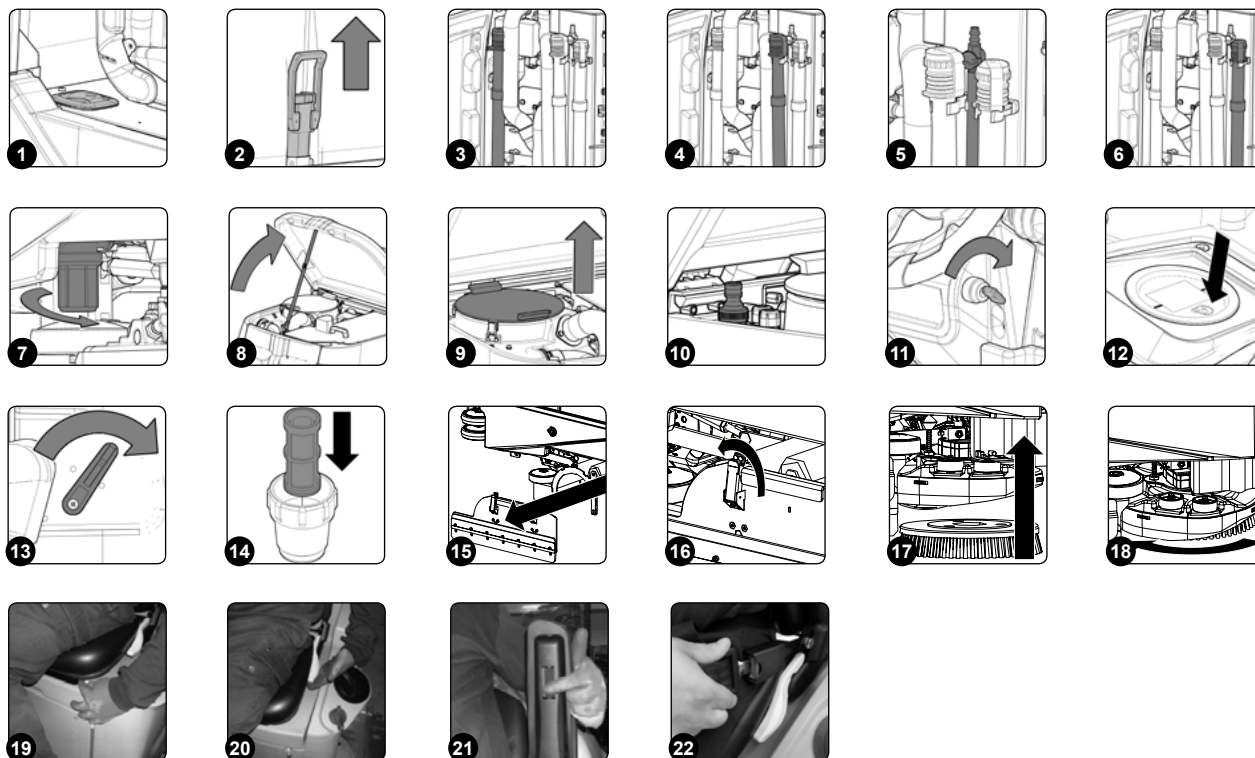
MACHINE SAFETY

The procedure for securing the machine, thus allowing the operations to be performed under conditions of complete safety, is as follows:

1. Sit on the driver's seat.
2. Check that the main switch on the control panel has been set to "0". If this is not the case, turn the key a quarter turn anti-clockwise (**Fig.1**).
3. Remove the key from the main switch.
4. Shift the direction lever to the "idle" position, moving it in the direction shown by the arrow (**Fig.2**).
5. Disconnect the battery connector from the machine's main system connector (**Fig.3**).



PREPARATION OF MACHINE



TYPE OF BATTERY TO BE USED

The batteries must meet the requirements laid out in the norms: DIN/EN 60254-2 and IEC 254-2 series L. **To carry out the work well the machine must have a 36V power supply**, we recommend using a 36V 360Ah/C₅ traction battery box.

BATTERY MAINTENANCE AND DISPOSAL

For battery maintenance and recharging, respect the instructions provided by the battery manufacturer.

When the batteries reach the end of their working life, they must be disconnected by expert, trained personnel then removed from the battery compartment with the aid of suitable lifting devices.



N.B.: dead batteries are classified as dangerous waste and as such must be delivered to an authorized body for disposal.

INSERTING THE BATTERIES IN THE MACHINE

To fit the batteries inside the machine, contact an COMAC assistance centre technician.



WARNING: COMAC declines all responsibility for any damage to property or injury persons in the event that the batteries are replaced by an unauthorized technician.

RECHARGING THE BATTERIES

The batteries must be charged prior to the first use, and when they don't provide enough power for tasks that could formerly be performed without difficulty.



ATTENTION: to avoid any permanent damage to the batteries, it is essential to avoid their complete discharge; begin recharging them within a few minutes of noting the "discharged batteries" signal.



ATTENTION: never leave the batteries completely run down, even if the machine is not being used.

To recharge the batteries, proceed as follows:

1. Bring the machine to the battery recharging area.



N.B.: Park the machine in an enclosed place, on a flat and level surface; near the machine there must be no objects that could either damage it, or be damaged through contact with it.



WARNING: the battery recharging area must comply with the requisites of Standard CEI EN 50272-3, or those currently in force in the country of use.

2. Make sure the machine is in a safe condition (see "[MACHINE SAFETY MEASURES](#)").
3. Grip the handle for moving the seat mounting plate and turn the plate to the maintenance position (**Fig.1**).
4. Disconnect the battery connector from the machine's main system connector (**Fig.2**).

 **ATTENTION:** the following operations must be carried out by qualified personnel. An incorrect connection of the connector may cause problems with machine functioning.

5. Connect the external battery charger cable to the battery connector.

 **N.B.:** the coupling connector of the battery charger is consigned inside the bag containing this instruction booklet, and must be assembled on the cables of the battery charger as indicated in the instructions.

 **CAUTION:** before connecting the batteries to the battery charger, make sure it is suitable for the batteries used.

 **CAUTION:** carefully read the Use and Maintenance Manual of the battery charger used for recharging.

 **CAUTION:** keep the battery inspection carter open for the duration of the battery recharging cycle to allow gas fumes to escape.

6. When the recharge cycle is complete, disconnect the external battery charger cable from the battery connector.
7. Connect the battery connector to the machine's main system connector.
8. Grip the handle and turn the seat mounting plate to its working position.

FILLING WITH DETERGENT SOLUTION

Before filling the tanks, proceed as follows:

1. Take the machine to the usual place for filling the solution tank.
2. Stand at the back of the machine and open the rear panel.
3. Make sure the cap of the recovery tank drainage tube is closed. If it isn't, close it (**Fig.3**).
4. Make sure the cap of the membrane settling tank drainage tube is closed. If it isn't, close it (**Fig.4**).
5. Make sure the tap of the degreaser settling tank drainage tube is closed. If it isn't, close it (**Fig.5**).
6. Check that the solution tank drainage tube cap is closed. If this is not the case, close it (**Fig.6**).
7. Check to make sure that the water system filter cap, located on the front left-hand side of the machine, is closed. If this is not the case, close it (**Fig.7**).
8. Turn the tank cover into the maintenance position, using the support to prevent it from rotating (**Fig.8**).
9. Remove the recovery tank cover (**Fig.9**).
10. Add the liquid detergent to the tank in the concentration and manner indicated on the detergent manufacturer's label; use the minimum amount of detergent recommended.

 **CAUTION:** it is recommended to wear the appropriate PPE (Personal Protective Equipment) for the work to be carried out.

 **ATTENTION:** always use detergents whose manufacturer's label indicates their suitability for scrubbing machines. Do not use acid or alkaline products or solvents without this indication.

 **N.B.:** always use low-foam detergent. To avoid the production of foam, put a minimum quantity of anti-foam liquid in the recovery tank before starting to clean. Do not use pure acids.

11. After putting the detergent in the recovery tank, close the top-up opening with the cover that was removed previously.
12. Connect the filling tube to the quick connector on the machine (**Fig.10**) and turn on the water tap.

 **N.B. :** fill with clean water, at a temperature no higher than 50°C (122°F) and no lower than 10°C (50°F).

13. Turn on the machine and turn the key a quarter turn clockwise (**Fig.11**).
14. Activate the "F1" function, keeping the button on the working programs display pressed down for at least three seconds (**Fig.12**).
15. Wait until the tanks are completely full.

 **N.B.:** when the F1 phase is active, the words "F1 ON" will appear on the work display.

 **N.B.:** when the F1 phase is complete, the words "F1 OFF" will appear on the work display.

 **WARNING:** if the F1 is complete but the tanks have not been fully filled, repeat the F1 phase.

 **N.B.:** it is advisable to equip the end section of the filling tube with a tap attachment to prevent water from leaking when disconnecting from the quick connector present on the machine.

INSERTING WATER SYSTEM FILTER

Before using the machine for the first time the water system filter needs to be reset, for shipping reasons the filter cartridge and the cap have been removed. To insert the filter cartridge in the water system filter body proceed as follows:

1. Take the machine to the maintenance area.
2. Make sure the machine is in a safe condition (see "[MACHINE SAFETY MEASURES](#)").



CAUTION: it is recommended to wear the appropriate PPE (Personal Protective Equipment) for the work to be carried out.

3. Close the tap output flow and turn the lever positioned near the operator seat in a clockwise direction (**Fig.13**).
4. Insert the filter cartridge in the housing on the cap (**Fig.14**).



N.B.: The O-ring gasket in the filter cartridge should be inserted into its seat in the cap.

5. Screw the cap onto the body of the detergent solution filter (**Fig.7**).

ASSEMBLING THE BRUSH HEAD BODY BRUSHES

To fit the brush on the brush head body, proceed as follows:

1. Take the machine to the maintenance area.
2. Make sure the machine has been secured (see the chapter entitled "[SECURING THE MACHINE](#)").



CAUTION: it is recommended to wear the appropriate PPE (Personal Protective Equipment) for the work to be carried out.

3. Go to the left-hand side of the machine and remove the left-hand carter (**Fig.15**). Unfasten the retainers on the carter before removing it (**Fig.16**).
4. Insert the front brush into the tunnel, taking care to make sure that the gearmotor drive shaft enters the slit in the brush itself.
5. Repeat the operation described for the rear brush.
6. Fit the left-hand carter and secure in place using the retainers loosened previously.



N.B.: In order to be installed correctly, the brushes must form an X when viewed from above in the forward direction of movement. To facilitate this operation, the rear brush is equipped with a cusp shaped device in a different colour.

FITTING THE SIDE BRUSH (OPTIONAL)

To fit the brush on the side brush head body, proceed as follows:

1. Take the machine to the maintenance area.
2. Make sure the machine has been secured (see the chapter entitled "[SECURING THE MACHINE](#)").



CAUTION: it is recommended to wear the appropriate PPE (Personal Protective Equipment) for the work to be carried out.

3. Go to the right side of the machine.
4. With the brush head in the raised position, insert the brush into the brush holder plate (**Fig.17**). Rotate the brush unit the brush's three buttons on the brush, grip with the notches in the brush plate.
5. Turn the brush in increments until the button is pushed towards the coupling spring and is locked in place (**Fig.18**).

USER SEAT ADJUSTMENT

The proper adjustment of the driving position provides a greater sense of comfort when using the machine.

Seat backrest adjustment: make sure you sit upright and that your back and lower back and spine are at 90°. Use the lever on the left side of the seat (**Fig.19**) to adjust the backrest of the seat.

Driving position adjustment: The seat should always be positioned using the pedals as a reference. Use the lever in the lower part of the seat (**Fig.20**) to adjust the seat.



N.B.: The distance should be adjusted so that with the pedals fully pressed to the floor the knees are slightly bent (about 120°).



N.B.: Adjust the distance of the seat so that when pressing the brake pedal it goes as far as it can. This operation should be done with the machine running so as to pressurise the braking system.



N.B.: If the knee is not bent enough, it is too far from the steering wheel, if however the knee is bent almost 90° then it is too close to the steering wheel.



N.B.: The feet should be positioned keeping the heels on the footrest, the sole of the foot directly below the fingers should push the pedals.



N.B.: The ideal driving position is that which allows you to grip the steering wheel correctly with the palms slightly lower than the shoulders. With a good grip on the steering wheel, the elbows should be bent by about 120°. They should be at least 30 cm or 11.81 in between the middle of the steering wheel and our breastbone. In any case, this distance should be no more than 45 cm or 17.72 in.

Adjusting the armrests (optional): the armrests should be inclined to make using the machine comfortable.



N.B.: To adjust the armrest, use the wheel underneath it (**Fig.21**).



N.B.: Taking the right armrest as a reference, if the wheel is turned outwards the inclination of the armrest is increased. Taking the left armrest as a reference, if the wheel is turned inwards the inclination of the armrest is increased.

Wear the seatbelt correctly (optional): The machine has a sub-abdominal safety device that allows the operator to be anchored to the driver's seat. To secure the safety belt, sit in the driver's seat then take the mobile part of the belt, wrapping it around your abdomen and inserting the end in the slit on the fixed part (**Fig.22**).

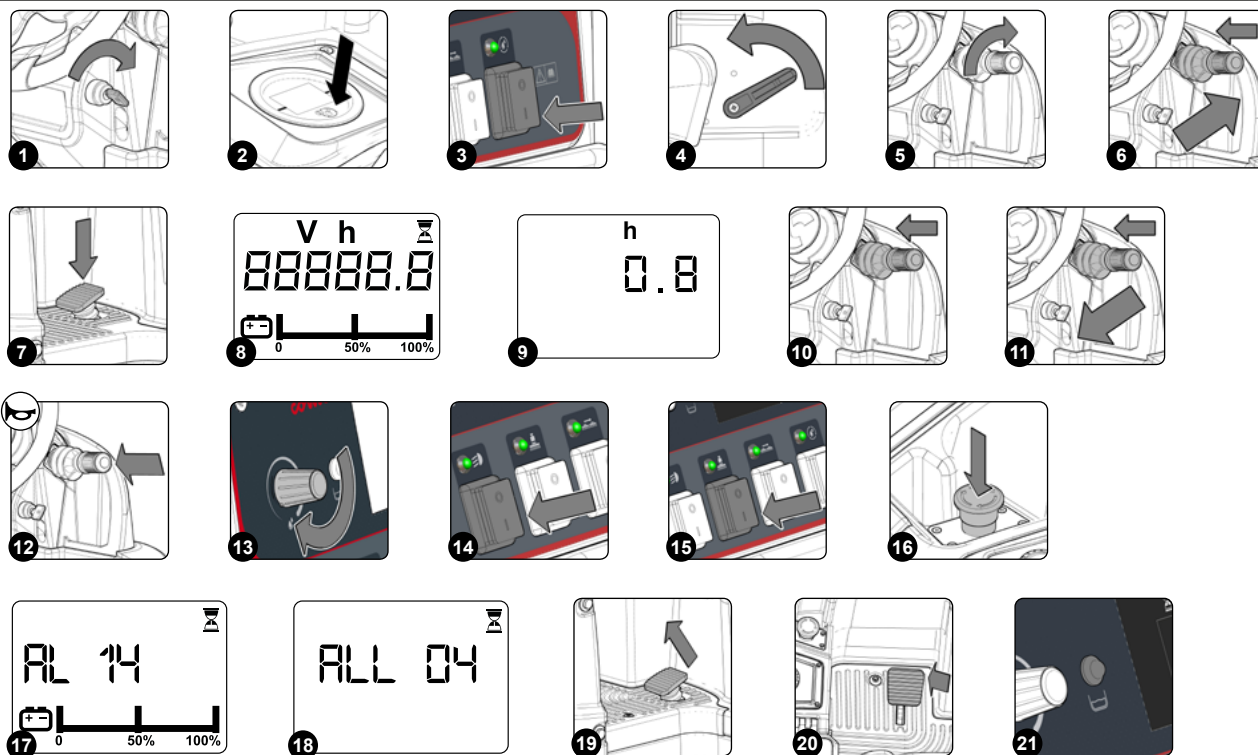
i N.B.: Adjust the horizontal part of the belt so it is as tight as possible on the pelvis. The belt should be pulled and put as low as possible on the pelvis bone, and not on the belly.

PREPARING TO WORK

Before beginning to work, it is necessary to:

1. Verify that the quantity of detergent solution in the solution tank is suitable for the type of work you wish to carry out, otherwise fill the solution tank (see ["FILLING WITH DETERGENT SOLUTION"](#)).
2. Check that the squeegee rubbers are in good working condition. If not, carry out maintenance (see ["REPLACING THE SQUEEGEE BODY RUBBER BLADES"](#)).
3. Check that the brushes are in good working condition. If this is not the case, replace them (see ["REPLACING THE BRUSH HEAD BRUSH"](#)).
4. Check that the battery connector is connected to the machine's general system connector; if this is not the case, perform this operation.

WORK



1. Sit on the driver's seat.
2. Insert the key into the main switch on the control panel. Set the main switch to "I" by turning the key a quarter turn clockwise (**Fig.1**).

i N.B.: As soon as the machine is switched on, the control board will carry out diagnostics on the machine; the buzzer will only give the signal that work can be started if the outcome of this is positive.

3. Activate the "F1" function, keeping the button on the working programs display pressed down for at least three seconds (**Fig.2**).
4. Wait for the program activation cycle to be completed.

i N.B.: when the F1 phase is active, the words "F1 ON" will appear on the work display.

i N.B.: when the F1 phase is complete, the words "F1 OFF" will appear on the work display.

i N.B.: if you wish to stop the F1 function, press and hold the button on the working program display for more than three seconds; when phase F1 stops, the word "STOP" will appear on the work display.

5. Activate the "F2" work function by moving the dedicated switch on the control panel to the "I" position (**Fig.3**).

i N.B.: If the function is active, the corresponding green LED will be illuminated.

i **N.B.:** when the F2 working phase is active, the words "F2 ON" will appear on the work display.

6. Open the detergent solution flow into the machine's water system by turning the tap control lever in the direction indicated by the arrow (**Fig.4**).
7. Select the speed level (e.g. "step-01") and turn the handle on the direction selection lever (**Fig.5**) under the steering wheel.

i **N.B.:** adjust the forward speed to suit the adhesion conditions.

8. Select the direction in which you want to move the machine. For example, if you want to move forward, shift the direction selector lever in the direction shown by the arrow (**Fig.6**).

i **N.B. :** To select the forward gear (F) you need to first shift the lever up and then in the direction indicated by the arrow (**Fig.6**).

9. Press the drive pedal to begin moving the machine (**Fig.7**).
10. The machine will now work at its maximum efficiency level until the batteries run down.

i **N.B.:** the squeegee and brush head lower until they touch the floor, and the traction motor, brush head motor and suction motor will start working. As a result, the solenoid valve will also be activated and detergent solution will be dispensed onto the brushes. During the first few metres, check that there is sufficient solution and that the squeegee is drying correctly.

i **N.B.:** Before cleaning, pick up large pieces of waste. Pick up wire, tape, string, large pieces of wood or other refuse that could wrap around the brushes or become entangled. Drive the machine in a straight line. Avoid hitting obstacles and scratching the sides of the machine. Overlap the cleaning track by a few centimetres. Avoid turning the steering wheel abruptly when the machine is moving. The machine responds rapidly to the movements of the steering wheel. Avoid hairpin turns, except in emergencies. Adjust the speed of the machine, the pressure of the brushes and the flow of the solution according to the type of cleaning to be carried out. Drive the machine slowly on inclines. Use the brake pedal to control the speed when going down an incline. If working on a slope, slow down on ramps and slippery surfaces, and carry out the scrubbing operation by moving the machine upwards rather than downwards.

! **ATTENTION:** Do not use the machine in areas where the ambient temperature is higher than 43 °C (110° F). Do not use the scrubbing functions in areas where the ambient temperature is less than freezing 0 °C (32 °F).

GENERAL HOUR METER

The command display is located on the control panel, and the screen that appears after the start-up screen displays the machine's total usage time (**Fig. 8**).

The digits that precede the "." symbol identify hours, whilst the digit that follows it indicates hour decimals (an hour decimal corresponds to six minutes).

When the "hour glass" symbol is flashing, it indicates that the hour meter is counting the appliance operating time.

DETERGENT SOLUTION RECYCLING SYSTEM HOUR METER

When the machine is in stand-by, the hour meter pertaining to the usage of the detergent solution recycling system can be viewed on the working program display (**Fig.9**). The time of use will be displayed in tenths of an hour.

BATTERY CHARGE LEVEL INDICATOR

The control panel is equipped with a control display.

The graphic symbol that identifies the charge level of the batteries appears at the bottom of the control display (**Fig. 8**).

The indicator consists of charge level symbols.

When the minimum remaining charge is reached, the graphic symbol will start to blink, and will turn off after a few seconds, after which the symbol will start to blink. Under these conditions, the machine must be brought to the battery charging area.

i **N.B.:** a few seconds after the battery charge reaches the critical level, the brush motors switch off automatically. With the remaining charge it is possible to complete the drying process before starting the recharge.

i **N.B.:** a few seconds after the battery charge reaches the discharge level, the suction motor switches off automatically.

SELECTING THE OPERATING DIRECTION

The machine has a lever for selecting the travel direction, located under the steering wheel.

i **N.B.:** To select the forward gear you need to first shift the lever up and then in the direction indicated by the arrow (**Fig.6**).

i **N.B.:** To go from forward to neutral, first move the lever in the direction indicated by the arrow (**Fig.10**).

-  **ATTENTION:** To select the reverse gear, you need to first shift the lever up and then in the direction indicated by the arrow (**Fig.11**). With reverse gear engaged if you press the drive pedal a buzzer will sound and the white rear lights come on.
-  **CAUTION:** the reverse speed is lower than the forward speed to comply with current health and safety standards.
-  **N.B.:** in order to disengage the reverse gear, disengage the lever underneath the steering wheel.
-  **N.B.:** once the lever has been engaged in the reverse position, the acoustic signalling device will be activated in order to signal that the machine's reverse gear has been engaged.
-  **N.B.:** If the reverse gear is engaged with the squeegee in its working position, once the drive pedal is pressed, the machine will begin to move in reverse and the squeegee body will be raised into its resting position.
-  **N.B.:** If the reverse gear is engaged with the brush head in its working position, once the drive pedal is pressed, the machine will begin to move in reverse and the brush head will remain in its working position, but the solenoid valve will stop dispensing detergent solution to the brushes.

ADJUSTING THE OPERATING SPEED

To adjust the operating speed, use the knob on the gear lever (**Fig.5**).

-  **N.B.:** there are three forward speeds.
-  **CAUTION:** adjust the forward speed to suit the adhesion conditions.

BUZZER

The machine is equipped with a buzzer. If you need to sound a warning, just press the button on the gear lever (**Fig.12**).

ADJUSTMENT OF THE DETERGENT SOLUTION FLOW

If it becomes necessary to adjust the delivery flow of detergent solution to the brushes while working, simply turn the knob on the control panel (**Fig.13**).

-  **N.B.:** Turning the knob clockwise will increase the flow of detergent solution into the machine's water system, while turning it the other direction will reduce the quantity of detergent solution present in the machine's water system.
-  **N.B.:** Turning the knob fully in an anticlockwise direction will stop the flow of detergent solution into the machine's water system.

WORKING HEADLIGHTS

The machine is equipped with front and rear working lights. To activate them, move the switch on the control panel to the "I" position (**Fig.14**).

-  **N.B.:** If the function is active, the corresponding green LED will be illuminated.
-  **N.B.:** the sidelights come on when the machine is started.
-  **N.B.:** if you wish to switch off the working lights, move the switch to position "0".

EXTRA PRESSURE

If it becomes necessary to activate the "EXTRA PRESSURE ON BRUSH HEAD BODY" function while working, move the switch on the control panel to position "I" (**Fig.15**).

-  **N.B.:** if you wish to deactivate the function, move the switch to position "0".

EMERGENCY STOP

If any serious problems are encountered during the work operations, press the emergency button on the electrical system carter (**Fig. 16**).

-  **CAUTION:** This command interrupts the electrical circuit between the batteries and the machine system.
-  **N.B.:** To recommence work having stopped and once the problem has been resolved, switch off the machine and turn the knob in the direction of the arrows indicated on it.

ALARM SCREEN

If there is an error, the writing AL is shown on the control display followed by a number (**Fig.17**), this stays visible until the error is resolved. When an error occurs, do as follows:

1. Stop the machine immediately.
2. If the error persists, switch off the machine, wait for at least ten seconds and switch on the machine.
3. If the error persists contact the nearest service centre.

ALARM NUMBER	DESCRIPTION
AL_1: General	Memory error
AL_2: General	Key fault
AL_3: General	Undervoltage
AL_4: General	Overvoltage
AL_5: General	Batt. connection
AL_6: General	Dashboard communication
AL_7: General	FFM communication
AL_8: General	Internal communication 1
AL_9: General	Internal communication 2
AL_10: General	Enter tag
AL_11: General	Invalid tag
AL_12: General	Update in progress...
AL_13: General	Switch-off
AL_14: General	Recovery tank full
AL_15: General	Brake fluid Reserve
AL_41: Function	Overtemperature
AL_42: Function	Power board damaged
AL_43: Function	Main fuse faulty
AL_44: Function	Main contactor faulty
AL_45: Function	Main contactor faulty - CC
AL_46: Function	Overcurrent - brush outputs 1-2-3
AL_47: Function	Overcurrent - vacuum cleaner outputs 1-2
AL_48: Function	Overcurrent - water pump outputs
AL_49: Function	Amperometric - brush output 1
AL_50: Function	Amperometric - brush output 2
AL_51: Function	Amperometric - brush output 3

ALARM NUMBER	DESCRIPTION
AL_52: Function	Amperometric - vacuum cleaner output 1
AL_53: Function	Amperometric - vacuum cleaner output 2
AL_60: Function	Time-out Actuator 1
AL_61: Function	Amperometric Actuator 1
AL_62: Function	Overcurrent Actuator 1
AL_63: Function	Incorrect limit switches - actuator 1
AL_64: Function	Time-out Actuator 2
AL_65: Function	Amperometric Actuator 2
AL_66: Function	Overcurrent Actuator 2
AL_67: Function	Incorrect limit switches - actuator 2
AL_68: Function	Time-out Actuator 3
AL_69: Function	Amperometric Actuator 3
AL_70: Traction	Overcurrent Actuator 3
AL_71: Traction	Incorrect limit switches - actuator 3
AL_80: Traction	Overtemperature
AL_81: Traction	Power board damaged
AL_82: Traction	Main fuse faulty
AL_83: Traction	Main contactor faulty
AL_84: Traction	Main contactor faulty - CC
AL_85: Traction	Overcurrent - traction output
AL_86: Traction	Amperometric - traction output
AL_87: Traction	Motor reading
AL_88: Traction	Electric brake fault
AL_89: Traction	Pedal fault
AL_90: Traction	Pedal pressed
AL_91: Traction	Encoder fault

DETERGENT SOLUTION RECYCLING SYSTEM ALARM SCREEN

If there is an error, the letters "AL" will appear on the work program display followed by a number (**Fig.18**); it will remain visible until the error has been resolved.

When an error occurs, do as follows:

1. Stop the machine immediately.
2. If the error persists, switch off the machine, wait for at least ten seconds and switch on the machine.
3. If the error persists contact the nearest service centre.

ALARM NUMBER	DESCRIPTION
ALL t1	Recovery tank empty, or tank float or membrane
ALL t2	Membrane settling tank empty
ALL t3	Solution tank empty
ALL 04	Membrane filter clogged
ALL 06	Recovery tank pump blocked
ALL 07	ELV1 solenoid valve blocked
ALL 08	ELV2 solenoid valve blocked

ALARM NUMBER	DESCRIPTION
ALL 09	Activation of phase F1 with phase F2 active
ALL 10	Problem with reserve solution tank float
ALL 11	Problem with solution tank minimum level float
ALL 12	Problem with solution tank maximum level float
ALL 13	Problem with solution tank floats
ALL 14	Problem with tank float or membrane or pump P2

BRAKING CONTROL

The machine has an encoder to help braking and also a mechanical brake.

- If the machine is moving and the accelerator pedal (**Fig.19**) is released, the machine brakes, decelerating gently until it stops the encoder. Only when the encoder has stopped is the electric brake engaged.
- If the machine is moving and the brake pedal (**Fig.20**) is pressed, the machine brakes according to the braking force of the mechanical system. Only when the encoder has stopped is the electric brake engaged.



CAUTION: The electro-brake on the machine only serves as a parking brake.

SOLUTION TANK CAPACITY LOW

The machine is fitted with an electronic device (float) located inside the solution tank. When the tank is empty, it activates the solution tank float indicator light on the control panel (**Fig.21**). In this instance, take the machine to the maintenance area and fill the solution tank with clean water (see ["FILLING THE TANKS"](#)).



ATTENTION: Every time the solution tank is filled, it is good practice to drain the recovery tank and both the settling tanks.

WORK MODE WITHOUT DETERGENT SOLUTION RECYCLING

The machine can also be moved without activating the detergent solution recycling function; to use the machine in the following manner, you must:

1. Sit on the driver's seat.
2. Insert the key into the main switch on the control panel. Set the main switch to "I" by turning the key a quarter turn clockwise (**Fig.1**).



N.B.: As soon as the machine is switched on, the control board will carry out diagnostics on the machine; the buzzer will only give the signal that work can be started if the outcome of this is positive.

3. Activate the "F3" function, keeping the button on the working programs display pressed down for at least ten seconds (**Fig.2**).
4. Wait for the program activation cycle to be completed.



N.B.: when phase F3 is active, the message "F3 EN" will appear on the work display.

5. Activate the "F2" work function by moving the dedicated switch on the control panel to the "I" position (**Fig.3**).



N.B.: if the function is active, the corresponding green LED will be illuminated.



N.B.: when the F2 working phase is active, the words "F2 ON" will appear on the work display with a bell symbol in the upper part.

6. The machine will now work at its maximum efficiency level until the batteries run down and the detergent solution in the solution tank runs out.

AT THE END OF THE WORK

At the end of the work, and before carrying out any type of maintenance, perform the following operations:

1. Take the machine to the maintenance area and perform all of the procedures listed in the chapter "[COMPULSORY MAINTENANCE OPERATIONS](#)" in the "DAILY" section.
2. Once the maintenance operations are complete, take the machine to the designated storage location.



ATTENTION: Park the machine in an enclosed place, on a flat surface, and at a safe distance from any objects that could either damage it or be damaged due to contact with the machine itself.

3. Make sure the machine is in a safe condition, see chapter "[MACHINE SAFETY MEASURES](#)".

COMPULSORY MAINTENANCE OPERATIONS

INTERVAL	MACHINE COMPONENTS	PROCEDURE
DAILY	Squeegee	Clean the vacuum chamber; the squeegee rubber blades; the vacuum nozzle (see " CLEANING THE SQUEEGEE BODY ").
	Debris hopper	Empty the debris hopper and clean inside (see " EMPTYING THE DEBRIS HOPPER ").
	Brush head brushes	Clean the brushes (see " CLEANING THE BRUSH HEAD BRUSHES ").
	Recovery tank basket-filter	Clean the recovery tank basket-filter (see " EMPTYING THE RECOVERY TANK ").
WEEKLY; BEFORE A LONG PERIOD OF INACTIVITY	Recovery tank	Every working week, empty the recovery tank (see " EMPTYING THE RECOVERY TANK ").
	Solution tank	Every working week, empty the solution tank (see " EMPTYING THE SOLUTION TANK ").
	Degreaser settling tank	Every working week, empty the degreaser settling tank (see " EMPTYING THE DEGREASER SETTLING TANK ").
	Membrane settling tank	Every working week, empty the membrane settling tank (see " EMPTYING THE MEMBRANE SETTLING TANK ").
	Machine water system	Clean the filter in the machine's water system (see " CLEANING THE WATER SYSTEM FILTER ").
	Squeegee rubber blades	Check that the rubber blades on the squeegee body are intact and inspect for wear; if necessary, replace these (see " REPLACING THE SQUEEGEE BODY RUBBER BLADES ").
	Brush head brushes	Check that the brushes on the brush head body are intact and inspect for wear; if necessary, replace these (see " REPLACING THE BRUSH HEAD BODY BRUSHES ").
	Lateral brush head body brush	Check that the side brush is intact and inspect for wear; if necessary, replace this (see " REPLACING THE SIDE BRUSH (OPTIONAL) ").
MONTHLY	Squeegee rubber blade levelling	Check that the rubber blades on the squeegee body are level and if necessary, adjust these (see " ADJUSTING THE SQUEEGEE BODY RUBBER BLADES ").

Before performing any routine or extraordinary maintenance operation, proceed as follows:

1. Take the machine to the maintenance area.

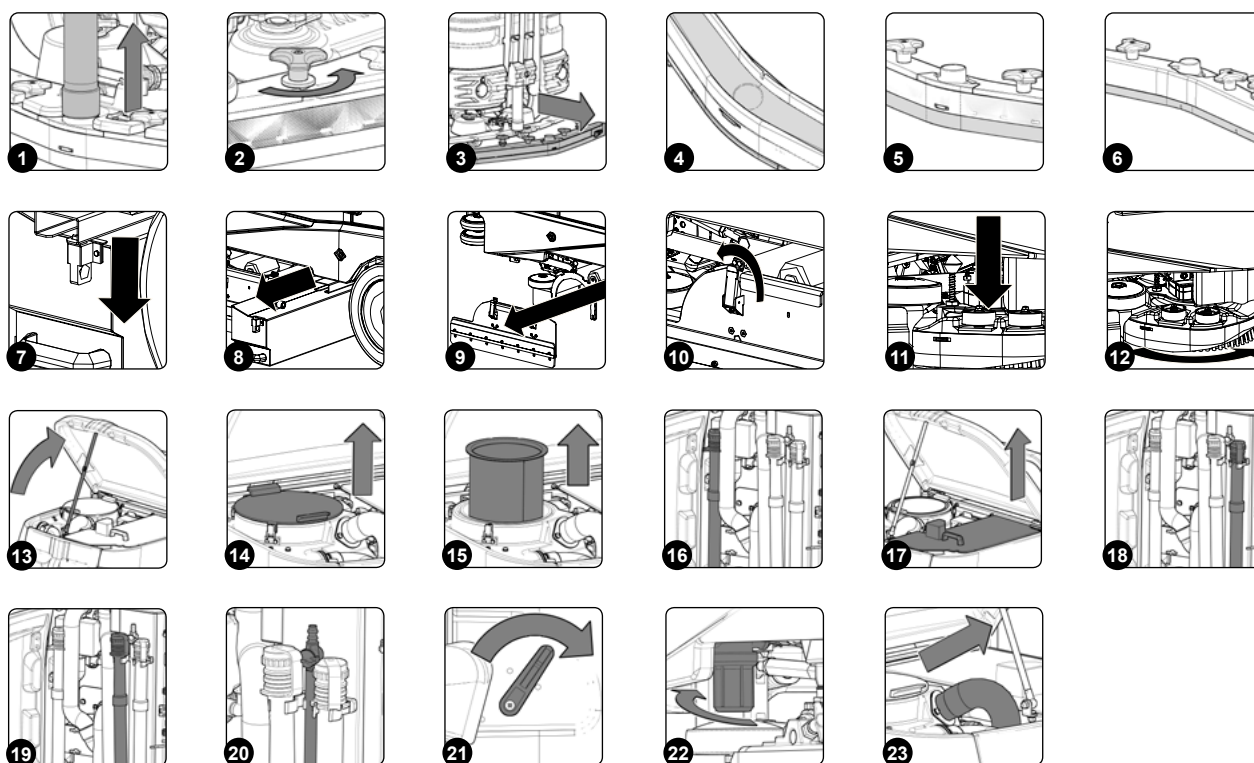


N.B.: the place designated for this operation must comply with current environmental protection regulations.

2. Make sure the machine has been secured (see the chapter entitled "[SECURING THE MACHINE](#)").



CAUTION: it is recommended to wear the appropriate PPE (Personal Protective Equipment) for the work to be carried out.



CLEANING THE SQUEEGEE BODY

The careful cleaning of the whole vacuum unit ensures better drying and cleaning of the floor as well as a longer vacuum motor life. To carry out the cleaning of the squeegee body, proceed as follows:

1. Extract the vacuum tube from the vacuum nozzle on the squeegee body (Fig.1).
2. Completely unscrew the knobs on the squeegee body pre-assembly (Fig.2).
3. Remove the squeegee body from the slits in the squeegee connector (Fig.3).
4. Thoroughly clean the squeegee body vacuum chamber with a jet of water, and then with a damp cloth (Fig.4).
5. Thoroughly clean the squeegee body rear rubber blade with a jet of water, and then with a damp cloth (Fig.5).
6. Thoroughly clean the squeegee body front rubber blade with a jet of water, and then with a damp cloth (Fig.6).
7. Use a jet of water and then a damp cloth to thoroughly clean the vacuum nozzle (Fig.6).
8. Proceed in the opposite order to reassemble all the parts.

i **N.B. :** Check the wear of the rear rubber blade (4) on the squeegee body; if the edge of the rubber in contact with the floor is worn, replace it. Refer to "[REPLACING THE SQUEEGEE BODY RUBBER BLADES](#)".

i **N.B.:** Check the wear of the front rubber blade (5) on the squeegee body; if the edge of the rubber in contact with the floor is worn, replace it. Refer to "[REPLACING THE SQUEEGEE BODY RUBBER BLADES](#)".

EMPTYING THE DEBRIS HOPPER

The thorough cleaning of the debris hopper ensures better floor cleaning performance. To empty the debris hopper, proceed as follows:

1. Go to the front left-hand side of the machine.
2. Release the debris hopper locking pin (Fig.7).
3. Use the handle to extract the debris hopper (Fig.8) and empty it. Clean the inside with a jet of water, and use a brush to remove any residual impurities if necessary.
4. Proceed in the opposite order to reassemble all the parts.

CLEANING THE BRUSH HEAD BODY BRUSHES

Careful cleaning of the brush guarantees better cleaning of the floor as well as a longer lifespan of the gear motor present in the brush head body. To clean the brushes, proceed as follows

1. Go to the left-hand side of the machine and remove the left-hand carter (Fig.9); unfasten the retainers on the carter before removing it (Fig.10).
2. Extract the brushes from the tunnel.
3. Clean the brush under a stream of running water to remove any impurities from its bristles. Check the wear of the bristles and if this excessive, replace the brushes (see "[FITTING THE BRUSH HEAD BODY BRUSHES](#)" for information on replacing the brushes).
4. Proceed in the opposite order to reassemble all the parts.

CLEANING THE SIDE BRUSH (OPTIONAL)

Careful cleaning of the side brush guarantees better cleaning of the floor as well as a longer lifespan of the gear motor present in the brush head body. To clean the brush, proceed as follows

1. Go to the right-hand side and press the brush locking pin (**Fig.11**).
2. Keeping the pin pressed, turn the brush clockwise until it is locked (**Fig.12**).
3. Turn until the button is pushed towards the outside of the coupling spring and is locked into place.
4. Clean the brush under a stream of running water to remove any impurities from its bristles. Check the bristles are not worn; in the event of excessive wear, replace the brushes. See "[FITTING THE SIDE BRUSH \(OPTIONAL\)](#)" for replacing the brush.

DRAINING THE RECOVERY TANK

After every working week, or when the detergent solution is no longer suitable for cleaning the floor, the recovery tank must be emptied. Proceed as follows to empty the recovery tank:

1. Stand at the back of the machine and open the rear panel.
2. Turn the tank cover into the maintenance position, using the support to prevent it from rotating (**Fig.13**).
3. Remove the recovery tank cover (**Fig.14**).
4. Remove the filter cartridge from the support (**Fig. 15**) and rinse under a jet of running water, using a brush to eliminate any impurities, if necessary.
5. Remove the recovery tank drainage tube (**Fig. 16**) from the stop and bend the end of the drainage tube, so as to create a choke and prevent the contents from coming out.
6. Place the tube on the draining surface, unscrew the cap and gradually release the tube.
7. If necessary, rinse the inside of the tank with a jet of running water.
8. Repeat the operations in reverse order to reassemble all the parts.

EMPTYING THE SOLUTION TANK

After every working week, or when the detergent solution is no longer suitable for cleaning the floor, the solution tank must be emptied. Proceed as follows to empty the solution tank:

1. Stand at the back of the machine and open the rear panel.
2. Turn the tank cover into the maintenance position, using the support to prevent it from rotating (**Fig.13**).
3. Remove the settling tank cover (**Fig.17**).
4. Remove the solution tank drainage tube (**Fig. 18**) from the stop and bend the end of the drainage tube, so as to create a choke and prevent the contents from coming out.
5. Place the tube on the draining surface, unscrew the cap and gradually release the tube.
6. If necessary, rinse the inside of the tank with a jet of running water.
7. Repeat the operations in reverse order to reassemble all the parts.

EMPTYING THE MEMBRANE SETTLING TANK

After every working week, or when the detergent solution is no longer suitable for cleaning the floor, the membrane settling tank must be emptied. Proceed as follows to empty the membrane settling tank:

1. Stand at the back of the machine and open the rear panel.
2. Turn the tank cover into the maintenance position, using the support to prevent it from rotating (**Fig.13**).
3. Remove the settling tank cover (**Fig.17**).
4. Remove the membrane settling tank drainage tube (**Fig. 19**) from the stop and bend the end of the drainage tube, so as to create a choke and prevent the contents from coming out.
5. Place the tube on the draining surface, unscrew the cap and gradually release the tube.
6. If necessary, rinse the inside of the tank with a jet of running water.
7. Repeat the operations in reverse order to reassemble all the parts.

EMPTYING THE DEGREASER SETTLING TANK

After every working week, or when the detergent solution is no longer suitable for cleaning the floor, the degreaser settling tank must be emptied. Proceed as follows to empty the degreaser settling tank:

1. Stand at the back of the machine and open the rear panel.
2. Turn the tank cover into the maintenance position, using the support to prevent it from rotating (**Fig.13**).
3. Remove the settling tank cover (**Fig.17**).
4. Remove the degreaser settling tank drainage tube (**Fig.20**) from the stop and place the tube on the draining surface, then gradually turn the tap lever.
5. If necessary, rinse the inside of the tank with a jet of running water.
6. Repeat the operations in reverse order to reassemble all the parts.

CLEANING THE WATER SYSTEM FILTER

In order to clean the water system's filter, do the following:

1. Tighten the tap outflow; turn the tap control lever on the left-hand side of the operator seat in a clockwise direction (**Fig.21**).
2. Go to the left-hand side of the front of the machine and loosen the detergent solution filter cap (**Fig.22**).
3. Remove the cartridge from the filter body and rinse under a jet of running water, and use a brush to eliminate any impurities, if necessary.
4. Once the filter cartridge is clean, repeat the operations in the opposite order to reassemble all the parts.

CLEANING THE VACUUM TUBE

Careful cleaning of the vacuum hose guarantees better cleaning of the floor as well as a longer vacuum motor life. Proceed as follows to clean the vacuum hose:

1. Extract the vacuum tube from the vacuum nozzle on the squeegee body (**Fig.1**).
2. Remove the vacuum tube via the hole on the back of the recovery tank (**Fig.23**).
3. The vacuum hose from the retainers present inside the recovery tank.
4. Rinse the inside of the vacuum hose with a jet of running water.
5. Repeat the operations in reverse order to reassemble all the parts.

EXTRAORDINARY MAINTENANCE WORK

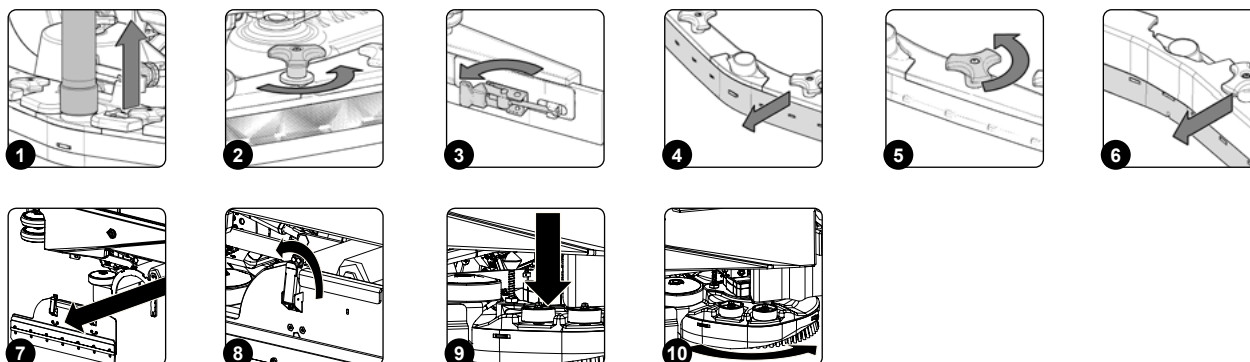
Before performing any routine or extraordinary maintenance operation, proceed as follows:

1. Take the machine to the maintenance area.

 **NOTE:** the place designated for this operation must comply with current environmental protection regulations.

2. Make sure the machine is in a safe condition (see "[MACHINE SAFETY MEASURES](#)").

 **CAUTION:** it is recommended to wear the appropriate PPE (Personal Protective Equipment) for the work to be carried out.



REPLACING THE SQUEEGEE BODY RUBBER BLADES

Ensuring the integrity of the squeegee body's rubber blades guarantees better floor cleaning and drying results, as well as a longer service life for the vacuum motor. In order to replace the squeegee body's rubber blades, do the following:

1. Extract the vacuum tube from the vacuum nozzle on the squeegee body (**Fig.1**).
2. Completely unscrew the knobs on the squeegee body pre-assembly (**Fig.2**).
3. Remove the squeegee body from the slits in the squeegee connector.
4. Remove the rear rubber blade compression plate, and release the stopper at the rear of the squeegee (**Fig. 3**).
5. Remove the rear rubber blade from the squeegee body (**Fig. 4**).
6. Completely unscrew the knobs on the squeegee body pre-assembly (**Fig.5**).
7. Remove the front rubber blade from the squeegee's internal body (**Fig. 6**).
8. Repeat the operations in reverse order to reassemble all the parts.

 **NOTE:** before using the machine, remember to adjust the squeegee body. Read "[ADJUSTING THE SQUEEGEE BODY RUBBER BLADES](#)".

 **N.B.:** it is good practice to replace both squeegee blades, to ensure good results when drying the floor.

REPLACING THE BRUSH HEAD BODY BRUSHES

If the brush head brushes are damaged they cannot work properly, or more specifically, they cannot remove the dirt from the floor; as such, the condition of these must be checked. To replace the brush head brushes, proceed as follows:

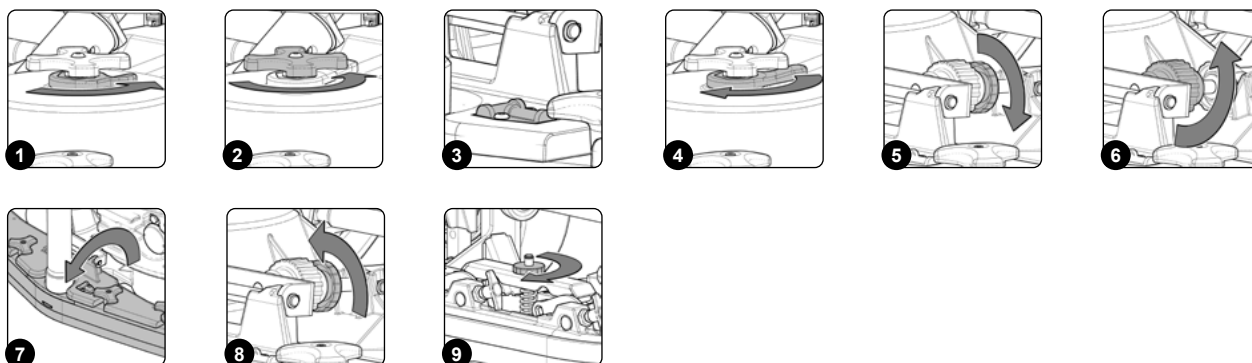
1. Go to the left-hand side of the machine and remove the left-hand carter (**Fig.7**); unfasten the retainers on the carter before removing it (**Fig.8**).
2. Extract the brushes from the tunnel and replace the worn brushes with the new ones (see ["FITTING THE BRUSH HEAD BODY BRUSHES"](#)).

REPLACING THE SIDE BRUSH (OPTIONAL)

If the side brush is damaged it cannot work properly, or more specifically, cannot remove the dirt from the floor; as such, the condition of these must be checked. To replace the side brush, proceed as follows:

1. Go to the right-hand side and press the brush locking pin (**Fig.9**).
2. Keeping the pin pressed, turn the brush clockwise until it is locked (**Fig.10**).
3. Turn until the button is pushed towards the outside of the coupling spring and is locked into place.
4. Replace the worn brush with the new one (see ["FITTING THE SIDE BRUSH \(OPTIONAL\)"](#)).

ADJUSTMENT INTERVENTIONS



ADJUSTING THE SQUEEGEE BODY'S RUBBER BLADES

The careful adjustment of the squeegee body rubber blades guarantees better cleaning of the floor. To adjust the squeegee body blades, proceed as follows:

1. Sit in the driver's seat and perform all of the procedures necessary to begin work.
2. As soon as the brush head and the squeegee have reached their working positions, perform the procedure for securing the machine (see the section titled ["SECURING THE MACHINE"](#)).

⚠ CAUTION: it is recommended to wear the appropriate PPE (Personal Protective Equipment) for the work to be carried out.

3. Stand at the back of the machine.

Adjusting the height of the squeegee body:

4. Release the stopper lever for the squeegee's height adjustment knob (**Fig.1**).
5. Adjust the height of the rubber blade in relation to the floor by loosening or tightening the knobs (**Fig.2**).

i NOTE: Figure 2 indicates the rotation direction for decreasing the distance between the squeegee support and the floor. This distance can be increased by turning it in the opposite direction.

i N.B.: By decreasing the distance between the squeegee support and the floor, the rubber blades present in the squeegee body move closer to the floor.

i N.B.: The right-hand and left-hand knobs must be rotated the same number of times, so that the squeegee is parallel to the floor when it is working.

i N.B.: Check to ensure proper adjustment by looking at the instrument positioned on the squeegee body (**Fig.3**).

6. Once the adjustment has been completed, tighten the stopper lever (**Fig.4**).

Adjusting the tilt of the squeegee body:

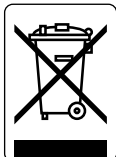
7. Loosen the stopper knob of the squeegee's tilt adjustment (**Fig.5**).
8. To adjust the tilt of the squeegee body rubber blades in relation to the floor, tighten or loosen the knob (**Fig.6**) until the blades are bent outwards by about 30° in relation to the floor, in an even manner along their entire length.

i **N.B.:** Figure 6 indicates the direction of rotation for tilting the squeegee towards the rear of the machine (**Fig.7**). Turn it in the opposite direction to rotate the squeegee towards the front of the machine.

i **N.B.:** Check to ensure proper adjustment by looking at the instrument positioned on the squeegee body (**Fig.3**).

9. Once the adjustment has been completed, tighten the stopper knob (**Fig.8**).

DISPOSAL



Dispose of the machine in accordance with the waste disposal regulations in force in the country in which the machine is being used.

CHOOSING AND USING BRUSHES

POLYPROPYLENE BRUSH (PPL)

Used on all types of floors. Good resistance to wear and tear, and hot water (no greater than 50°C.). PPL is non-hygroscopic and therefore retains its characteristics even when working in wet conditions.

ABRASIVE BRUSH

The bristles of this type of brush are charged with highly aggressive abrasives. It is used to clean very dirty floors. To avoid floor damage, work only with the pressure strictly necessary.

BRISTLE THICKNESS

Thicker bristles are more rigid and are therefore used on smooth floors or floors with small joints.

On uneven floors or those with deep joints, it is advisable to use softer bristles which can enter the gaps more easily.

Remember that when the bristles are worn and therefore too short, they will become rigid and are no longer able to penetrate and clean deep down. In this case, like with over-large bristles, the brush tends to jump.

MACHINE	NO. OF BRUSHES	CODE	TYPE OF BRISTLES	Ø BRISTLES	Ø BRUSHES	NOTES
C85 2018 BS NSC	1	447963	PPL	ø0.6	ø210x810	FRONT CYLINDRICAL BRUSH (WHITE COLOUR)
	1	447964	PPL	ø0.9	ø210x810	FRONT CYLINDRICAL BRUSH (BLACK COLOUR)
	1	447965	ABRASIVE	-	ø210x810	FRONT CYLINDRICAL BRUSH
	1	449921	NATURAL	-	ø210x810	FRONT CYLINDRICAL BRUSH
	1	449928	PPL	ø0.6	ø210x810	REAR CYLINDRICAL BRUSH (WHITE COLOUR)
	1	449929	PPL	ø0.9	ø210x810	REAR CYLINDRICAL BRUSH (BLACK COLOUR)
	1	449930	ABRASIVE	-	ø210x810	REAR CYLINDRICAL BRUSH
	1	449931	NATURAL	-	ø210x810	REAR CYLINDRICAL BRUSH
	1	427709	PPL	ø0.3	ø290	DISC BRUSH (BLUE COLOUR)
	1	427710	PPL	ø0.6	ø290	DISC BRUSH (WHITE COLOUR)
	1	427711	PPL	ø0.9	ø290	DISC BRUSH (BLACK COLOUR)
	1	427712	ABRASIVE	-	ø290	DISC BRUSH
	1	449920	NATURAL	-	ø290	DISC BRUSH
	1	447713	-	-	ø290	PAD HOLDER

TROUBLESHOOTING

This chapter lists the most common problems linked with the use of the machine. If you are unable to resolve the problems with the information given here, please contact your nearest assistance centre.

PROBLEM	POSSIBLE CAUSE	SOLUTION
The machine does not start.	The emergency switch is active.	Turn the emergency switch in the direction of the arrows printed on this to reset.
	The machine's general control board has detected an alarm.	See " ALARM SCREEN " or " DETERGENT SOLUTION RECYCLING SYSTEM ALARM SCREEN " and contact your nearest Comac assistance center.
	Batteries flat.	Charge the batteries, see " RECHARGING THE BATTERIES ".
	The battery connector is disconnected from the machine's electrical system connector.	Connect the battery connector to the machine's electrical system connector; this operation must be performed by a specialised Comac technician.
	One of the cable bridges of the battery is not connected properly.	Check the battery connections; this operation must be performed by a specialised Comac technician.
	Batteries faulty.	Contact a Comac assistance centre to replace the batteries.
Detergent solution collection low or absent.	The squeegee rubber blades are worn.	Replace the squeegee body rubber blades; see " REPLACING THE SQUEEGEE BODY RUBBER BLADES ".
	The squeegee body is not properly adjusted.	Adjust the squeegee body; read the paragraph " ADJUSTING THE SQUEEGEE BODY RUBBER BLADES ".
	The squeegee body is clogged.	Clean the squeegee body; see " CLEANING THE SQUEEGEE BODY ".
	The vacuum tube is clogged.	Clean the vacuum tube; see " CLEANING THE VACUUM TUBE ".
	The vacuum tube is not connected correctly.	Connect the vacuum tube to the nozzle on the squeegee body and insert into the hole in the rear part of the recovery tank.
	The recovery tank cover is not closed correctly.	Tighten the hinges on the side of the recovery tank or check that there are no obstructions that prevent these from tightening.
The vacuum motor does not start.	Recovery tank full.	Empty the recovery tank, read the paragraph " EMPTYING THE RECOVERY TANK ".
	Recovery tank full of foam.	Empty the recovery tank, read the paragraph " EMPTYING THE RECOVERY TANK ".
		Use less detergent, or change the detergent type.
		Use an anti-foaming agent.
The flow of detergent solution to the brushes is too low, or absent.	Solution tank empty.	Refill the solution tank; read the paragraph " FILLING THE SOLUTION TANK ".
	Detergent solution flow deactivated.	Turn the tap control lever to the ON position. Check the command display to ensure that the flow of detergent solution has not been reduced to zero.
	Detergent solution delivery lines clogged.	Rinse the machine water system.
	Water system filter clogged or blocked.	Rinse the filter cartridge, see " CLEANING THE WATER SYSTEM FILTER ".
Insufficient cleaning.	Debris trapped in the brushes.	Remove the debris from the brushes; see " CLEANING THE BRUSH HEAD BRUSHES ".
	Incorrect type of brush for the work to be carried out.	Contact a Comac assistance centre for help in choosing the type of brush to be used for the work to be performed.
	Brush bristles worn.	Replace the brushes; see " REPLACING THE BRUSH HEAD BRUSHES ".
	Excessive pressure on the brushes.	Reduce the power exerted on the brush head body.
	Battery charge level low.	Perform a full battery charge cycle, see " RECHARGING THE BATTERIES ".
Reduced working autonomy.	The battery charge is not complete.	Perform a full battery charge cycle, see " RECHARGING THE BATTERIES ".
	Batteries faulty.	Contact a Comac assistance centre for battery replacement.
	The batteries require maintenance.	Contact a Comac assistance centre for battery maintenance.
	The battery charger is faulty.	Contact a Comac assistance centre for replacement of the battery charger.

EC DECLARATION OF CONFORMITY



The undersigned manufacturer:

COMAC S.p.A.
Via Maestri del Lavoro, 13
37059 Santa Maria di Zevio (VR)

declares under its sole responsibility that the products

SCRUBBING MACHINES - mod.

**C85 2018 BS NSC BASIC
C85 2018 BS NSC PREMIUM**

comply with the provisions of Directives:

- 2006/42/EC: Machinery Directive.
- 2014/30/EU: Electromagnetic compatibility directive.

They also comply with the following standards:

- EN 60335-1:2012/A11:2014
- EN 60335-2-72:2012
- EN 12100:2010
- EN 61000-6-2:2005/AC:2005
- EN 61000-6-3:2007/A1:2011/AC:2012
- EN 62233:2008/AC:2008

The person authorized to compile the technical file:

Mr. Giancarlo Ruffo
Via Maestri del Lavoro, 13
37059 Santa Maria di Zevio (VR) - ITALY

Santa Maria di Zevio (VR), 10/09/2018

Comac S.p.A.
Legal representative
Giancarlo Ruffo

[illegible]

[illegible]

[illegible]



COMAC S.p.A. Via Maestri del Lavoro, 13 - 37059 Santa Maria di Zevio - Verona - ITALY
Tel. 045 8774222 - Fax 045 8750303 - www.comac.it - com@comac.it

Organization certified with Q.C.B. Italia ISO 9001:2008, ISO 14001:2015, OHSAS 18001:2007