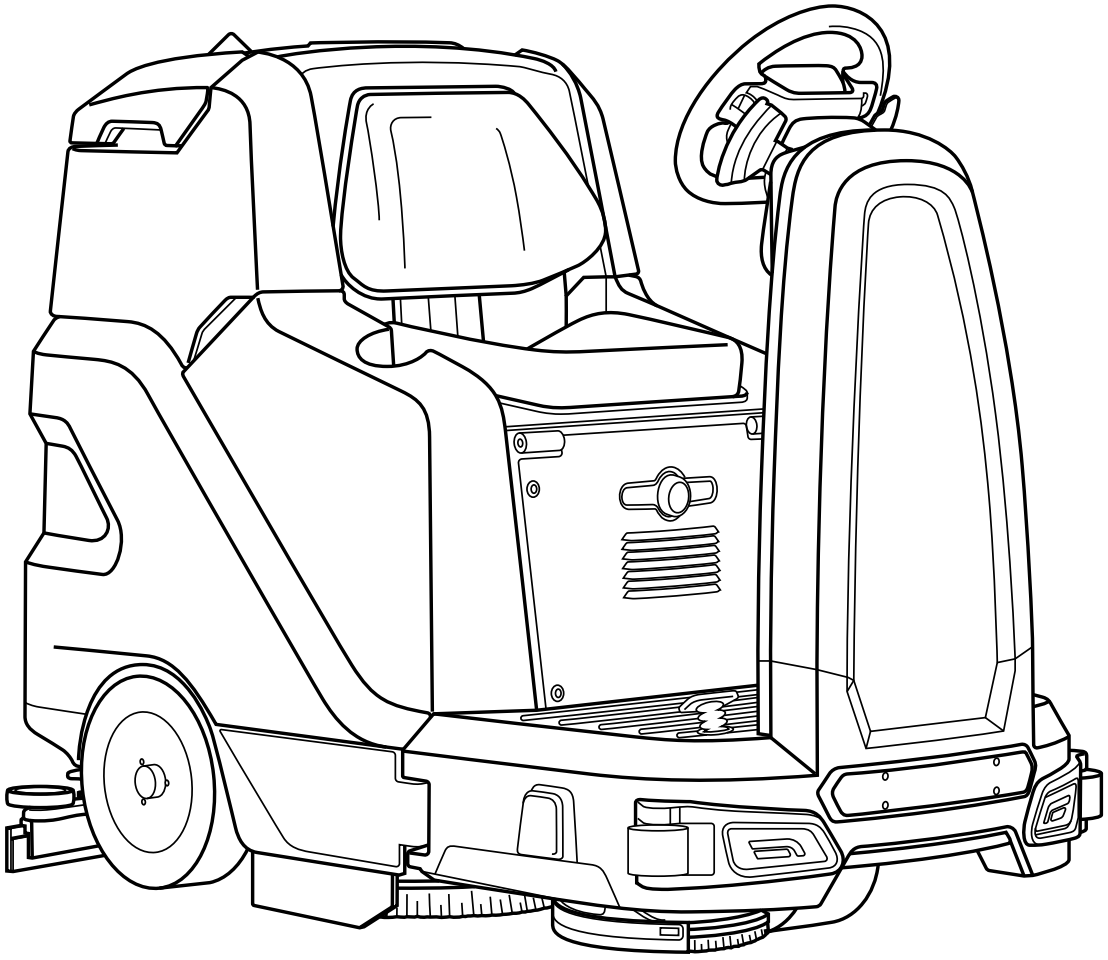
R30sc



Scrubbing Machine

USE AND MAINTENANCE MANUAL

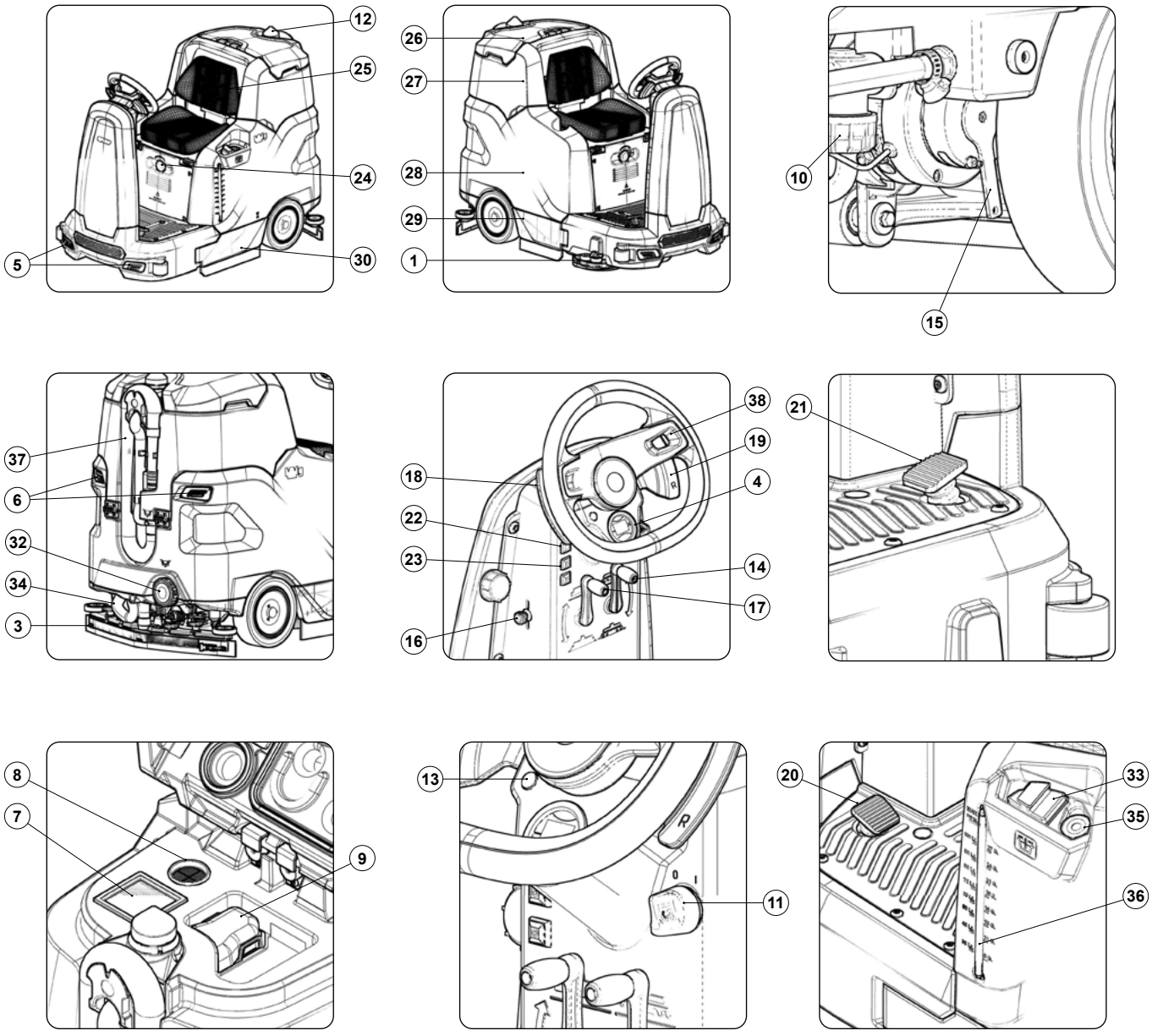
HILLYARD

TRIDENT®

by HILLYARD

Original instructions - DOC. 10075358- Ver. AB - 11-2020

LOCATION OF THE MAIN MACHINE COMPONENTS



The machine's main components are the following:

1. Lateral scrubbing brush head (optional).
2. Scrubbing brush head.
3. Squeegee body.
4. Hour meter display – battery charge level.
5. Headlights (optional).
6. Tail lights (optional).
7. Overflow tray.
8. Vacuum motor air duct filter.
9. Recovery tank filter.
10. Detergent solution filter.
11. Main key switch.
12. Blinking light.
13. Brush head extra pressure LED indicator.
14. Brush head control lever.
15. Electric brake control lever.
16. Detergent solution tap control lever.
17. Squeegee control lever.
18. Brush head extra pressure selection lever.
19. Reverse gear selection lever.
20. Service brake pedal.
21. Drive pedal.
22. Horn button.
23. Side brush control button (optional).
24. Emergency button.
25. Operator seat
26. Recovery tank lid.
27. Recovery tank.
28. Solution tank.
29. Right hatch.
30. Left hatch.
31. Squeegee support.
32. Solution tank drainage shaft cap.
33. Solution tank cap.
34. Squeegee vacuum hose.
35. Solution tank rapid filling hose.
36. Solution tank level hose.
37. Recovery tank drainage hose.
38. Steering wheel.

TRIDENT

CONTENTS

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 shown as reference only and are not binding as to the actual design and/or equipment.**

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 10094528).

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.

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.

DEFINITION OF LEVELS OF WARNING

DANGER: indicates an imminent dangerous situation that, unless avoided, will result in death or serious injuries.

WARNING: Indicates a potentially dangerous situation that, unless avoided, could cause death of serious injury.

ATTENTION: Indicates a potentially dangerous situation that, unless avoided, could cause slight or moderate injuries.

N.B.: instructs the reader to pay particular attention to the topic that follows.

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 with regard to the correct interpretation of instructions, contact your nearest HILLYARD assistance 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.

PRESERVATION OF THE USER

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 **TRIDENT R30 SC** is a floor scrubbing machine that can work on various types of floor and dirt thanks to the mechanical action of two brushes and the chemical action of a water-detergent solution. As it advances, it collects the dirt removed, along with the detergent solution not absorbed by the flooring itself. **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 in environments with an explosive atmosphere to clean dangerous powders or flammable liquids. In addition, it is not suitable as a means of transport for people or objects.

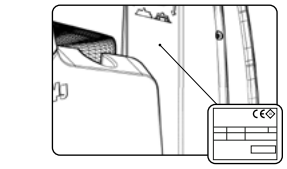
SAFETY

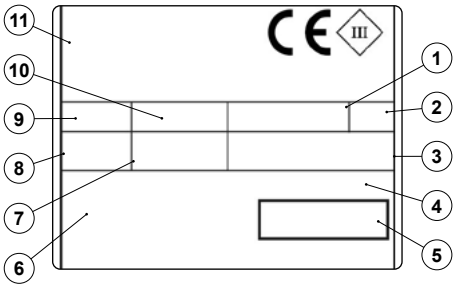
Operator cooperation is paramount for accident prevention. No accident prevention programme can be effective without the full cooperation of the person directly responsible for machine operation. The majority of occupational accidents that happen either in the workplace or whilst moving are caused by 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.

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 to purchase 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.

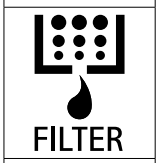
TECHNICAL DATA

TECHNICAL DATA	U/M SI [KMS]	Trident R30 SC
Nominal input power [IEC 60335-2-72; IEC 62885-9]	KW	1,93
Nominal power input, versions with side brush [IEC 60335-2-72; IEC 62885-9]	KW	2,03
Maximum theoretical productivity	sq.ft/h	48.760,5
Working width [IEC 62885-9]	in	29.7
Working width with the lateral brush	in	33,5
Squeegee width	in	34,6
Nominal power of central brush head motor [IEC 62885-9]	W	500
Total width of brushes [IEC 62885-9]	in	2 x 15.75
Central brush head motor RPM	rpm	140
Weight exerted by the central brush head	lb	79.4 ÷ 242.5
Nominal power of the side brush motor	W	100
Total width of the side brush	in	1 x 10.2
Number of rotations of side brush motor	rpm	150
Weight exerted by the side brush	lb	22
Nominal power of traction motor [IEC 62885-9]	W	520
Maximum transfer speed [IEC 62885-9]	mph	0 ÷ 4.9
Gradeability when working with GVW (maximum period of use 20 seconds)	%	7
Gradeability during transfer with full solution tank only (maximum period of use 20 seconds)	%	10
Gradeability during transfer with both tanks empty	%	18
Nominal power of suction motor [IEC 62885-9]	W	410
Maximum vacuum [IEC 62885-9; IEC 60312-1]	KPa	11,8
Solution tank capacity [IEC 62885-9]	gal	29,1
Recovery tank capacity [IEC 62885-9]	gal	29,1
Chemical product tank capacity [IEC 62885-9]	gal	2,6
Minimum inversion corridor [IEC 62885-9]	in	81,8
Machine dimensions (length - width - height)	in	63,1 34,7 48,9
Battery compartment dimensions (length - width - height)	in	20,7 15,2 11,8
Weight of batteries used for test [four 6V batteries, model 6TP210]	lb	284,4

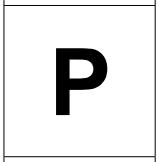
TECHNICAL DATA	U/M SI [KMS]	Trident R30 SC
Machine net weight [IEC 62885-9]	lb	588,6
Machine weight during transport [IEC 62885-9]	lb	873
GVW [IEC 60335-2-72; IEC 62885-9])	lb	1.333,8
Sound pressure on the operator's ears (Lp_A) [ISO 11201, ISO 4871, EN 60335-2-72]	dB (A)	63,3
Uncertainty Kp_A	dB (A)	1.5
Vibration level on the operator's arms [ISO 5349-1, EN 60335-2-72]	m/s^2	<2.5
Vibration level on the operator's body [ISO 5349-1, EN 60335-2-72]	m/s^2	<0.5
Vibration measurement uncertainty		1.5%

SYMBOLS USED ON THE MACHINE

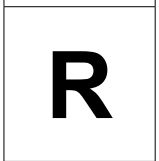
Symbol of maximum temperature for filling the solution tank:
Applied to the left-hand side of the machine's solution tank to indicate the maximum temperature of the water that can be used to safely fill the solution tank.



Filter body position symbol:
Applied to the left-hand side of the machine to indicate the position of the solution tank filter.



Extra pressure activation/deactivation lever position symbol:
Applied to the central brush head's extra pressure activation/deactivation lever.



Reverse gear activation/deactivation lever position symbol:
Applied to the reverse gear activation/deactivation lever.

Recovery tank drainage hose symbol:
Applied to the back of the machine to identify the recovery tank's drainage hose.

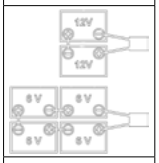
Solution tank drainage cap symbol:
Applied to the back of the machine to identify the solution tank's drainage cap.

Brush head body working position symbol:
Applied to the steering column to indicate the brush head control lever direction of rotation for bringing the brushes to their working position.

Brush head body standby position symbol:
Applied to the steering column to indicate the brush head control lever direction of rotation for bringing the brushes to their standby position.

Squeegee body working position symbol:
Applied to the steering column to indicate the squeegee control lever direction of rotation for bringing the squeegee to its working position.

Squeegee body standby position symbol:
Applied to the steering column to indicate the squeegee control lever direction of rotation for bringing the squeegee to its standby position.



Battery connection symbol:
Applied beneath the recovery tank to indicate how to connect the 6 V or 12 V batteries in order to obtain a total voltage of 24 V.

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

LABELS USED ON THE MACHINE

Battery charging sequence label:
Located near the steering column, indicating the sequence to perform to recharge the batteries correctly.

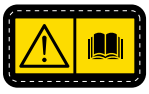
Warning label indicating that the battery charger user manual must be read (optional):
Applied in the vicinity of the steering column indicating to read the user manual of the battery charger. Also indicates to pay attention to when to perform the charging cycle and how long it should last.

Water system filter maintenance label:
Applied near the water system filter to remind the user to clean it after each work cycle.

Warning label during battery charging:
Located near the steering column, listing the warnings to perform when recharging the batteries.

Label indicating the need to read the Use and Maintenance Manual:
Used in the brush head body, and indicates the prohibition to approach the brush head while the brush is moving.

Visible daily maintenance label:
Applied near the steering column, indicating to tighten the machine's water tap after every work cycle and to clean the filters and the squeegee.

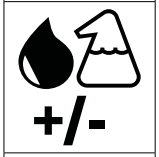


Label indicating the need to read the Use and Maintenance Manual:
Applied in the vicinity of the steering column in order to remind the operator to read the user and maintenance manual before using the machine.

Label warning about the risk of crushed hands:
Indicates danger to hands due to crushing between two surfaces.

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

Label for the automatic detergent dosing system (optional):
Applied near the steering column to indicate the button for activating or switching off the optional detergent dosing system.



Label for adjusting the automatic detergent dosing system (optional):
Applied near the steering column to indicate the button for adjusting the automatic detergent dosing system.

Label for the side brush control (optional):
Applied near the steering column to indicate the button for activating or switching off the side brush control system.

Vacuum wand control label (optional):
Applied near the steering column to indicate the control button for the optional vacuum wand kit.

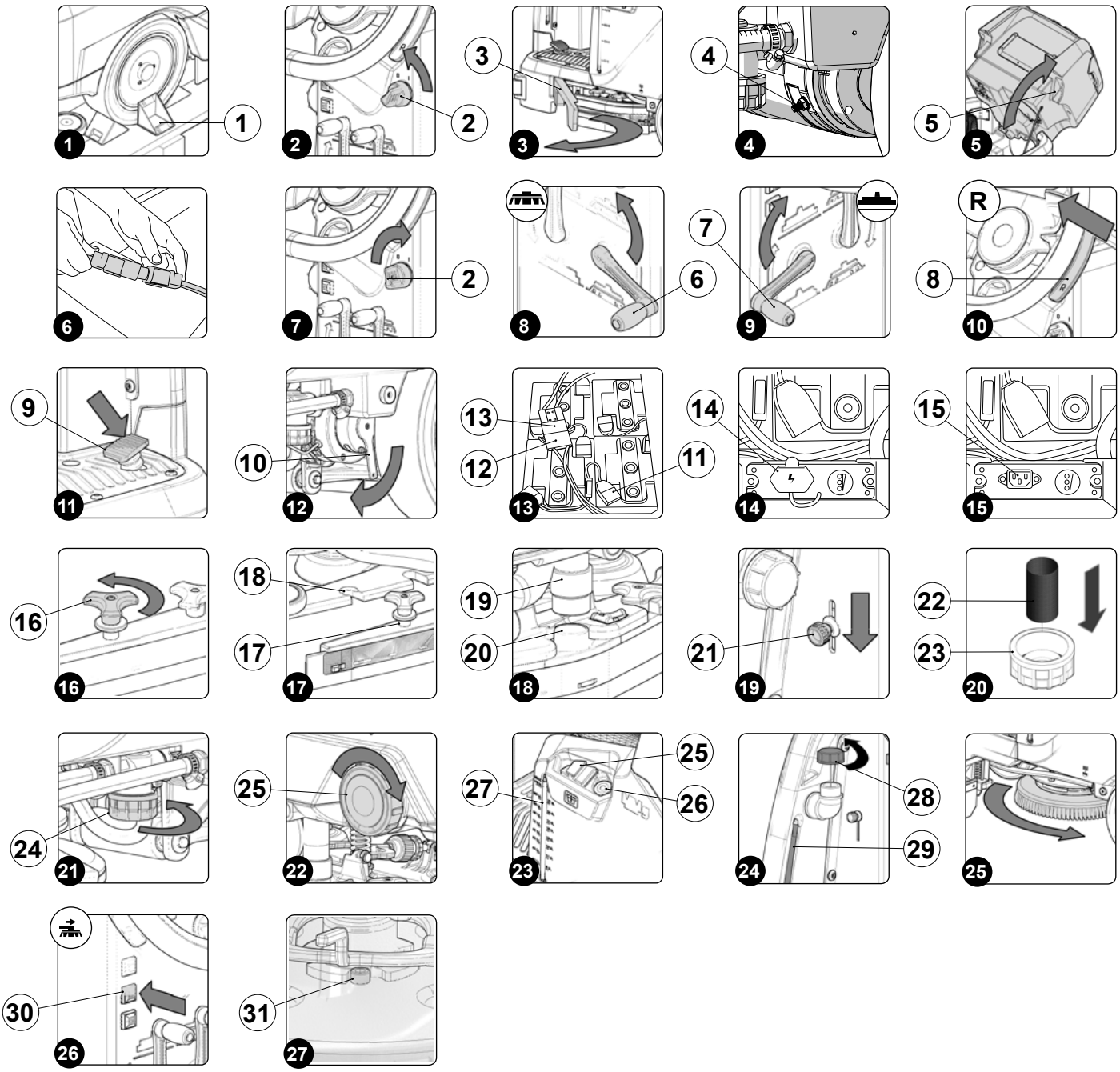
Spray gun control label (optional):
Applied near the steering column to indicate the control button for the optional spray gun kit.

Solution tank filter maintenance label:
Applied near the water system filter to remind the user to clean it after each work cycle.

Suction motor filter maintenance label:
Applied near the suction motor air filter to remind the user to clean it after each work cycle.

Label for detergent solution tap command:
Applied in the vicinity of the control column to identify the detergent solution tap control lever.

PREPARATION OF MACHINE



HANDLING THE PACKAGED MACHINE

The overall dimensions of the entire package are: height=56in width=40in length=69in, while the total mass of the packaging is 660lb.

N.B.: it is recommended that all the packaging components be kept for any future machine transportation.

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

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.

3. Remove the boxes containing the disc brushes and squeegee body from the machine.

WARNING: It is recommended to wear the appropriate PPE (Personal Protective Equipment), suitable for the work to be carried out.

4. 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.

1. The machine is fixed to the pallet with wedges (1) that block the wheels (**Fig.1**). Remove these wedges.
2. Check to make sure that the main switch on the control panel has been set to its “0” position. If this is not the case, turn the key (2) a quarter turn to the left (**Fig.2**). Remove the key from the main switch.
3. Move to the left hand side of the machine and open the left lateral carter (3) (**Fig.3**).
4. Connect the power supply cable to the connector (4) that is located on the traction motor (**Fig.4**).

ATTENTION: it is recommended that all installation and maintenance operations be carried out by expert personnel, trained at the specialised HILLYARD assistance centre.

5. Once the electrical connection is complete, close the left-hand side carter again.
6. Grip the handle (5) and raise the recovery tank to the maintenance position (**Fig.5**).
7. Connect the backup battery carriage's connector to the machine's main system connector (**Fig. 6**).

WARNING: the following operations must be carried out by qualified personnel. An incorrect connection of the connector may cause a malfunction of the device.

8. Grip the handle (5) and lower the recovery tank to its working position.
9. Sit on the driver’s seat.
10. Insert the key (2) into the main switch on the control panel. Set the main machine switch to its “I” position, by turning the key a quarter turn to the right (**Fig. 7)**).
11. Turn the brush head control level (6) anti-clockwise (**Fig.8**); in this manner the brush head body will be raised off the pallet.
12. Turn the squeegee control lever (7) clockwise (**Fig.9**) to raise the squeegee body off the pallet.
13. Engage reverse gear using the reverse gear activation/deactivation lever (8) (**Fig.10**).
14. Press the drive pedal (9) (**Fig.11**) to begin moving the machine.
15. Drive the machine down the ramp.

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

16. Bring the main switch to position "0" by turning the key (21) a quarter turn anti-clockwise (**Fig.2**). Remove the key from the main switch.
17. Get off the machine.
18. Grip the handle (5) and raise the recovery tank to the maintenance position (**Fig.5**).
19. Disconnect the backup battery carriage's connector from the machine's main system connector (**Fig. 6**).

WARNING: the following operations must be carried out by qualified personnel. An incorrect connection of the connector may cause a malfunction of the device.

20. Grip the handle (5) and lower the recovery tank to its working position.

HOW TO MOVE THE MACHINE

To transport the machine safely, proceed as follows:

DANGER: before starting any task, make sure the current regulations concerning the safe transport of dangerous substances are scrupulously observed.

1. Check to make sure that the solution tank and the recovery tank are empty. If this is not the case, empty them (see the sections titled “EMPTYING THE SOLUTION TANK” on page 29 and “EMPTYING THE RECOVERY TANK” on page 28).

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

N.B.: the ramp gradient must not be such as to cause damage to the machine as it goes up.

2. Sit on the driver’s seat.
3. Insert the key (2) into the main switch on the control panel. Bring the main switch to position "I" by turning the key (2) a quarter turn to the right (**Fig.7**).
4. Turn the brush head control lever (6) anti-clockwise (**Fig.8**); in this manner the brush head body will be raised off the floor.
5. Turn the squeegee control lever (7) clockwise (**Fig.9**) to raise the squeegee body off the floor.
6. Press the drive pedal (9) (**Fig.11**) to begin moving the machine.
7. Use a ramp to move the machine up onto the transport vehicle.

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

N.B.: the ramp gradient must not be such as to cause damage to the machine as it goes up.

8. Position the machine on the means of transport, and set the main switch to position “0” by turning the key (2) a quarter turn anti-clockwise (**Fig.2**). Remove the key from the main switch.
9. Get off the machine.
10. Grip the handle (5) and raise the recovery tank to the maintenance position (**Fig.5**).
11. Disconnect the battery connector from the machine's main system connector (**Fig. 6**).

WARNING: the following operations must be carried out by qualified personnel. An incorrect disconnection of the connector may cause a malfunction of the device.

12. Grip the handle (5) and lower the recovery tank to its working position.

WARNING: secure the device according to the directives in force in the country of use, 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. Check to make sure that the solution tank and the recovery tank are empty. If this is not the case, empty them (see the sections titled “EMPTYING THE SOLUTION TANK” on page 29 and “EMPTYING THE RECOVERY TANK” on page 28).
2. Bring the main switch to its "0" position by turning the key (2) a quarter turn anti-clockwise (**Fig.2**). Remove the key from the instrument panel.
3. Get off the machine.
4. Grip the handle (5) and raise the recovery tank to the maintenance position (**Fig.5**).
5. Disconnect the battery connector from the machine's main system connector (**Fig. 6**).

WARNING: the following operations must be carried out by qualified personnel. An incorrect disconnection of the connector may cause a malfunction of the device.

6. Grip the handle (5) and turn the recovery tank to its working position.

TYPE OF BATTERY TO BE USED

Used batteries must meet the requirements set out in DIN EN 50272-3 "Traction batteries for industrial trucks". **To carry out the work well, the machine must have a 24V power supply**; we recommend using four 6V MFP 210Ah/C_5 batteries.

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 service life, they must be disconnected by a HILLYARD assistance centre technician or by a specialised and properly trained worker, and must be subsequently removed from the battery compartment using suitable lifting devices.

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

INSERTING THE BATTERIES INTO THE MACHINE

The batteries must be housed in the special compartment beneath the recovery tank and should be handled using lifting equipment that is suitable in terms of both weight and its coupling system.

DANGER: make sure that you comply with the accident prevention regulations in force in the country where you work or with DIN EN 50272-3 and DIN EN 50110-1, before any handling of the batteries.

WARNING: to prevent an accidental short circuit use insulated tools to connect the batteries, and do not place or drop metal objects on the battery. Remove rings, watches and any clothing with metal parts that may come into contact with the battery terminals.

The various phases for inserting the batteries in the battery compartment are as follows:

1. Carry out the steps to ensure the machine is in a safe condition (read “MACHINE SAFETY” on page 14).
2. Move to the left hand side of the machine and open the left lateral carter (3) (**Fig.3**).
3. Check that the traction motor power supply cable is connected to the connector (4) (**Fig.4**); if this is not the case, proceed with connecting it.

ATTENTION: it is recommended that all installation and maintenance operations be carried out by expert personnel, trained at the specialised HILLYARD assistance centre.

4. Check to make sure that the electronic brake is engaged, and turn the lever on the rear left portion of the machine (10) clockwise (**Fig.12**). Close the left lateral carter (3).
5. Grip the handle (3) and raise the recovery tank to the maintenance position (**Fig. 3**).

N.B.: for battery maintenance and daily recharging, you must fully respect the indications provided by the manufacturer or retailer.

WARNING: all installation and maintenance operations must be carried out by specialised personnel.

N.B.: before installing the battery, clean the battery compartment. Check that the connectors on the cables supplied are functioning correctly.

ATTENTION: check that the characteristics of the battery that you are looking to use are appropriate for the type of work to be performed. Check the battery charge and the condition of the contacts on the battery.

N.B.: you are advised to only lift and move the batteries with lifting and transportation means suitable for the specific weight and size

WARNING: the lifting hooks must not damage the blocks, connectors or cables.

N.B.: Before inserting the batteries, remember to cover the terminals with a little grease to protect them against external corrosion.

6. House the batteries in the compartment, positioning the poles “+” and “-“ opposite each other.

CONNECTING THE BATTERIES TO THE MACHINE'S ELECTRICAL SYSTEM

The batteries should be connected so as to obtain a total voltage of 24 V.

ATTENTION: it is recommended that all installation and maintenance operations be carried out by expert personnel, trained at the specialised assistance centre.

WARNING: to prevent an accidental short circuit use insulated tools to connect the batteries, and do not place or drop metal objects on the battery. Remove rings, watches and any clothing with metal parts that may come into contact with the battery terminals.

The various phases for inserting the batteries in the battery compartment are as follows:

1. Using the jumper cable supplied (11), connect the “+” and “-“ poles of the batteries in series (**Fig.13**).
2. Connect the battery connector cable (12) to the “+” and “-“ poles to obtain a voltage of 24V at the terminals (**Fig.13**).
3. Connect the electrical system connector (13) to the battery connector (12) (**Fig. 13**).

RECHARGING THE BATTERIES

The batteries must be charged prior to first use, and whenever they no longer provide sufficient power.

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 discharged, even if the device is not being used.

1. Bring the appliance to the zone where the batteries are charged.

2. Carry out the steps to ensure the machine is in a safe condition (read “MACHINE SAFETY” on page 14.

ATTENTION: park the appliance in an enclosed place, on a flat surface; near the appliance there must be no objects that could either damage it, or be damaged through contact with it.

ATTENTION: the room used to recharge the batteries must be adequately ventilated to prevent the accumulation of gases that leak from batteries.

3. Grip the handle (5) and raise the recovery tank to the maintenance position (**Fig.5**).

To recharge the batteries without the built-in battery charger, proceed as follows:

- Disconnect the electrical system connector (13) from the battery connector (12) (**Fig. 13**).

ATTENTION: the following operations must be carried out by qualified personnel. An incorrect connection of the connector may cause a malfunction of the device.

- 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.

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

N.B.: carefully read the use and maintenance instructions of the battery charger that is used for charging.

WARNING: keep the recovery tank open for the duration of the battery recharging cycle to allow gas fumes to escape.

- Once the recharge cycle has been completed, disconnect the battery charger's cable from the battery connector.
- Connect the electrical system connector (13) to the battery connector (12) (**Fig. 13**).
- Grip the handle (5) and turn the recovery tank to its working position.

To recharge the batteries with the on-board battery charger proceed as follows:

ATTENTION: the following operations must be carried out by qualified personnel. An incorrect connection of the connector may cause a malfunction of the device.

N.B.: carefully read the use and maintenance instructions of the battery charger that is used for charging.

- Remove the cap (14) from the battery charger socket (**Fig. 14**).
- Connect the connector of the battery charger power cable to the socket (15) in the charger itself (**Fig.15**).
- Plug the battery charger cable into the mains socket.

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

WARNING: Before inserting the battery charger power cable into the socket (15), check that there is no condensate or other forms of liquids.

N.B.: the battery charger power cable is delivered inside the bag containing this instruction booklet.

WARNING: keep the recovery tank open for the duration of the battery recharging cycle to allow gas fumes to escape.

- When the recharge cycle is complete, disconnect the battery charger cable from the mains.
- Disconnect the battery charger's power cable from the socket on the battery charger itself.
- Apply the cap (14) to the battery charger socket (**Fig. 14**).
- Grip the handle (3) and turn the recovery tank to its working position.

ASSEMBLING THE SQUEEGEE BODY

For packaging reasons, the squeegee body comes disassembled from the machine. In order to mount it on the squeegee support, do the following:

1. Sit on the driver’s seat.
2. Insert the key (2) into the main switch on the control panel. Bring the main switch to position "I" by turning the key (2) a quarter turn clockwise (**Fig.7**).
3. Turn the squeegee control lever (7) anti-clockwise (**Fig.9**) to raise the squeegee body off the floor.
4. Once the squeegee body has arrived in its resting position, perform the procedure for securing the machine (see the section entitled “MACHINE SAFETY” on page 14).

WARNING: It is recommended to wear the appropriate PPE (Personal Protective Equipment), suitable for the work to be carried out.

5. Unscrew the knobs (16) in the squeegee body pre-assembly (**Fig.16**).
6. First of all, insert the left-hand pin (17) on the squeegee body in the left slit (18) in the squeegee support (**Fig.17**), so that the bushing adheres to the walls of the slit.
7. Repeat the same operation for the right pin.
8. Insert the vacuum tube (19) in the sleeve (20) in the squeegee body (**Fig.18**).

N.B.: Although the squeegee comes pre-adjusted, it is nevertheless recommended to read the section entitled “ADJUSTING THE SQUEEGEE BODY’S RUBBER BLADES” on page 33.

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. Carry out the steps to ensure the machine is in a safe condition (read “MACHINE SAFETY” on page 14.

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

3. Close the tap's output flow; shift the knob (21) on the left-hand side of the steering column (**Fig. 19**) downwards.
4. Move to the front of the machine, insert the filter cartridge (22) in the housing on the cap (23) (**Fig.20**).

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

5. Screw the cap (23) onto the body of the detergent solution filter (**Fig.21**).

FILLING THE SOLUTION TANK

Before filling the solution tank, carry out the following steps:

1. Take the machine to the usual place for filling the solution tank.
2. Carry out the steps to ensure the machine is in a safe condition (read “MACHINE SAFETY” on page 14.
3. Check to make sure that the solution tank drainage cap (24) is closed. If this is not the case, close it (**Fig.22**).
4. Check to make sure that the water system filter cap (23), located on the rear left-hand side of the machine, is closed; if not, close it (**Fig. 21**).

The solution tank can be filled with water in two different ways:

- Removing the cap/measuring device (25) and filling the solution tank by means of a rubber hose or a bucket (**Fig. 23**).
- Using the filler hose (26) (**Fig.23**), which supports the water hose on its own. In this case, be sure to remove the cap/measuring device (25) in order to allow the air to vent properly.

5. Fill with clean water, at a temperature not higher than 122°F and not lower than 50°F. The amount inside the tank can be seen by means of the level tube (27) on the left-hand side of the machine (**Fig.23**).

DETERGENT SOLUTION

After filling the solution tank with clean water add the liquid detergent to the tank in the concentration and manner indicated on the detergent manufacturer's label. To prevent the formation of an excessive amount of foam that could damage the vacuum motor, use the minimum percentage of detergent required.

WARNING: protective gloves should always be worn before handling detergents or acidic or alkaline solutions, to avoid serious injury to the hands.

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.

ATTENTION: 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.

ATTENTION: The filler cap can be used as measuring device for the detergent to be added to the solution tank; the cap features moulded notches identifying the percentage of detergent, ranging from a minimum of 0.1% to a maximum of 0.5%.

For versions with automatic detergent dosing system, fill the solution tank with clean water and then proceed as follows:

1. Carry out the steps to ensure the machine is in a safe condition (read “MACHINE SAFETY” on page 14).

CAUTION: protective gloves should always be worn before handling detergents or acidic or alkaline solutions, to avoid serious injury to the hands.

2. Remove the cap (28) of the detergent canister (**Fig. 24**).
3. Fill the canister with the desired detergent; it is possible to see the quantity in the detergent canister using the level tube (29) on the front left of the canister (**Fig. 24**).

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.

ATTENTION: the dosing system is suitable for frequent maintenance cleaning. Acid or alkaline maintenance detergent tank be used with pH values between 4 and 10 and that do not contain: oxidising agents, chlorine or bromine, formaldehyde, mineral solvents. The detergents used must be suitable for use with scrubbing machines. Wash the circuit with water after use if the system is not used daily. The system can be excluded. In case of sporadic use of detergents with pH between 1-3 or 11-14, use the floor scrubbing machine in the traditional way by adding the detergent in the clean water tank and excluding the dosing circuit.

ATTENTION: 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.

4. Close the cap (28) correctly to prevent liquid coming out when working.

FITTING BRUSH HEAD BRUSHES (SCRUBBING)

To assemble the brushes to bush head body, which for reasons of packaging are supplied dismantled from the machine, proceed as follows:

1. Sit on the driver’s seat.
2. Insert the key (2) into the main switch on the control panel and move the main switch to position "I" by turning the key a quarter turn clockwise (**Fig.7**).
3. Turn the brush head control lever (6) anti-clockwise (**Fig.8**); in this manner the brush head body will be raised off the floor.
4. Once the brush head body has arrived in its resting position, perform the procedure for securing the machine (see the section entitled “MACHINE SAFETY” on page 14).

WARNING: It is recommended to wear the appropriate PPE (Personal Protective Equipment), suitable for the work to be carried out.

5. Move to the left hand side of the machine and open the left lateral carter (3) (**Fig.3**).
6. With the brush head UP, insert the brush in the plate housing underneath the brush head, turning it until the three buttons engage with the niches on the plate itself.
7. Turn in increments until the button is pushed towards the coupling spring and is locked in place (**Fig. 25**).

N.B.: Image 24 indicates the direction of rotation for coupling the left brush; the right brush must be turned in the opposite direction.

SIDE BRUSH ASSEMBLY

For packaging reasons, the lateral brush comes disassembled from the machine, and must be assembled on the brush head body by doing the following:

1. Sit on the driver’s seat.
2. Insert the key (2) into the main switch on the control panel and move the main switch to position "I" by turning the key a quarter turn clockwise (2) (**Fig.7**).
3. Check to make sure that the side brush head body is in its resting position, otherwise press the side brush control button (30) on the left-hand side of the steering column (**Fig.26**).
4. Once the brush head body has arrived in its resting position, perform the procedure for securing the machine (see the section entitled “MACHINE SAFETY” on page 14).

WARNING: It is recommended to wear the appropriate PPE (Personal Protective Equipment), suitable for the work to be carried out.

5. With the brush head in the rest position, insert the brush into the plate housing underneath the brush head, and turn it until the two buttons (31) engage with the recesses on the plate itself (**Fig. 27**).
6. Push the brush until the stopper spring on the brush itself has engaged with the niche present on the gearmotor pin.

USER SEAT ADJUSTMENT

The careful adjustment of the driver's seat ensures a greater sense of comfort when using the machine; the seat should always be positioned using the pedals as a point of reference, in order to adjust the seat, use the lever located under 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°).

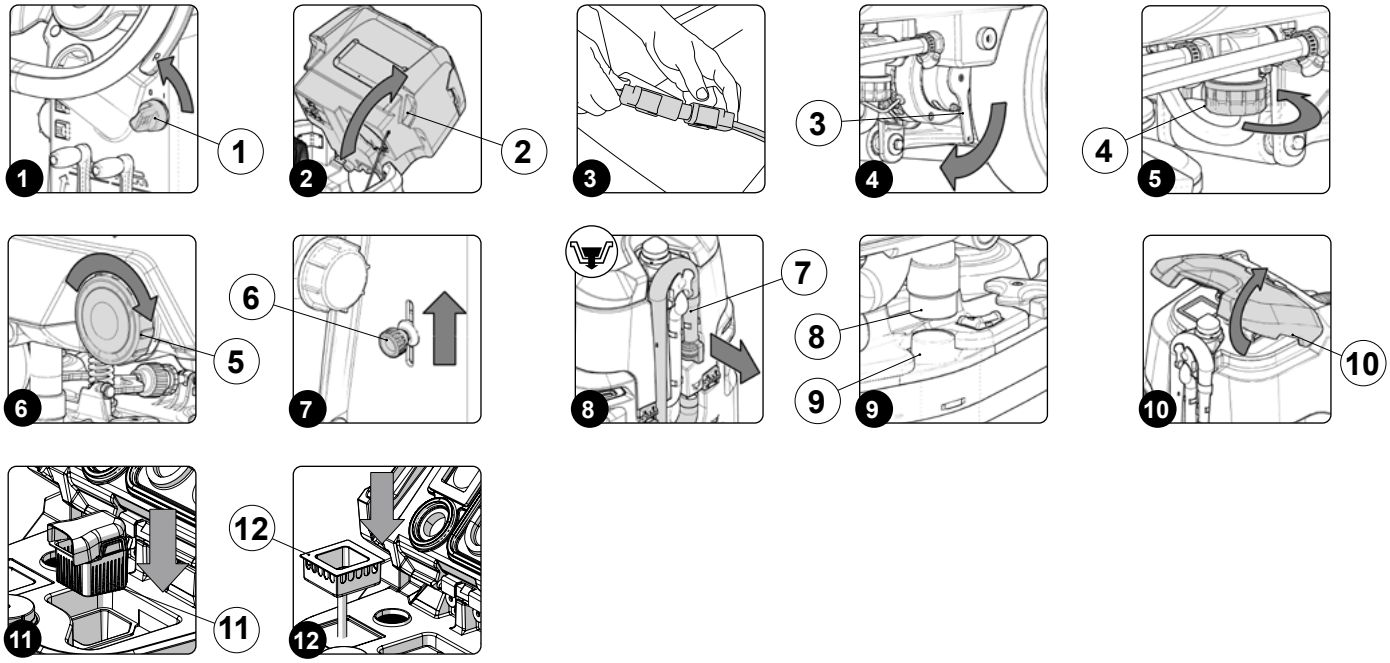
N.B.: Adjust the distance of the seat so that when pressing the brake pedal it goes as far as it can. This operation should be done with the machine running so as to pressurise the braking system.

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°. There should be at least 11.81 cm between the middle of the steering wheel and our breastbone. In any case, this distance should be no more than 17.72 cm.

PREPARING TO WORK



Before beginning to work, it is necessary to:

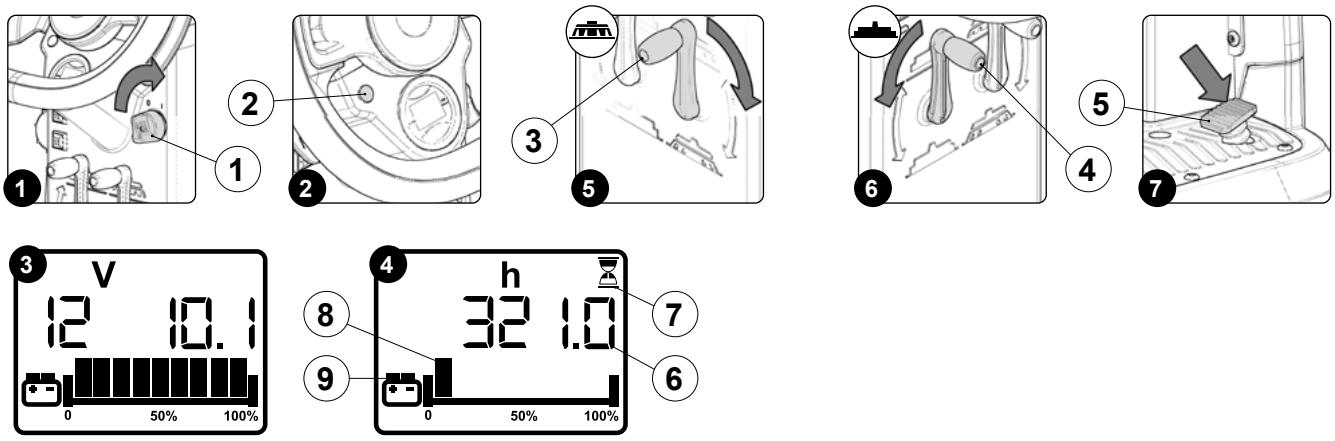
1. Make sure the recovery tank is empty. If this is not the case, empty it (read “EMPTYING THE RECOVERY TANK” on page 28).
2. Check that the amount of detergent solution present in the solution tank is sufficient for the type of work to be performed. If this is not the case, top up the solution tank (see the sections entitled “FILLING THE SOLUTION TANK” on page 17and “DETERGENT SOLUTION” on page 17).
3. Check the rubber squeegee blades are in good working condition. If they are worn, replace them (see “REPLACING THE SQUEEGEE BODY RUBBER BLADES” on page 31).
4. Check the lateral squeegee splash guard rubber blades are in good working condition. If they are worn, replace them (see “REPLACING THE SIDE SQUEEGEE SPLASH GUARD RUBBER BLADES” on page 32).
5. For scrubbing and sweeping versions, check that the state of wear of the brush head brushes is suitable for performing the work in question; if not, replace them. See paragraphs “SIDE BRUSH ASSEMBLY” on page 18.
6. For scrubbing and sweeping versions, check that the state of wear of the side brushes is suitable for performing the work in question; if not, replace them. See paragraphs “SIDE BRUSH ASSEMBLY” on page 18.
7. For scrubbing versions, check that the brush head body splash guard rubber blades are in good working condition. If they are worn, replace them (see “REPLACING THE BRUSH HEAD SPLASH GUARD” on page 32.
8. Check that the main switch is set to “0", turn the key (1) a quarter turn anticlockwise (**Fig.1**) . With the machine off, remove the key from the instrument panel.
9. Grip the handle (2) and raise the recovery tank to the maintenance position (**Fig.2**).

CAUTION: the following operations must be carried out by qualified personnel. An incorrect connection of the connector may cause a malfunction of the device.

10. Connect the battery connector from the main machine system connector (**Fig.3**).
11. Rotate the recovery tank into the work position.
12. Move to the right rear part of the machine and check that the electro-brake in the traction gear motor is engaged; if not, turn the lever (3) clockwise (**Fig. 4**).
13. Move to the front of the machine and check that the water system filter cap (4) is closed, otherwise tighten it (**Fig.5**).
14. Move to the rear of the machine and check that the cap (5) of the solution tank drainage well is closed. If it isn't, close it (**Fig.6**).
15. Move to the front left-side of the machine and check that the water tap is fully open, move the water adjustment knob (6) in the direction shown by the arrow (**Fig.7**).
16. Move to the rear of the machine a check that the cap of the recovery tank drainage tube (7) is closed. If it isn't, close it (**Fig.8**).
17. Make sure the vacuum hose (8) is correctly connected to the sleeve (9) in the squeegee body. If it isn't, connect it (**Fig.9**).

18. Grip the handle (10) and raise the recovery tank lid to its maintenance position (**Fig. 10**).
19. Make sure the basket-filter (11) is correctly connected and is clean (**Fig.11**). If it isn't, clean it (see “CLEANING THE RECOVERY TANK FILTERS” on page 29).
20. Make sure the anti-wave tray (12) is correctly connected and is clean (**Fig.12**). If it isn't, clean it (see “CLEANING THE RECOVERY TANK FILTERS” on page 29).

STARTING WORK



Let's take the scrubbing with drying working programme as an example:

1. Carry out all the checks listed in the section “PREPARING TO WORK” on page 19.
2. Sit on the driver’s seat.
3. Insert the key (1) into the main switch on the control panel and move the main switch to position "I" by turning the key a quarter turn clockwise (**Fig.1**).

N.B.: As soon as the machine turns on, the control board will perform a diagnostics procedure, during which the red LED indicator (2) on the control panel (**Fig.2**) will remain on.

N.B.: If the control board's diagnostics procedure returns a positive outcome, the red LED indicator (2) on the control panel (**Fig.2**) will turn off, and an acoustic signal will sound indicating that the work operations may be initiated.

4. At switch-on, a number of screens appear in sequence on the control display.

N.B.: In the first screen the nominal battery voltage programmed into the control board is displayed on the left of the screen, and on the right, the minimum inhibit temperature appears (**Fig.3**).

N.B.: The second screen displays the hours of work completed by the machine (**Fig.4**).

5. Turn the brush head control lever (3) clockwise (**Fig.5**); in this manner, the brush head body will be positioned in contact with the floor.
6. Turn the squeegee control lever (4) anti-clockwise (**Fig.6**); in this manner, the squeegee body brush head will be positioned in contact with the floor.
7. Press the drive pedal (5) to begin moving the machine (**Fig. 7**).

N.B.: As soon as the drive pedal is pressed, the traction motor, brush head motor and vacuum 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.

N.B.: The machine will now begin to work with full efficiency until the battery is flat or until the detergent solution has finished.

HOUR METER

The command display is located on the control panel (**Fig. 4**), and the second screen that appears after the start-up screen displays the machine's total usage time (6).

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

N.B.: When the “hour glass” symbol (7) is flashing, it indicates that the hour meter is counting the appliance operating time (**Fig.4**).

BATTERY CHARGE LEVEL INDICATOR

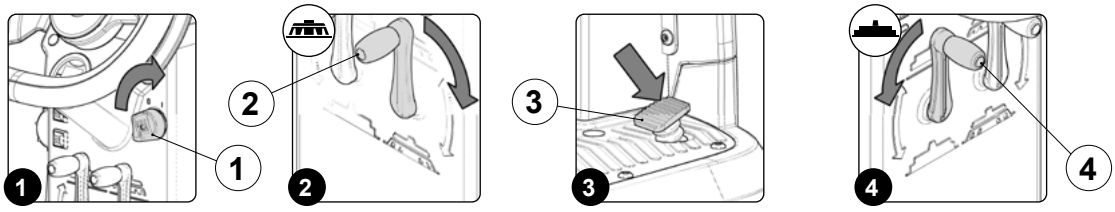
The command display is located on the control panel (**Fig. 4**), and the second screen that appears after the start-up screen displays the percentage of charge of the batteries (8).

N.B.: When the minimum remaining charge is reached, the graphic symbol (8) will start to blink, and will turn off after a few seconds, after which the symbol (9) will start to blink. Under these conditions, the machine must be brought to the battery charging area.

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.

N.B.: A few seconds after the battery charge reaches the discharge level, the vacuum motor switches off automatically.

WORKING PROGRAMS



SCRUBBING WITHOUT DRYING

To carry out “SCRUBBING WITHOUT DRYING” tasks, proceed as follows:

1. Carry out all the checks listed in the section “PREPARING TO WORK” on page 19.
2. Sit on the driver’s seat.
3. Insert the key (1) into the main switch on the control panel and move the main switch to position "I" by turning the key a quarter turn clockwise (**Fig.1**).
4. Lower the brush head body by turning the brush head control lever (2) on the rear part of the steering column (**Fig.2**).
5. Press the drive pedal (3) (**Fig. 3**) to begin moving the machine.

N.B.: Once the drive pedal has been pressed, the brush head body will begin to descend into its working position.

N.B.: Once the brush head body has reached its working position, the corresponding gear motors will begin to function and the solenoid valve will begin to dispense the detergent solution.

6. During the first few meters of work, check that the detergent solution coming out is appropriate to the work to be carried out; if not, adjust it after reading the section “REGULATING THE DETERGENT SOLUTION” on page 23.
7. The machine will now begin to work with full efficiency until the battery is flat or until the detergent solution has finished.

N.B.: If the drive pedal is released during work, the gear motors (on the brush head) and the solenoid valve will stop working.

N.B.: when filling the solution tank, it is good practice to empty the recovery tank using the special drainage hose.

SCRUBBING WITH DRYING

To carry out “SCRUBBING AND DRYING” tasks, proceed as follows:

1. Carry out all the checks listed in the section “PREPARING TO WORK” on page 19.
2. Sit on the driver’s seat.
3. Insert the key (1) into the main switch on the control panel and move the main switch to position "I" by turning the key a quarter turn clockwise (**Fig.1**).
4. Lower the brush head body by turning the brush head control lever (2) on the rear part of the steering column (**Fig.2**).
5. Lower the squeegee body by turning the squeegee control lever (4) on the rear part of the steering column (**Fig.4**).
6. Press the drive pedal (3) (**Fig. 3**) to begin moving the machine.

N.B.: Once the drive pedal is pressed, the brush head body and the squeegee body will begin to descend into their working positions.

N.B.: Once the brush head body and the squeegee body have reached their working positions, the relative motors will enter into function, and the solenoid valve will dispense the detergent solution.

7. During the first few meters of work, check that the detergent solution coming out is appropriate to the work to be carried out; if not, adjust it after reading the section “REGULATING THE DETERGENT SOLUTION” on page 23.
8. The machine will now begin to work with full efficiency until the battery is flat or until the detergent solution has finished.

N.B.: If the drive pedal is released during work, the brush motor and the solenoid valve will stop working, and the suction motor will continue to operate for a few seconds in order to ensure that all the liquid present in the vacuum hose is extracted.

N.B.: when filling the solution tank, it is good practice to empty the recovery tank using the special drainage hose.

DRYING

To carry out “DRYING WITHOUT SCRUBBING” tasks, proceed as follows:

1. Carry out all the checks listed in the section “PREPARING TO WORK” on page 19.
2. Sit on the driver’s seat.
3. Insert the key (1) into the main switch on the control panel and move the main switch to position "I" by turning the key a quarter turn clockwise (**Fig.1**).
4. Lower the squeegee body by turning the squeegee control lever (4) on the rear part of the steering column (**Fig.4**).
5. Press the drive pedal (3) (**Fig. 3**) to begin moving the machine.

N.B.: Once the drive pedal has been pressed, the squeegee body will begin to descend into its working position.

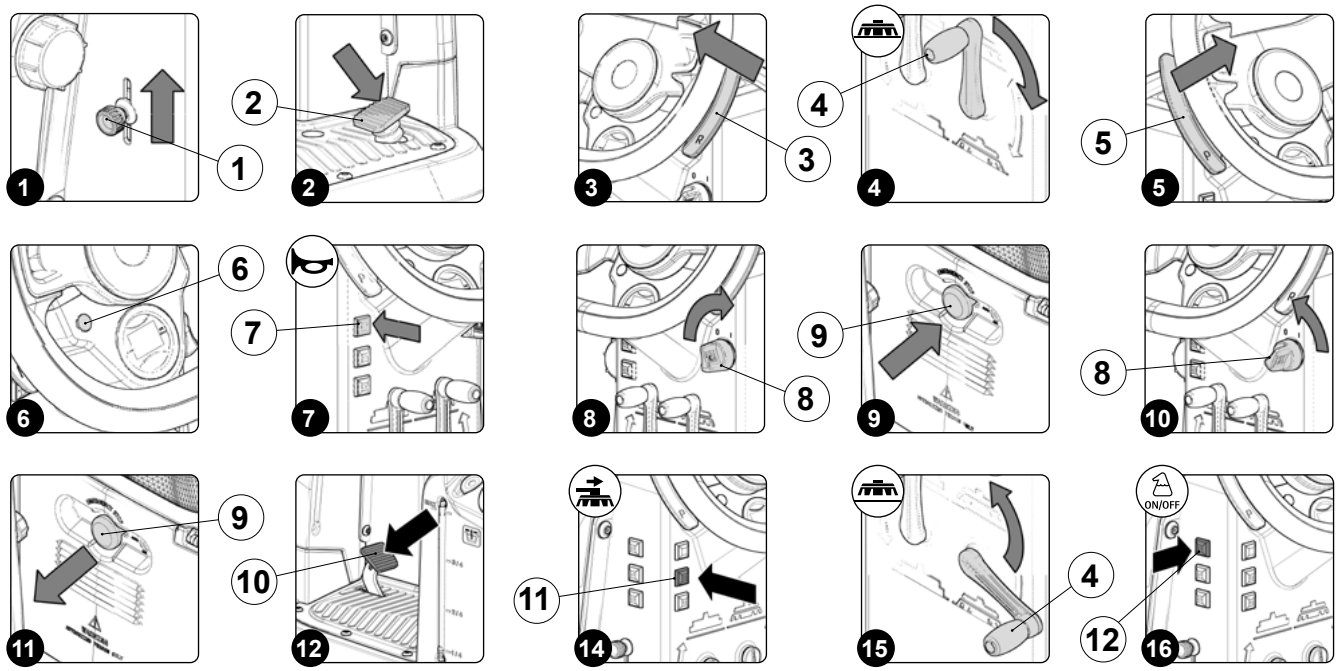
N.B.: Once the squeegee body has reached its working position, the vacuum motor will enter into function.

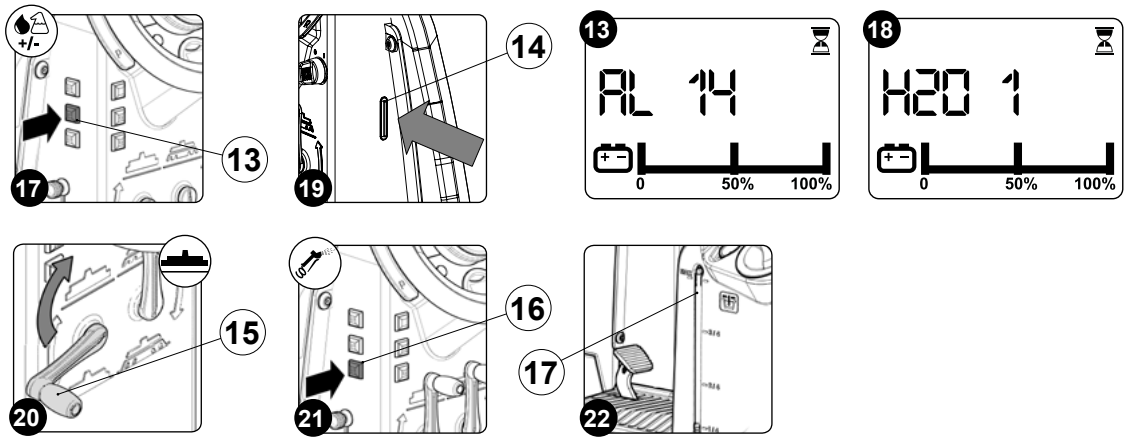
6. The machine will now work at its maximum efficiency level until the batteries run down.

N.B.: If the drive pedal is released during the drying operation, the vacuum motor will continue to operate for a few seconds in order to ensure that all the liquid present in the vacuum hose is extracted.

ATTENTION: The drying without scrubbing operation should only be carried out if the machine was previously used to carry out a scrubbing without drying operation.

ADDITIONAL FUNCTIONS





REGULATING THE DETERGENT SOLUTION

To adjust the amount of detergent solution on the brush, proceed as follows:

1. Open the tap's output flow to maximum, and shift the knob on the left hand side of the steering column (1) (**Fig.1**) upward.
2. When the drive pedal is pressed (2) (**Fig.2**), the brush gearmotors will enter into function and the solenoid valve will distribute detergent solution to the brushes.
3. During the first few metres, check to make sure that the quantity of solution is sufficient to wet the floor, but not so much as to come out of the splash guard. The detergent leakage can be adjusted using the knob (1) on the steering column.

N.B.: When the knob (1) is moved upwards, the amount of detergent solution distributed to the brushes increases. When the knob (1) is moved downwards, the amount of detergent solution distributed to the brushes decreases.

REVERSE GEAR

This machine is equipped with electronic traction control. To reverse, proceed as follows:

1. Engage the “REVERSE GEAR ACTIVATION/DEACTIVATION” lever (3) underneath the steering wheel (**Fig. 3**).
2. Press the drive pedal (2) (**Fig.2**); in this manner the machine will begin to move in reverse.

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 (3) underneath the steering wheel (**Fig.3**).

N.B.: Once the lever has been engaged (3), 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.

EXTRA BRUSH HEAD PRESSURE

This machine is capable of increasing the pressure exerted upon the brushes during the work cycle. This can be done in the following manner:

1. Check to make sure that the brush head body is in contact with the floor. If this is not the case, adjust the brush head control lever (4) on the steering column (**Fig.4**).
2. Shift the “EXTRA-PRESSURE ACTIVATION/DEACTIVATION” lever (5) underneath the steering wheel (**Fig.5**).
3. Press the drive pedal (2) (**Fig.2**) in order to initiate the machine's working cycle.

N.B.: Once the lever (5) has been engaged, the red indicator light (6) on the steering column will turn on to indicate that the extra-pressure function has been enabled (**Fig. 6**).

BUZZER

The machine is equipped with an acoustic signalling device. If an acoustic signal needs to be emitted, simply press the button (7) on the control panel (**Fig.7**).

WORKING HEADLIGHTS (OPTIONAL)

Upon request, the machine can be equipped with front and rear working lights. These lights can be turned on by setting the main switch to “I”, by turning the key (8) a quarter turn to the right (**Fig.8**).

EMERGENCY BUTTON

If any problems are encountered during the work operations, press the emergency button (9) on the electrical system's cover carter (**Fig.9**).

CAUTION: This command interrupts the electrical circuit between the batteries and the machine system.

N.B.: After having stopped and resolved the problem, the work operations can be resumed by doing the following:

1. Bring the main switch to position "0" by turning the key (8) a quarter turn anti-clockwise (**Fig.10**).
2. Disengage the mushroom-head emergency button (9) (**Fig. 11**).
3. Bring the main switch to position "I" by turning the key (8) a quarter turn clockwise (**Fig.8**).

BRAKING CONTROL

The machine has an encoder to help braking and also a mechanical brake. If the machine is moving and the accelerator pedal (2) 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 (10) (**Fig.12**) 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.

ALARM SCREEN

If there is an error, the writing AL is shown on the control display followed by a number (**Fig.13**), 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.

List of alarms:

NUMBER	TYPE	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	HFM 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_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
AL_52	Function	Amperometric - vacuum cleaner output 1

NUMBER	TYPE	DESCRIPTION
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

ACTIVATING THE SIDE BRUSH

If the side brush needs to be used during the floor scrubbing operations (and therefore with the brush head in its working position), press the side brush head activation/deactivation button (11) on the left-hand side of the steering column (**Fig.14**).

N.B.: When the side brush is in function, the LED indicator light inside the button (11) will be on.

N.B.: By pressing the button (11), the side brush head will begin to move towards the outside of the machine, and the solenoid valve will only begin to dispense the detergent solution once it has reached its working position (valid only for scrubbing versions).
By pressing the button (11) the side brushes will start to move towards the floor and the gear motors of the side brushes will start to work (valid only for sweeping versions).

N.B.: In order to bring the side brush head back to its resting position, press the button (11) (valid only for scrubbing versions).
In order to bring the side brushes back to their resting positions, press the button (11) (valid only for sweeping versions).

N.B.: If the central brush head is raised with the side brush head in its working position, the lever (4) on the steering column (**Fig.15**) can be turned in order to bring the side brush head back to the rest position. The LED indicator inside the button (11) will nevertheless remain on to indicate that if the central brush head is brought back to its working position, the side one will move to the right (valid only for scrubbing versions).
If the central brush head is raised with the side brush head in its working position, by turning the lever (4) on the steering column (**Fig.15**) the side brushes can also be brought into the rest position. The LED indicator inside the button (11) will nevertheless remain on to indicate that if the central brush head is brought back to its working position, also the side brushes will be brought into contact with the floor (valid only for scrubbing versions).

AUTOMATIC DETERGENT MEASURING SYSTEM

Upon request, the machine can be fitted with a system that measures out the detergent separately from the water in the solution tank. To start it do as follows.

1. Once the machine has been started up, press the automatic detergent dosing system activation - deactivation button (12) on the left side of the steering column (**Fig.16**) .
2. Press the detergent solution adjustment button (13), on the left side of the steering column, to select the level you want to use for the task in hand (**Fig.17**).

N.B.: If you press the button (13), the control display will show a code indicating the amount of detergent in the machine's water system. Press the button gradually to cyclically alter the amount of detergent; there are four possible settings (from 0 to 3).

N.B.: If the command display shows the code H2O 0, the machine doesn't dispense detergent (**Fig.18**). This mode is used when the floor is already wet or in general when the chemical action of water and detergent solution is not necessary.

N.B.: With each press of the button (13), the amount of solution released into the machine water system will increase by one level. Once the maximum level has been reached, a further press on the button will return you to level 0 (no solution dispensed).

N.B.: Passing from one step to another is a continuous cycle - it is not possible to go back except by continuing to the end of the scale and starting again from zero. If the machine is switched off via the main switch, the flow of detergent will return to step -03.

N.B.: If this system is used, the water adjustment tap must always be at its maximum setting; move the knob upwards.

TAG INSERTION (HFM VERSIONS)

To activate the automatic fleet management data recording function, which is valid for machine versions with the FFM system, after the screen displaying the machine programming characteristics appears, insert the TAG in the slot (14) on the right-hand side of the steering column (**Fig.19**).

N.B.: If the owner of the TAG just inserted is not enabled to use it, the AL_11 alarm will appear on the control display.

OVERFLOW DEVICE

The machine is not equipped with an overflow device, because the volume of the recovery tank is greater than the capacity of the solution tank. In extraordinary cases, there is a mechanical device (float) under the recovery tank lid that, when the recovery tank is full, shuts off the air to the vacuum motor intake to protect it; the sound of the suction motor will then be deeper. Empty the recovery tank (read “EMPTYING THE RECOVERY TANK” on page 28).

SPRAY GUN KIT (OPTIONAL)

On request, the machine can be equipped with the spray gun kit. To use this, proceed as follows:

1. Turn the brush head control lever (4) anti-clockwise (**Fig.15**); in this manner the brush head body will be raised off the floor.
2. Turn the squeegee control lever (15) clockwise (**Fig.20**) to raise the squeegee body off the floor.
3. Release the tank cleaning spray gun (at the back of the machine) from the retainers.
4. Activate the pump kit optional tank cleaning spray gun by pressing the button (16); this is located to the rear of the steering column (**Fig.21**).

N.B.: As soon as the button (16) is pressed, the LED on it comes on.

N.B.: With the tank cleaning spray gun kit active, the traction and work functions are deactivated.

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

N.B.: Before activating the optional tank cleaning kit, check that the quantity of detergent solution in the solution tank is suitable for the type of work you wish to carry out; check the level via the indicator (17) on the solution tank (**Fig. 22**).

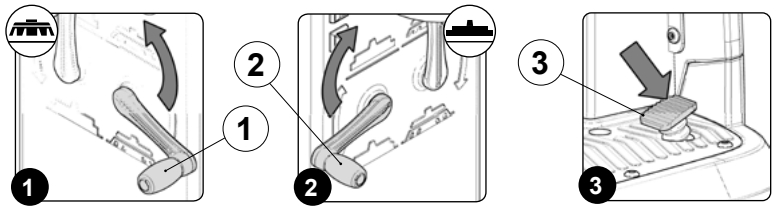
5. Activate the jet of solution by pressing the lever on the tank cleaning spray gun. Make sure the jet is pointing into the tank before pressing the lever.

N.B.: To adjust the jet of solution that comes out of the spray gun, use the knob on the front of the spray gun itself.

N.B.: To adjust the intensity of the jet of solution that comes out of the spray gun, use the ring on the back of the spray gun itself.

N.B.: To block the jet of solution, use the stopper on the lower part of the tank cleaning spray gun control lever.

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. Turn the brush head control level (1) anti-clockwise (**Fig.1**); in this manner the brush head body will be raised off the floor.
2. Turn the squeegee control lever (2) clockwise (**Fig.2**) to raise the squeegee body off the floor.
3. Press the drive pedal (3) (**Fig. 3**) to begin moving the machine.

4. Take the appliance to the dedicated dirty water drainage area.
5. Carry out all the procedures listed in the paragraph “RECOMMENDED PERIODIC MAINTENANCE” indicated in the column “AT THE END OF THE WORK”.
6. Once the maintenance work is finished take the appliance to the designated storage place.
7. Secure the machine, see the section entitled “MACHINE SAFETY” on page 14.

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.

ROUTINE MAINTENANCE

INTERVAL	MACHINE COMPONENTS	PROCEDURE	REFERENCE
DAILY BEFORE A LONG PERIOD OF INACTIVITY	RECOVERY TANK	Empty the recovery tank.	“EMPTYING THE RECOVERY TANK” on page 28
		Cleaning the vacuum system filters.	“CLEANING THE RECOVERY TANK FILTERS” on page 29
	SQUEEGEE BODY	Clean the vacuum chamber; the squeegee rubber blades; the vacuum nozzle.	“CLEANING THE SQUEEGEE BODY” on page 29
	SOLUTION TANK	Empty the solution tank.	“EMPTYING THE SOLUTION TANK” on page 29
	BRUSH HEAD BODY	Clean the brushes in the brush head body.	“CLEANING BRUSH HEAD BRUSHES (SCRUBBING)” on page 30
		Clean the brush in the side brush head body.	“CLEANING THE LATERAL BRUSH” on page 30
		Cleaning the splash guard rubber blades into he brush head body.	“CLEANING THE BRUSH HEAD BODY SPLASH GUARD RUBBER BLADES” on page 30
WEEKLY	MACHINE WATER SYSTEM	Clean the filter in the machine's water system.	“CLEANING THE WATER SYSTEM FILTER” on page 30
	SQUEEGEE BODY	Clean the vacuum hose.	“CLEANING THE VACUUM TUBE” on page 31
		Check the condition and wear of the rubber blades on the squeegee body.	“REPLACING THE SQUEEGEE BODY RUBBER BLADES” on page 31
		Check the condition and wear of the lateral squeegee splash guard rubber blades at the rear of the machine.	“REPLACING THE SIDE SQUEEGEE SPLASH GUARD RUBBER BLADES” on page 32
	BRUSH HEAD BODY	Check the condition and wear of the brushes in the brush head body.	“FITTING BRUSH HEAD BRUSHES (SCRUBBING)” on page 18
		Check the condition and wear of the brush in the side brush head body.	“SIDE BRUSH ASSEMBLY” on page 18
		Check the condition and wear of the splash guard rubber blades in the brush head body.	“REPLACING THE BRUSH HEAD SPLASH GUARD” on page 32
MONTHLY	SQUEEGEE BODY	Check the correct levelling of the rubber blades present in the squeegee body.	“ADJUSTING THE SQUEEGEE BODY’S RUBBER BLADES” on page 33
	BRUSH HEAD BODY	Check the correct levelling of the splash guard rubber blades present in the brush head body.	“ADJUSTING BRUSH HEAD BODY SIDE SPLASH GUARDS” on page 33

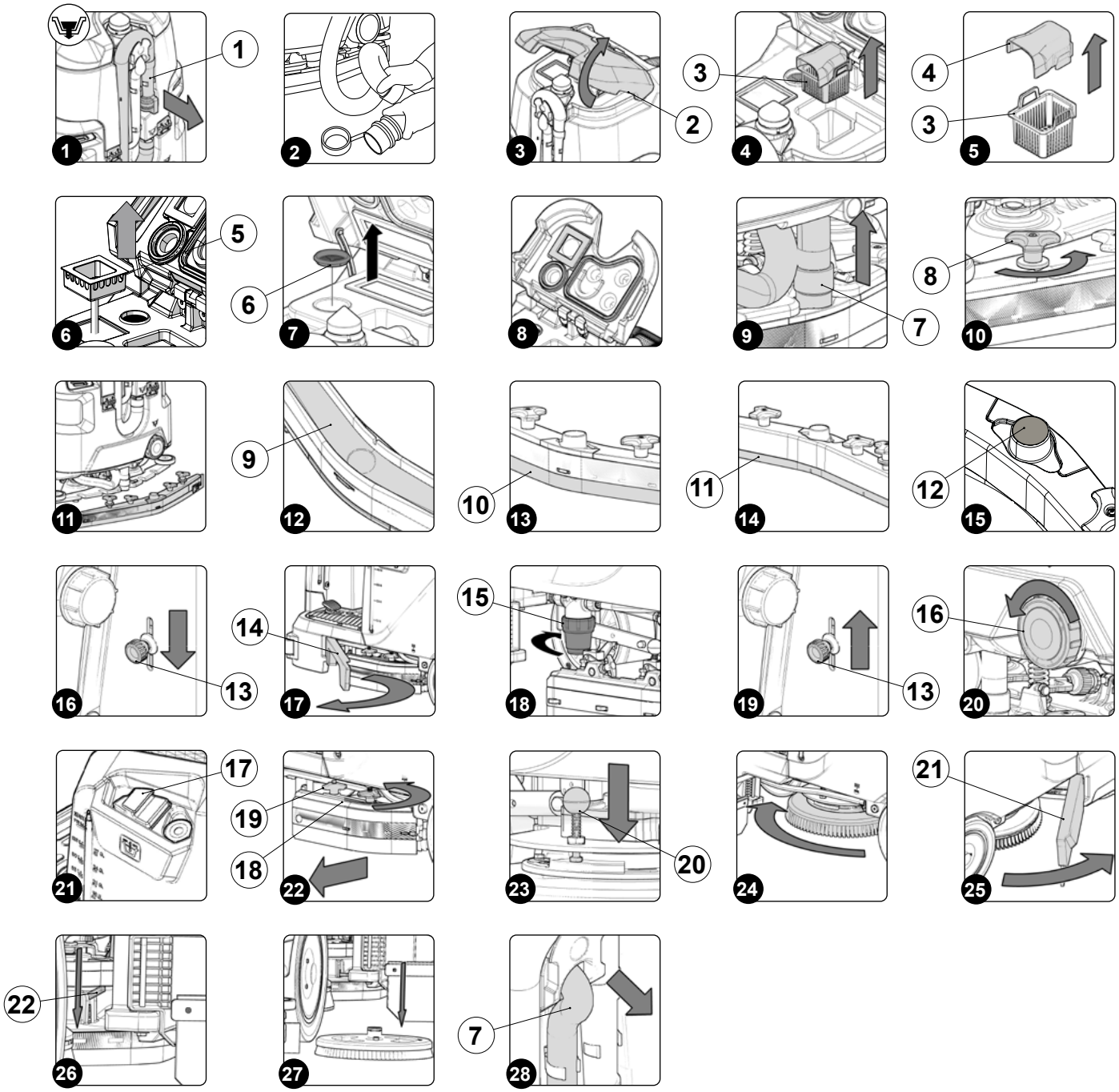
Before carrying out any routine maintenance operations, proceed as follows:

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 is in a safe condition (see “MACHINE SAFETY” on page 14).

WARNING: It is recommended to wear the appropriate PPE (Personal Protective Equipment), suitable for the work to be carried out.



EMPTYING THE RECOVERY TANK

Proceed as follows to empty the recovery tank:

1. Remove the drainage hose of the recovery tank (1) from the clamps; it is located at the rear of the machine (**Fig.1**).
2. Bend the end of the drainage tube in order to create a choke and prevent the content from coming out (**Fig. 2**), then position the tube on the discharge surface, unscrew the cap, and gradually release the tube.
3. Rinse the inside of the recovery tank with a jet of water. If necessary, use a spatula to remove any sludge that may have accumulated at the bottom of the tank.

⚠ **WARNING:** Take care to also clean the electro-mechanical float inside the tank.

4. Repeat the operations in reverse order to reassemble all the parts.

CLEANING THE RECOVERY TANK FILTERS

In order to clean the filters present inside the recovery tank, do the following:

1. Grip the moulded handles (2) on the recovery tank cover (**Fig.3**).
2. Rotate the recovery tank cover as far as it will go.
3. Remove the dirty water basket/filter (3) from the support (**Fig.4**).
4. Remove the basket cover (4) from the basket/filter (3) (**Fig.5**).
5. Clean the basket/filter and the basket cover under a jet of water.

N.B.: Use a spatula or brush to eliminate any dirt that is particularly difficult to remove.

6. Use a cloth to dry the basket/filter and basket cover, and place them back inside the recovery tank.
7. Remove the anti-wave tray from the support (5) (**Fig.6**).
8. Clean the basin under a jet of water.

N.B.: Use a jet of water to eliminate any remaining dirt, and use a spatula or a brush with soft bristles to eliminate any dirt that is particularly hard to remove.

9. Remove the suction motor duct filter (6) from its support (**Fig.7**).
10. Clean the suction motor duct filter under a jet of water.

N.B.: Use a spatula to eliminate any dirt that is particularly difficult to remove.

11. Dry the suction motor duct filter with a dry cloth and place it back on its support.
12. Clean the lower part of the vacuum cover with a damp cloth, and carefully clean the filter gaskets (**Fig. 8**).
13. Repeat the operations in reverse order to reassemble all the parts.

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 hose (7) from the vacuum nozzle on the squeegee body (**Fig.9**).
2. Completely unscrew the knobs (8) in the squeegee body pre-assembly (**Fig.10**).
3. Remove the squeegee body from the slits in the squeegee connector (**Fig. 11**).
4. Thoroughly clean the squeegee body vacuum chamber (9) with a jet of water, and then with a damp cloth (**Fig. 12**).

N.B.: Use a spatula to eliminate any particularly stubborn dirt.

5. Thoroughly clean the squeegee body rear rubber blade (10) with a jet of water, and then with a damp cloth (**Fig. 13**).
6. Thoroughly clean the squeegee body front rubber blade (11) with a jet of water, and then with a damp cloth (**Fig. 14**).
7. Use a jet of water and then a damp cloth to thoroughly clean inside the vacuum nozzle (12) (**Fig.15**).

N.B.: Use a spatula to eliminate any particularly stubborn dirt.

8. Repeat the operations in reverse order to reassemble all the parts.

EMPTYING THE SOLUTION TANK

Proceed as follows to empty the solution tank:

1. Close the detergent solution flow, and shift the knob (13) on the left-hand side of the steering column (**Fig.16**) downwards.
2. Move to the left hand side of the machine and open the left lateral carter (14) (**Fig. 17**).
3. Unscrew the detergent solution filter cap (15) (**Fig.18**).

N.B.: For the sweeping versions, the detergent solution filter is located on the right side of the machine.

4. Open the detergent solution flow to the maximum, and shift the knob on the left hand side of the steering column (13) (**Fig.19**) upward.
5. When the solution tank is empty, go to the rear of the machine and unscrew the cap (16) for the solution tank dumping system (**Fig.20**).
6. Go to the left side of the machine and remove the doser cap (17)(**Fig.21**).
7. Clean the inside of the tank with a jet of running water.
8. Once the work has been completed, repeat the operations in reverse order to reassemble all the parts.

CLEANING BRUSH HEAD BRUSHES (SCRUBBING)

Careful cleaning of the brush guarantees better cleaning of the floor as well as a longer brush head gearmotor lifespan. To clean the brush, proceed as follows:

1. Open the machine's left lateral carter (14) (**Fig.17**).
2. Remove the side splash guard support (18) by loosening the knobs (19) on it (**Fig.22**).
3. Press the brush locking pin (20) (**Fig.23**).
4. Keeping the pin (20) pressed, turn the brush clockwise until it is locked (**Fig.24**).
5. Turn until the button is pushed towards the outside of the coupling spring and is locked into place.
6. Clean the brush under a stream of running water to remove any impurities from its bristles.

N.B.: Check the wear of the bristles and replace the brushes if they are excessively worn (the bristle protrusion must not be less than 10mm; this distance is indicated on the brush by the yellow band). To replace the brush, see paragraph “FITTING BRUSH HEAD BRUSHES (SCRUBBING)” on page 18.

7. After checking to make sure that the brush is clean, reassemble it and move on to the one on the right hand side.

N.B.: you are advised to invert the right and left-hand brushes every day.

N.B.: Image 24 indicates the direction of rotation for coupling the left brush; the right brush must be turned in the opposite direction.

ATTENTION: If the brushes are not new however, and have deformed bristles, it is better to reassemble them in the same position (the right-hand one on the right, and the left-hand one on the left), to prevent the different inclination of the bristles producing an overload on the brush motor as well as excessive vibrations.

8. Once the work is complete, see paragraph “FITTING BRUSH HEAD BRUSHES (SCRUBBING)” on page 18.

CLEANING THE BRUSH HEAD BODY SPLASH GUARD RUBBER BLADES

Careful cleaning of the splash guard rubber blades present in the brush head body guarantees better cleaning of the floor; in order to clean the splash guard rubber blades, proceed as follow:

1. Open the machine's left lateral carter (14) (**Fig.17**).
2. Remove the side splash guard support (18) by loosening the knobs (19) on it (**Fig.22**).
3. Clean the splash guard rubber blades with a damp cloth .

N.B.: Check the wear of the brush head body splash guard rubber blades; to replace these, see “REPLACING THE BRUSH HEAD SPLASH GUARD” on page 32.

4. Once the operation is complete, repeat the operations in reverse order to reassemble all the parts.

CLEANING THE LATERAL BRUSH

Careful cleaning of the brush guarantees better cleaning of the floor as well as a longer brush head gearmotor lifespan. To clean the brush, proceed as follows:

1. Go to the right-hand side of the machine and open the right lateral carter (21) (**Fig.25**).
2. Move the brush release lever downwards (22) (**Fig.26**).
3. Remove the brush from the lateral brush head (**Fig.27**).
4. Clean the brush under a stream of running water to remove any impurities from its bristles.

N.B.: Check the wear of the bristles and replace the brush if they are excessively worn (the bristle protrusion must not be less than 10mm; this distance is indicated on the brush by the yellow band). To replace the brush, see “SIDE BRUSH ASSEMBLY” on page 18.

5. Once the work is complete, refit the brushes, see “SIDE BRUSH ASSEMBLY” on page 18.

CLEANING THE WATER SYSTEM FILTER

Careful cleaning of the water system filter guarantees better cleaning of the floor, as well as greater environmental and financial savings; in order to clean the filter, proceed as follows:

1. Close the detergent solution flow, and shift the knob (13) on the left-hand side of the steering column (**Fig.16**) downwards.
2. Move to the left hand side of the machine and open the left lateral carter (14) (**Fig. 17**).
3. Unscrew the detergent solution filter cap (15) (**Fig.18**).
4. Remove the detergent solution filter and clean it under a jet of running water to remove any impurities present

N.B.: For the sweeping versions, the detergent solution filter is located on the right side of the machine.

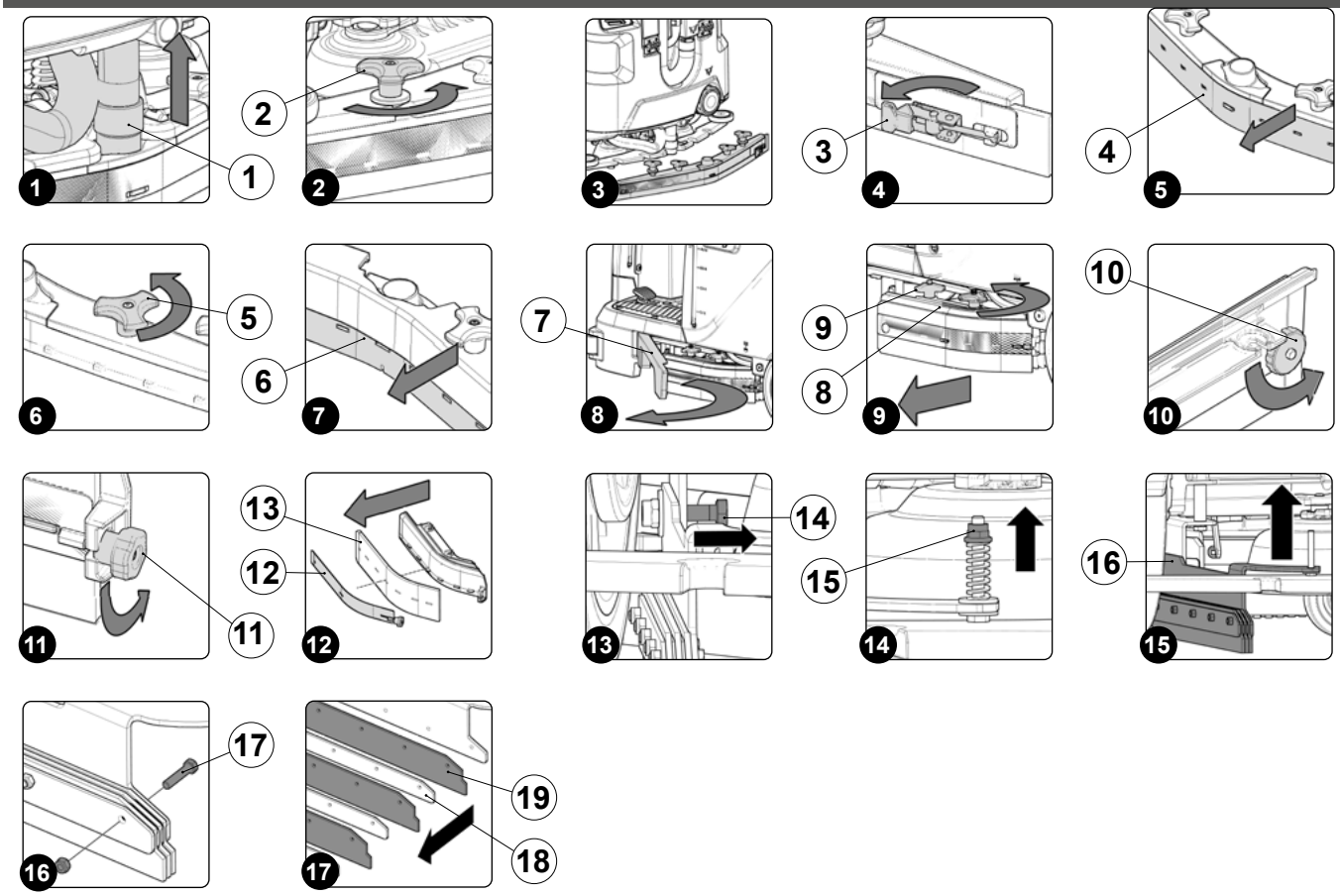
5. Once the operation is complete, repeat the operations in reverse order to reassemble all the parts.

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 (7) from the vacuum nozzle on the squeegee body (**Fig.9**).
2. Remove the vacuum tube (7) via the hole on the back of the recovery tank (**Fig.28**).
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. Once the operation is complete, repeat the operations in reverse order to reassemble all the parts.

EXTRAORDINARY MAINTENANCE WORK



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

N.B.: Before using the machine, remember to adjust the squeegee body: see the section entitled “ADJUSTING THE SQUEEGEE BODY’S RUBBER BLADES” on page 33.

N.B.: It is recommended to replace both squeegee body blades in order to ensure good results when drying the floor.

REPLACING THE BRUSH HEAD SPLASH GUARD

If the splash guard rubber blades of the brush head side casing are damaged they cannot work properly, namely they cannot convey the dirty detergent solution towards the squeegee, therefore the splash guard rubber blades need to be checked. To replace the brush head splash guards, proceed as follows:

1. Open the machine's left lateral carter (7) (**Fig.8**).
2. Remove the side splash guard support (8) by loosening the knobs (9) on it (**Fig.9**).
3. Remove the rear rubber blade compression plate (10), and release the stopper (11) on rubber blade compression plate (**Fig.10**).
4. Remove the splash guards (12) from the left splash guard body and replace it with a new one or else turn it around (**Fig.11**).
5. Repeat the operations in reverse order to reassemble all the parts.
6. Repeat the operations just carried out also for the right side casing as well.

REPLACING THE SIDE SQUEEGEE SPLASH GUARD RUBBER BLADES

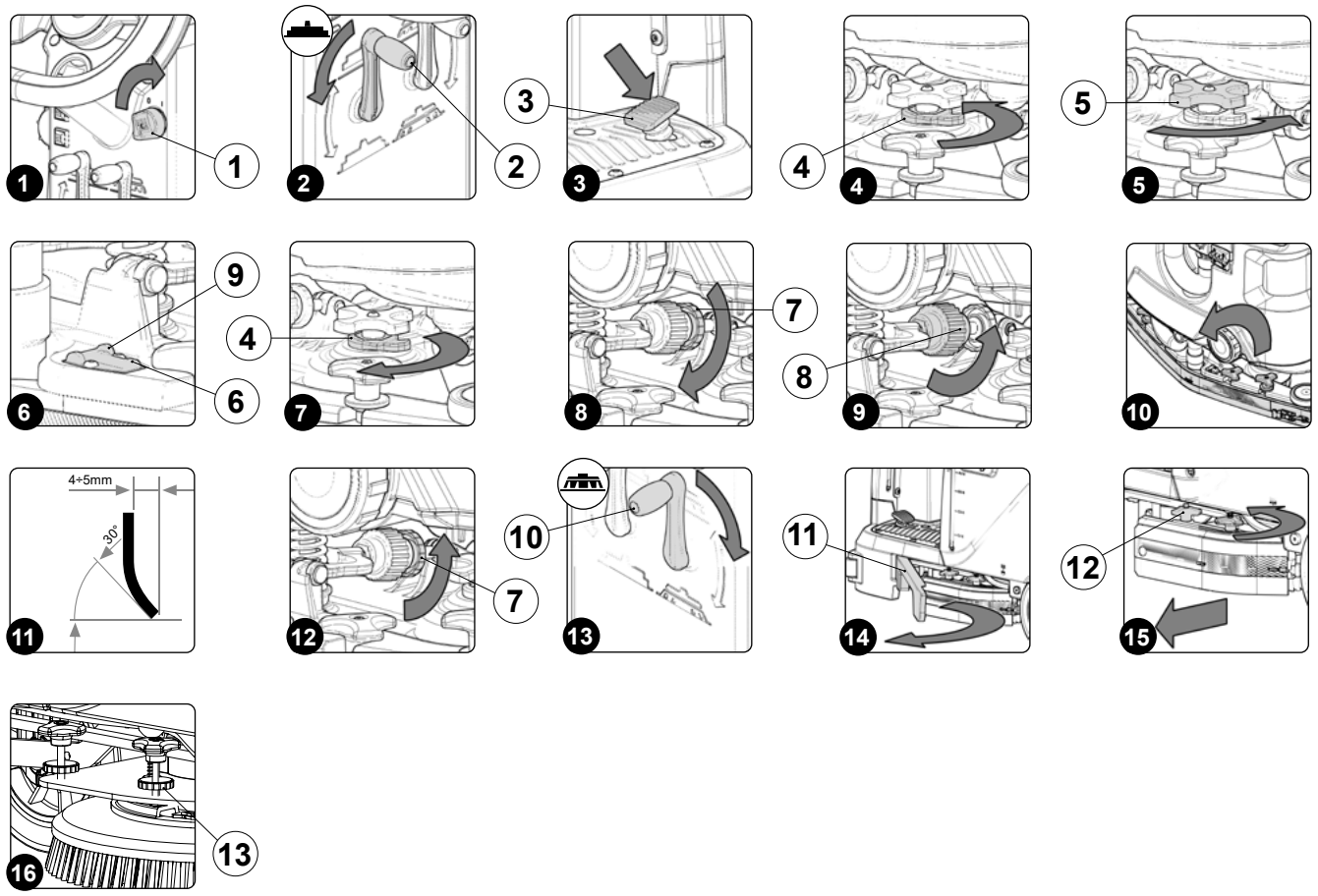
If the splash guard rubber blades of the side squeegee are damaged they cannot work properly, namely they cannot convey the dirty detergent solution towards the squeegee, therefore the rubber blades need to be checked. To replace the brush head splash guards, proceed as follows:

1. Extract the vacuum hose (1) from the vacuum nozzle on the squeegee body (**Fig. 1**).
2. Completely unscrew the knobs (2) in the squeegee body's pre-assembly (**Fig. 2**).
3. Remove the squeegee body from the slits in the squeegee connector (**Fig. 3**).
4. Using the right equipment (not supplied with the machine) remove the screw (14) (**Fig.13**).
5. Using the right equipment (not supplied with the machine) remove the nut (15) (**Fig.14**).
6. Remove the left side squeegee (16) from the machine (**Fig.15**).
7. Using the right equipment (not supplied with the machine) remove the splash guard rubber blade fixing screws (17) (**Fig.16**).
8. Remove the rubber blade compression plates (18) and the splash guard rubber blades (19) and replace them with new ones (**Fig.17**).
9. Repeat the operations in the reverse order and reassemble all the parts, then move on to the right side squeegee.

N.B.: remember to put the blade compression plate (18) between one splash guard rubber blade and the other (**Fig.17**).

N.B.: when adjusting the side squeegee, remember to leave about 10 mm of the threaded part beyond the self-locking flanged nut (15) (**Fig.14**).

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 blades, proceed as follows:

1. Sit on the driver's seat.
2. Insert the key (1) into the main switch on the control panel. Bring the main switch to its "I" position by turning the key (1) a quarter turn clockwise (**Fig.1**).
3. Lower the squeegee body by turning the squeegee control lever (2) at the rear of the steering column (**Fig.2**).
4. Press the drive pedal (3) (**Fig. 3**) to begin moving the machine.

N.B.: Once the drive pedal has been pressed, the squeegee body will begin to descend into its working position.

5. As soon as the brush head and the squeegee have reached their working positions, perform the procedure for securing the machine (see the section entitled "MACHINE SAFETY" on page 14).

WARNING: It is recommended to wear the appropriate PPE (Personal Protective Equipment), suitable for the work to be carried out.

6. Stand at the back of the machine.

Adjusting the height of the squeegee body:

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

N.B.: Figure 5 indicates the direction of rotation for decreasing the distance between the squeegee support and the floor. This distance can be increased by turning it in the opposite direction.

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

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.

N.B.: Check the adjustment is correct by looking at the horizontal bubble gauge (6) on the squeegee body (**Fig.6**).

- Once the adjustment has been completed, engage the stopper lever (4) (**Fig. 7**).

Adjusting the tilt of the squeegee body:

- Loosen the stopper knob (7) for the squeegee's tilt adjustment knob (8) (**Fig. 8**).
- To adjust the inclination of the squeegee body rubber blades with respect to the floor, tighten or loosen the knob (8) (**Fig.9**), until the squeegee body rubber blades are bent towards the outside evenly along the entire length by about 30° with respect to the floor (**Fig.11**).

N.B.: Figure 9 indicates the direction of rotation for tilting the squeegee towards the rear of the machine (**Fig.10**). Turn it in the opposite direction to rotate the squeegee towards the front of the machine.

N.B.: Check the adjustment is correct by looking at the horizontal bubble gauge (9) on the squeegee body (**Fig.6**).

- Once the adjustment has been completed, tighten the stopper knob (7) (**Fig. 12**).

ADJUSTING BRUSH HEAD BODY SIDE SPLASH GUARDS

If the side splash guards of the brush head body are not positioned correctly they cannot do their work properly, namely convey the dirty detergent solution towards the squeegee, therefore the height of the splash guard needs to be adjusted.
This operation can be done with the brush head body in the work position, proceeding as follows:

1. Sit on the driver's seat.
2. Insert the key (1) into the main switch on the control panel. Bring the main switch to its "I" position by turning the key (1) a quarter turn clockwise (**Fig.1**).
3. Lower the brush head body by turning the brush head control lever (10) on the rear part of the steering column (**Fig.13**).
4. Press the drive pedal (3) (**Fig. 3**) to begin moving the machine.

N.B.: Once the drive pedal has been pressed, the brush head body will begin to descend into its working position.

5. As soon as the brush head and the squeegee have reached their working positions, perform the procedure for securing the machine (see the section entitled "MACHINE SAFETY" on page 14).

WARNING: It is recommended to wear the appropriate PPE (Personal Protective Equipment), suitable for the work to be carried out.

6. Go to the front left-hand side of the machine.
7. Open the machine's left lateral carter (11) (**Fig.14**).
8. Remove the side splash guard support by loosening the knobs (12) on it (**Fig.15**).
9. Adjust the height of the splash guard with respect to the floor; tighten or loosen the handwheels (13) (**Fig.16**), until the splash guard rubber blade is bent outwards, to the same degree along its entire length, at an angle of around 30° in relation to the floor (**Fig.11**).

N.B.: Both the front and rear of the splash guard need to be at the same height off the floor.

10. Once the adjustment is complete, repeat the operations described above in reverse order to reassemble all the parts.
11. Close the left-hand lateral carter and repeat the operations just carried out on the right-hand side splash guard.

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.

PAD HOLDER
The pad holder is recommended for cleaning shiny surfaces.
There are two types of pad holder:

- The traditional pad holder is fitted with a series of anchor points that allow the abrasive floor pad to be held and dragged while working.
- the CENTRE LOCK type pad holder not only has anchor points, but also a snap-type central locking system in plastic that allows the abrasive floor pad to be perfectly centred and held without any risk of it becoming detached. This type of pad holder is recommended above all for machines with more than one brush, where the centring of the abrasive discs is difficult.

CODE	QTY	Ø EXTERNAL	TYPE OF BRISTLE	NOTES
414272	2	390	PPL 0,3	BRUSH $Ø_F$=390mm $Ø_E$=400mm BLUE COLOUR
414270	2	390	PPL 0,6	BRUSH $Ø_F$=390mm $Ø_E$=400mm WHITE COLOUR
414273	2	390	PPL 0,9	BRUSH $Ø_F$=390mm $Ø_E$=400mm BLACK COLOUR
414271	2	390	ABRASIVE	BRUSH $Ø_F$=390mm $Ø_E$=400mm GREY COLOUR
449915	2	390	TAMPICO	BRUSH $Ø_F$=390mm $Ø_E$=400mm
405508	2	380	-	BRUSH PAD HOLDER $Ø_F$=380mm
443121	1	260	PPL 0,3	BRUSH $Ø_F$=255mm $Ø_E$=260mm BLUE COLOUR
444020	1	260	PPL 0,6	BRUSH $Ø_F$=255mm $Ø_E$=260mm WHITE COLOUR
444021	1	260	PPL 0,9	BRUSH $Ø_F$=255mm $Ø_E$=260mm BLACK COLOUR
444022	1	260	ABRASIVE	BRUSH $Ø_F$=255mm $Ø_E$=260mm GREY COLOUR
449916	1	260	TAMPICO	BRUSH $Ø_F$=255mm $Ø_E$=260mm
444023	1	260	-	PAD HOLDER $Ø_F$=255mm $Ø_E$=260mm

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 main switch is set to “0”.	Make sure that the main switch is in its "I" position, otherwise turn the key a quarter turn clockwise.
	Check that when switched on there are no alarm messages on the control display.	Stop the machine immediately, and contact a specialised service centre.
	Make sure that the batteries are correctly connected to each other and that the battery connector is connected to the electrical system connector.	Correctly connect the batteries to each other (see “CONNECTING THE BATTERIES TO THE MACHINE’S ELECTRICAL SYSTEM” on page 15.
		Correctly connect the batteries to the machine's electrical system (see “CONNECTING THE BATTERIES TO THE MACHINE’S ELECTRICAL SYSTEM” on page 15.
	Check the charge level of the batteries.	If the battery charge level is critical, perform a complete recharge cycle (see paragraph “RECHARGING THE BATTERIES” on page 15).
THE BATTERIES ARE NOT CHARGED CORRECTLY	The connector of the battery charger cable is not properly inserted in the battery connector.	Connect the battery charger cable connector to the battery connector again.
	The plug on the battery charger's power cable is not correctly inserted into the electrical outlet.	Check that the battery charger power supply cable plug is connected to the mains socket.
	The characteristics of the mains power supply do not correspond to those required by the battery charger.	Check that the characteristics in the battery charger plate are the same as those of the mains supply.
	The LEDs of the battery charger blink repeatedly.	Referring to the battery charger use and maintenance manual, check the meaning of the flashing signals that the battery charger emits dung the battery recharge stage.
THE MACHINE HAS A VERY LOW WORKING AUTONOMY	Check the battery charge level, check the symbol on the control display.	If the battery charge level is critical, perform a complete recharge cycle (see paragraph “RECHARGING THE BATTERIES” on page 15).
THE MACHINE DOES NOT MOVE	The machine does not start.	Read the section “THE MACHINE DOES NOT START”.
	The traction motor power cable is not correctly connected.	Go to the left-hand side of the machine, open the side carter and connect the traction motor power cable to the contact located on the motor itself. **ATTENTION:** This operation must be carried out by expert personnel, trained at the HILLYARD assistance centre
	The electrobrake located in the traction gearmotor is not engaged.	Go to the left-hand side of the machine, open the side carter and turn the lever in the traction gearmotor clockwise.
	There is an issue on the drive pedal.	Contact your nearest service centre.
INSUFFICIENT DETERGENT SOLUTION ON THE BRUSHES	The quantity of detergent solution in the water system is not sufficient for the work to be carried out.	Check that the amount of detergent solution present in the machine's water system is sufficient for the work to be carried out.
	Detergent solution filter obstructed.	Check the detergent solution filter isn't obstructed. If it is, clean it (see “CLEANING THE WATER SYSTEM FILTER” on page 30).
THE MACHINE DOES NOT CLEAN CORRECTLY	The machine does not start.	Read the section “THE MACHINE DOES NOT START”.
	Not enough detergent solution comes out.	Read the section “INSUFFICIENT DETERGENT SOLUTION ON THE BRUSHES”.
	The brushes have not been inserted correctly in the machine.	Check that the disc brushes are correctly inserted inside the machine.
	The type of brush used is not suitable for the dirt to be cleaned.	Check that the brushes on the machine are adequate for the work to be carried out, contact the nearest technical assistance centre.
	The brush bristles are excessively worn.	Check the state of wear of the brush and, if necessary, replace it.

PROBLEM	POSSIBLE CAUSE	SOLUTION
THE SQUEEGEE DOES NOT DRY PERFECTLY	The vacuum unit is obstructed.	Make sure the squeegee is free of obstructions (see “CLEANING THE SQUEEGEE BODY” on page 29).
		Make sure the vacuum tube is free of obstructions (see “CLEANING THE VACUUM TUBE” on page 31).
		Make sure the vacuum cap filter is free of obstructions (see “CLEANING THE RECOVERY TANK FILTERS” on page 29).
		Make sure the suction motor filter is free of obstructions (see “CLEANING THE RECOVERY TANK FILTERS” on page 29).
	The cap on the recovery tank drainage tube is not properly positioned.	Check that the cap on the recovery tank drainage tube is positioned properly.
	The recovery tank lid is not positioned correctly.	Check that the recovery tank lid is properly positioned on the machine.
EXCESSIVE FOAM PRODUCTION	The detergent being used is not suitable.	Check that a low foam detergent has been used. If necessary, add a small quantity of anti-foam liquid to the recovery tank.
	The floor is not very dirty.	Dilute the detergent more.
THE MACHINE DOES NOT VACUUM CORRECTLY	The recovery tank is full.	Empty the recovery tank (read “EMPTYING THE RECOVERY TANK” on page 28).
	The vacuum device is obstructed	Read the section "THE SQUEEGEE DOES NOT DRY PERFECTLY".

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