

USE AND MAINTENANCE MANUAL



L20 2014 B
L20 2014 E

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EN

ORIGINAL
INSTRUCTIONS
Doc. 10050232
Ver. AB



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SYMBOLS USED IN THE MANUAL



Open book symbol with an "i":
Indicates the need to consult the instruction manual



Open book symbol:
Used to tell the operator to read the manual before using the machine



Warning symbol
Carefully read the sections marked with this symbol and observe the indications, for the safety of the operator and the machine



Warning symbol
Indicates danger of gas exhalation and leakage of corrosive liquids



Warning symbol
Indicates the danger of fire.
Do not go near with free flames



Warning symbol
Indicates that the packed product should be handled with suitable lifting means that comply with the legal requirements



Disposal symbol
Carefully read the sections marked with this symbol, for machine disposal



CONTENTS

ON CONSIGNMENT OF THE MACHINE	5
INTRODUCTORY COMMENT	5
INTENDED USE	5
SERIAL NUMBER PLATE	5
TECHNICAL DESCRIPTION	5
SYMBOLS USED ON THE MACHINE	6
GENERAL SAFETY REGULATIONS	8
PREPARATION OF MACHINE	9
1. HANDLING THE PACKED MACHINE	9
2. HOW TO UNPACK THE MACHINE	9
3. HOW TO MOVE THE MACHINE	9
4. REAR COMPONENTS OF THE MACHINE	10
5. FRONT MACHINE COMPONENTS	10
6. BATTERY TYPE (VERSION B)	10
7. MAINTENANCE AND DISPOSAL OF THE BATTERY (B VERSION)	10
8. FITTING THE BATTERIES INTO THE MACHINE (B VERSION)	11
9. BATTERY CHARGER CONNECTION (B VERSION, WITHOUT BC)	12
10. BATTERY CHARGER CONNECTION (B VERSION, WITH BC)	12
11. DIGITAL HOUR METER (B VERSIONS)	14
12. DIGITAL HOUR METER (E VERSION)	14
13. BATTERY CHARGE LEVEL INDICATOR (B VERSION)	14
14. RECOVERY TANK	14
15. SOLUTION TANK	14
16. FILLING THE SOLUTION TANK	15
17. DETERGENT SOLUTION	15
18. REGULATING THE DETERGENT	16
19. ASSEMBLING THE SQUEEGEE	16
20. SQUEEGEE INCLINATION	16
21. ADJUSTING THE SQUEEGEE SUPPORT HEIGHT	17
22. DISC BRUSH ASSEMBLY	17
WORK	18
23. PREPARING TO WORK	18
24. OVERFLOW DEVICE	18
25. FORWARD MOVEMENT	18
AT THE END OF THE WORK	19
DAILY MAINTENANCE	20
26. CLEANING THE DIRTY WATER RECOVERY TANK	20
27. CLEANING THE SUCTION MOTOR FILTER	20
28. CLEANING THE SQUEEGEE	21
29. CLEANING THE SOLUTION TANK	21
30. CLEANING THE SOLUTION FILTER	22
31. DISASSEMBLING THE DISC BRUSHES (B VERSION)	22
32. DISASSEMBLING THE DISC BRUSHES (E VERSION)	22
WEEKLY MAINTENANCE	23
33. CLEANING THE VACUUM HOSE	23
EXTRAORDINARY MAINTENANCE	24
34. REPLACING THE FRONT SQUEEGEE RUBBER	24
35. REPLACING THE REAR SQUEEGEE RUBBER	24
TROUBLESHOOTING	25
36. INSUFFICIENT WATER ON THE BRUSHES	25
37. THE SQUEEGEE DOES NOT DRY PERFECTLY	25
38. THE MACHINE DOES NOT CLEAN WELL	25
39. EXCESSIVE FOAM PRODUCTION	25
40. THE VACUUM CLEANER DOES NOT FUNCTION	25



41. THE MACHINE DOES NOT START	25
42. ELECTRIC SYSTEM SAFETY (E Version).....	25
DISPOSAL	26
CHOOSING AND USING THE BRUSHES.....	27
EC DECLARATION OF CONFORMITY	28



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.

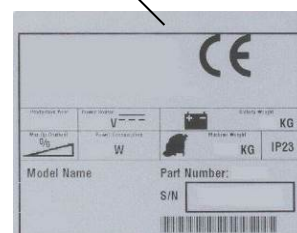
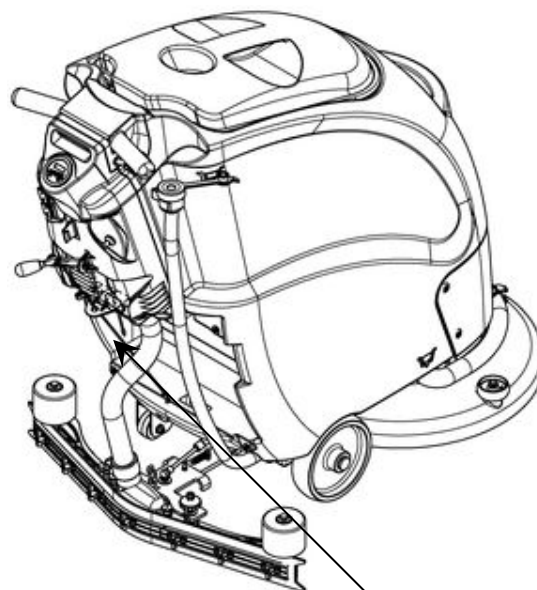
INTRODUCTORY COMMENT

L20 is a scrubbing machine that is able to clean a wide variety of flooring and dirt types by using the mechanical action of at least one disc or cylindrical brushes (depending on the model), and the chemical action of a water-detergent solution. As it advances, it also collects the dirt removed and the detergent solution not absorbed by the floor.

The machine must only be used for this purpose. Even the best machines will only work well if used correctly and kept in good working order. We therefore recommend you read this instruction booklet carefully, and consult it whenever difficulties arise while using the machine. If necessary, remember that our customer assistance service (organised in collaboration with our dealers) is always available for advice or direct intervention.

INTENDED USE

The floor scrubbing machine is designed for the professional cleaning of surfaces and floors in industrial, commercial and public environments only. It is only suitable for use in closed (or at least covered) places. The machine is not suitable for use in the rain, or under water jets. IT IS FORBIDDEN to use the machine for picking up dangerous dusts or inflammable liquids in places with an explosive atmosphere. In addition, it is not suitable as a means of transport for people or objects.



SERIAL NUMBER PLATE

TECHNICAL DESCRIPTION	U/M	L20 B	L20 E 230V	L20 E 110V
Working width	mm	508	508	508
Squeegee width	mm	680	680	680
Working capacity, up to	m ² /h	1450	1450	1450
Disc brushes	No. / Ø mm	508 (1)	508 (1)	508 (1)
Brush rpm	rpm	135	135	165
Brush motor	V/W	24 / 500	230 / 750	110 / 750
Pressure on the brushes	kg	27.5	27.5	27.5
Maximum gradient with full load	%	2	2	2
Forward speed type		Semi-aut.	Semi-aut.	Semi-aut.
Suction motor	V/W	24 / 310	230 / 450	110 / 450
Suction vacuum	mbar	104.5	104.5	104.5
Rear elastic wheels	ØØ mm	175x45	175x45	175x45
Solution tank	l	36	36	36
Recovery tank	l	37	37	37
Machine length	mm	1125	1165	1165
Machine height	mm	995	995	995
Machine width (without squeegee)	mm	525	541	541
Solution				
Battery compartment (l x w x h)	mm	330x345x270	-	-
Rated voltage	V	24	230	110
Batteries	V/Ah	12 / 77 (2)	-	-
Built-in battery charger	V/A	24 / 11		
Battery weight (max)	kg	54	-	-
Machine weight (empty and without batteries)	kg	61.5	61.5	61.5
Gross weight of the machine ready for use	kg	152	98	98
Sound pressure level (ISO 11201)	dB (A)	68.8 ± 1.4	68.8 ± 1.4	-
Hand vibration level (ISO 5349-1)	m/s ²	2 ± 3.5%	2 ± 3.5%	-
Body vibration level	m/s ²	-	-	-



SYMBOLS USED ON THE MACHINE



Main switch symbol
Used on the instrument panel, to indicate the switch for machine operation ON or OFF



Symbol denoting suction motor
Used on the instrument panel to indicate the switch that commands suction motor operation



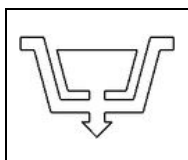
Brush uncoupling symbol
Used on the instrument panel to indicate the button for automatic brush uncoupling



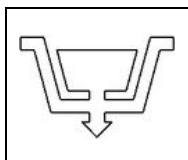
Squeegee UP symbol
Used on the rear of the machine to indicate the position for the squeegee lifting cable



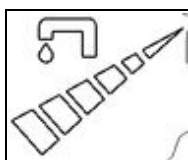
Squeegee DOWN symbol
Used on the rear of the machine to indicate the position for the squeegee lifting cable



Symbol denoting solution tank emptying
Used on the rear of the solution tank to indicate the position for the clean water drainage tube.



Symbol denoting recovery tank emptying
Used on the front right of the solution tank to indicate the position for the dirty water drainage tube.



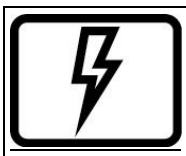
Water quantity adjustment symbol
Used on the rear of the solution tank to indicate the knob for adjusting the quantity of water distributed on the brush



Indicates the maximum temperature of the detergent solution
Located near the solution tank inlet



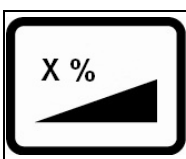
SYMBOLS USED ON THE MACHINE



Warning - high voltage 110-230 Volt



Indicates the earth connection point of the electric system of the machine



Indicates the maximum gradient



GENERAL SAFETY REGULATIONS

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



PREPARATION OF MACHINE

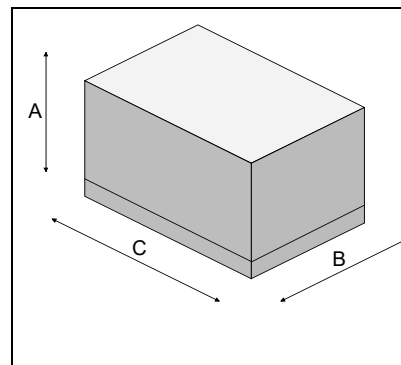
1. HANDLING THE PACKED MACHINE

The machine is contained in specific packaging with a pallet for the handling with fork trucks. The packages CANNOT be placed on top of each other.

The total mass of the machine with packaging is 76.5 kg (without batteries)

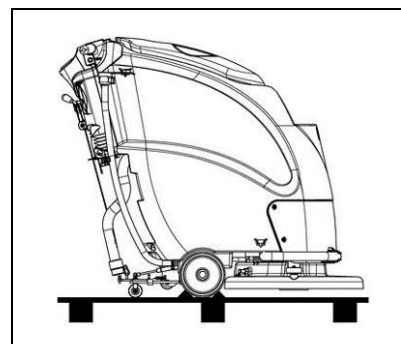
The packaging dimensions are as follows:

L20
A: 1145 mm
B: 665 mm
C: 1230 mm



2. HOW TO UNPACK THE MACHINE

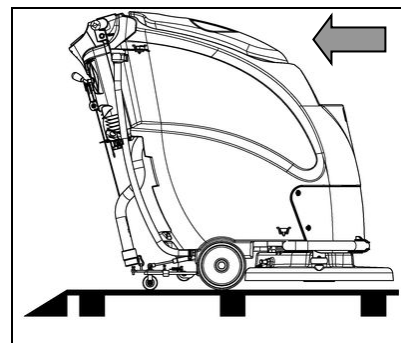
1. Remove the outer packaging
2. The machine is fixed to the pallet with wedges which block the wheels
3. Remove the wedges



4. Use a chute to get the machine down from the pallet, pushing it backwards. Do not assemble the rear squeegee before unloading the machine, and avoid violently jolting the brush head. To assemble the squeegee, read the section "ASSEMBLING THE SQUEEGEE".
5. Keep the pallet for any future transport needs

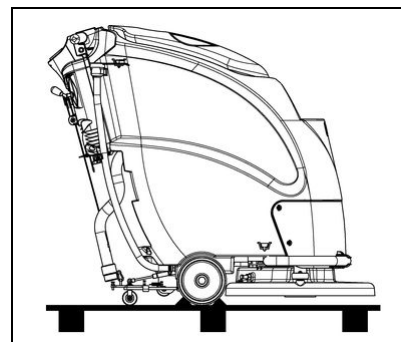


ATTENTION: If the product is delivered in cardboard containers, handle the packed product with suitable lifting means that comply with the legal requirements



3. HOW TO MOVE THE MACHINE

1. Make sure the solution tank and the dirty water compartment are empty
2. Make sure the squeegee is UP
3. Remove the brush from the brush head
4. Place it on a pallet using a chute
5. Make sure the main switch is in the OFF position
6. Secure the machine to the pallet using wooden wedges



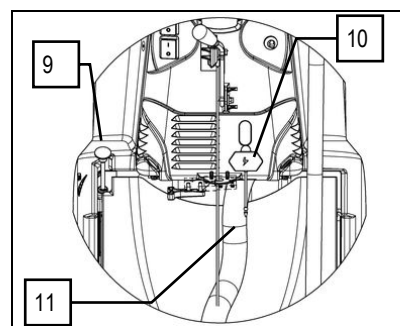
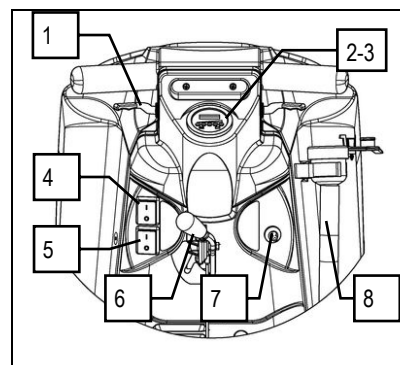


MACHINE PREPARATION

4. REAR COMPONENTS OF THE MACHINE

The components at the rear of the machine are identified as follows:

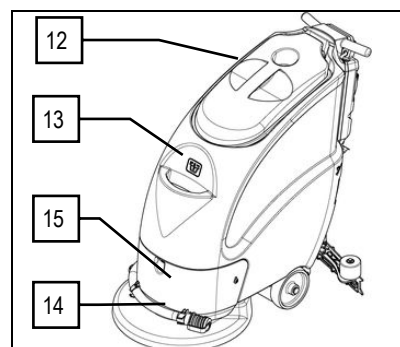
1. Brush operation / dead man's levers (located beneath the grip)
2. Display for battery level / hour meter (battery-operated versions)
3. Digital hour meter (electric versions)
4. Main machine switch
5. Suction motor switch
6. Control lever for commanding the squeegee lifting cable
7. 2-way switch for quick brush release (battery-operated versions), or thermal trip unit (electric versions)
8. Clean water drainage/filling tube
9. Tie-rod for adjusting the detergent solution flow
10. Protective cap for battery charger socket (BC versions)
11. Squeegee vacuum hose



5. FRONT MACHINE COMPONENTS

The components at the front of the machine are identified as follows:

12. Dirty water recovery compartment cover
13. Detergent solution inlet
14. Dirty water drainage hose
15. Casing for accessing the filter/solenoid valve (optional), and the motors



6. BATTERY TYPE (VERSION B)

To power the machine it is necessary to use:

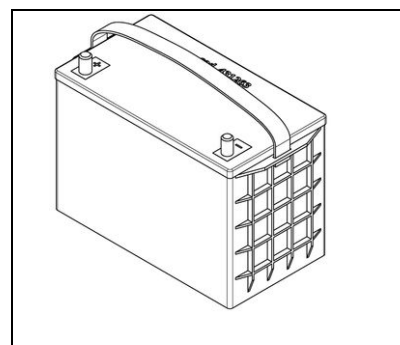
- liquidelectrolyte lead traction batteries;
- sealed traction batteries with gas recombination or gel technology.

OTHER TYPES MUST NOT BE USED.

The batteries must meet the requirements laid out in the norms: CEI EN 60254-1:2005-12 (CEI 21-5) + CEI EN 60254-2:2008-06 (CEI 21-7).

The battery compartment can house two 12V batteries

For good working operation, you are advised to use two 12V MFP 77AH GEL batteries; for the other models, check whether these are suitable for the battery compartment dimensions



7. MAINTENANCE AND DISPOSAL OF THE BATTERY (B VERSION)

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

Particular attention must be paid when choosing the battery charger, if not supplied, since there are different kinds according to the type and capacity of the battery.

When the battery reaches the end of its working life, it must be disconnected by expert, trained personnel, then lifted (using the grips and suitable lifting devices) to remove it from the battery compartment. EXHAUSTED BATTERIES ARE CLASSIFIED AS DANGEROUS WASTE AND MUST BE CONSIGNED TO THE AUTHORISED BODIES FOR CORRECT DISPOSAL.



PREPARATION OF MACHINE



ATTENTION: users are advised to always wear protective gloves, to avoid the risk of serious injury to hands.



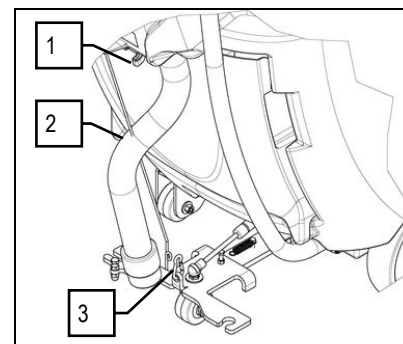
ATTENTION: you are advised to only lift and move the batteries with lifting and transportation means suitable for the specific weight and size

8. FITTING THE BATTERIES INTO THE MACHINE (B VERSION)

The batteries must be housed in the special compartment in the rear part of the machine. They should be handled using lifting equipment that is suitable in terms of both weight and hook-up system. They must also satisfy the requirements of Standard CEI 21-5. The dimensions of the battery compartment are: 330 x 345 x H270mm.

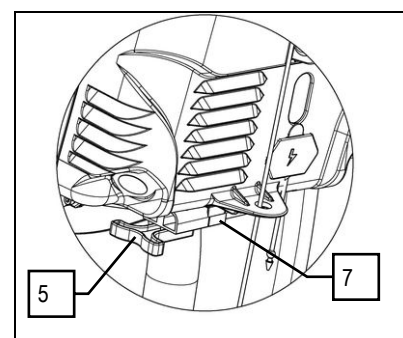
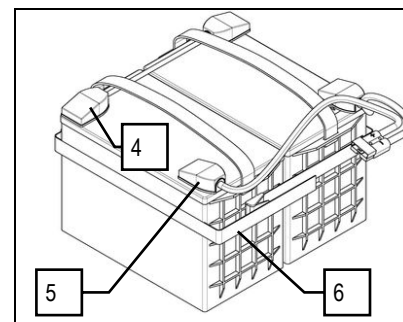


ATTENTION: for battery maintenance and daily recharging, you must fully respect the indications provided by the manufacturer or retailer. all installation and maintenance operations must be carried out by specialised personnel.



To insert the batteries you must:

1. Detach the suction tube (2) from the nozzle on the squeegee
 2. Remove the hook (3) that fixes the squeegee lifting cable to the squeegee support
 3. Move the squeegee support to the right
 4. Remove the rear casing that covers the batteries (1)
 5. Position the poles "+" and "-" opposite to each other
 6. connect the batteries in series - using the supplied jumper cable (4) - to the poles "+" and "-"
 7. Using a support surface, position the batteries in the relevant compartment
-
8. Connect the battery connector cable (5) to the terminal poles "+" and "-" to obtain a voltage of 24V on the clamps
 9. Fix the batteries with the aid of the belt (6)
 10. Connect the battery connector cable (5) to the machine connector cable (7)
 11. Insert the rear casing that covers the batteries (1)
 12. Fix the squeegee lifting hook (3) to the squeegee support
 13. Fix the suction tube (2) to the nozzle on the squeegee



ATTENTION: You are advised to use airtight batteries only, to avoid the leakage of acids!



ATTENTION: users are advised to always wear protective gloves, to avoid the risk of serious injury to hands.



PREPARATION OF MACHINE



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



ATTENTION: you are advised to have the electric connections made by a qualified, FIMAP trained technician

9. BATTERY CHARGER CONNECTION (B VERSION, WITHOUT BC)

In order not to cause permanent damage to the batteries, it is essential to avoid their complete discharge: arrange the recharge within a few minutes of the switching on of the "discharged batteries" blinking light.



ATTENTION: Never leave the batteries completely discharged, even if the machine is not being used. Check the battery charger is suitable for the batteries installed, in terms of both capacity and type.

To connect the batteries you must:

1. Make sure the dirty water recovery tank is empty; if necessary, empty it completely
2. Make sure the switch is in the OFF position
3. Take the machine to the designated machine storage place (where the battery charger is located)

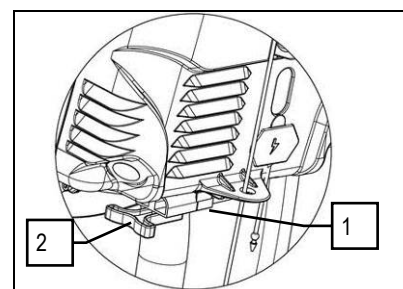


ATTENTION: park the machine indoors, on a flat and level surface; near the machine there must be no objects that could either damage it, or be damaged through contact with it

4. Disconnect the battery connector (2) of the machine connector (1).
5. Connect the battery charger connector to the battery connector (2).
6. After fully recharging the batteries, disconnect the battery charger connector from the battery connector (2).
7. Connect the battery connector (2) to the machine connector (1).



ATTENTION: Carefully read the use and maintenance instructions of the battery charger that is used for charging.



10. BATTERY CHARGER CONNECTION (B VERSION, WITH BC)

In order not to cause permanent damage to the batteries, it is essential to avoid their complete discharge: arrange the recharge within a few minutes of the switching on of the "discharged batteries" blinking light.



ATTENTION: Never leave the batteries completely discharged, even if the machine is not being used. Check the battery charger is suitable for the batteries installed, in terms of both capacity and type.



PREPARATION OF MACHINE

To connect the batteries you must:

1. Make sure the dirty water recovery tank is empty; if necessary, empty it completely
2. Make sure the switch is in the OFF position
3. Take the machine to the designated machine storage place

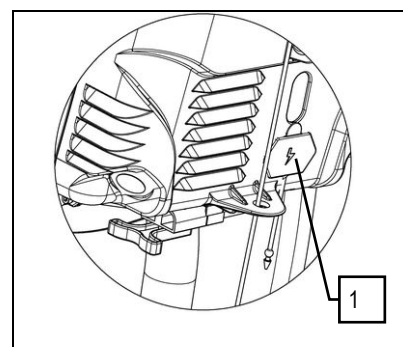


ATTENTION: park the machine indoors, on a flat and level surface; near the machine there must be no objects that could either damage it, or be damaged through contact with it

4. Remove the protective cap from the battery charger connector socket on the back of the machine (1)
5. Plug the battery charger cable (supplied with the machine) into the freed socket
6. Plug the battery charger cable into the mains socket
7. Follow the instructions in the enclosed booklet for the correct use of the battery charger, located inside the casing that covers the electrical system



ATTENTION: If one of the three LEDs flashes refer to the battery charger manual supplied with the machine



ATTENTION: The machine is equipped with an automatic system that disconnects the power supply from the electrical system while the batteries are being recharged

ATTENTION: In order not to cause permanent damage to the batteries, it is essential to avoid their complete discharge: arrange the recharge within a few minutes of the switching on of the "discharged batteries" blinking light.

ATTENTION: Never leave the batteries completely flat, even if the machine is not being used.

ATTENTION: For the daily recharging of the batteries, you must fully respect the indications provided by the manufacturer or retailer. all installation and maintenance operations must be carried out by specialised personnel.

ATTENTION: carefully read the use and maintenance manual of the charger that is delivered inside the bag containing this instruction booklet.

ATTENTION: Before inserting the battery charger power cable into the socket, verify that there is no condensate or other forms of liquids.



ATTENTION: Danger of gas exhalation and leakage of corrosive liquids.



ATTENTION: Danger of fire: Keep naked flames at a safe distance.



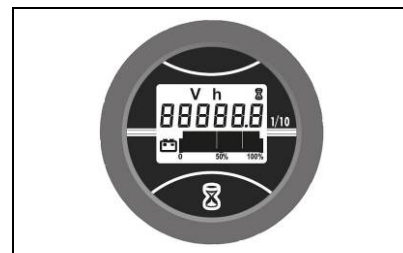
MACHINE PREPARATION

11. DIGITAL HOUR METER (B VERSIONS)

On the upper part of the display, you will see the total operating time. The line visualised shows the operating hours; the number consists of five figures, plus one figure after the point "." to show the tenth of an hour.

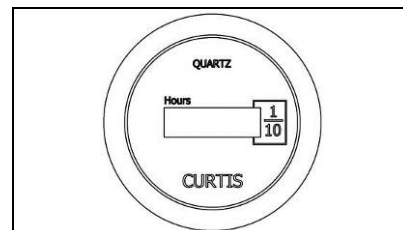


ATTENTION: During the operation of the hour meter, the "hour glass" symbol will flash.



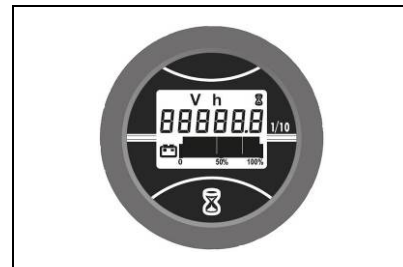
12. DIGITAL HOUR METER (E VERSION)

On the upper part of the display, you will see the total operating time. The line visualised shows the operating hours; the number consists of five figures, plus one figure after the point "." to show the tenth of an hour.



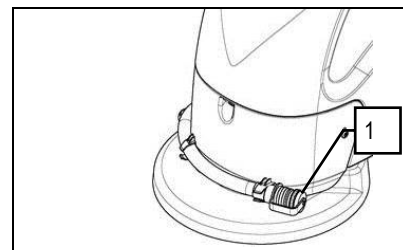
13. BATTERY CHARGE LEVEL INDICATOR (B VERSION)

On the lower part of the display, you can see the battery charge level. When the batteries fitted in the machine are fully charged, the line at the bottom consists of nine illuminated indicator bars. As the batteries gradually run down, the indicator bars are no longer illuminated. When the battery "critical charge" threshold is reached, the last indicator bar flashes for about 20 seconds, after which the "battery" symbol begins to flash.



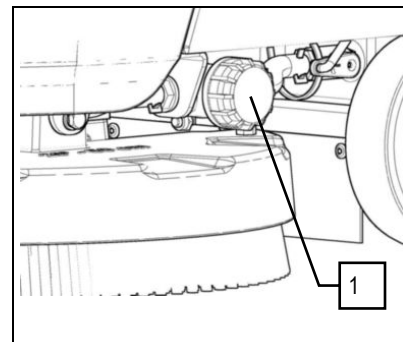
14. RECOVERY TANK

Make sure the dirty water recovery tank is empty; if necessary, empty it completely. Check the drainage tube cap (1) - in the front part of the machine - is correctly closed and fitted.

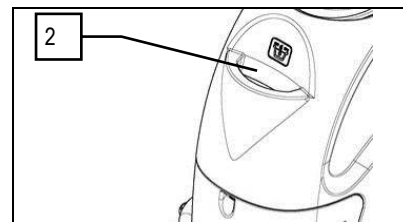


15. SOLUTION TANK

The dirty water recovery tank must be completely emptied each time the solution tank is filled. Make sure the solution filter cap (1), located at the front left of the machine (in its working direction), is properly closed.



Check the solution filter (2) in the filling nozzle - in the front part of the machine - is correctly positioned.



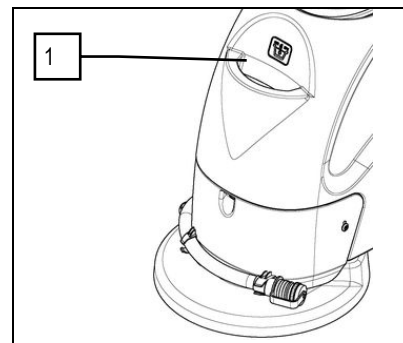


PREPARATION OF MACHINE

16. FILLING THE SOLUTION TANK

The solution tank can be filled in two different ways:

1. with a rubber tube, or buckets of water, using the filling nozzle (1) on the front part of the solution tank

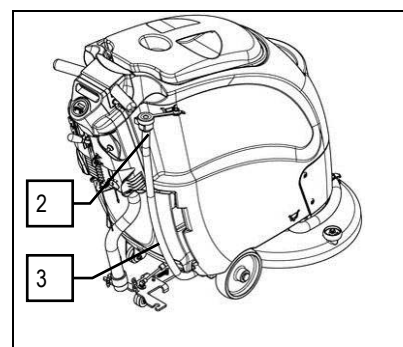


2. with a rubber tube, using the rubber cap (2) on the rear part of the solution tank.



ATTENTION: make sure you keep the cap higher than the front filling nozzle.

By means of the transparent tube (3) and the level notches on the rear part of the solution tank, you can see how much water is in the tank.



17. DETERGENT SOLUTION

Fill it with clean water at a temperature not exceeding 50°C. The solution tank has a maximum capacity of about 35 litres. Add the liquid detergent to the tank in the concentration and manner indicated on the detergent manufacturer's label. The formation of excess foam could damage the vacuum motor, so use only the minimum amount of detergent that is necessary.



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



ATTENTION: always use low-foam detergent. To avoid the production of foam, put a minimum quantity of antifoam liquid in the recovery tank before starting to clean. Do not use pure or basic acids.



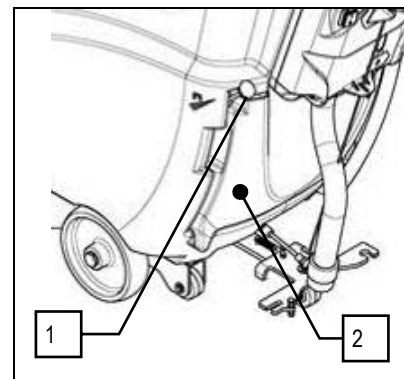
PREPARATION OF MACHINE

18. REGULATING THE DETERGENT

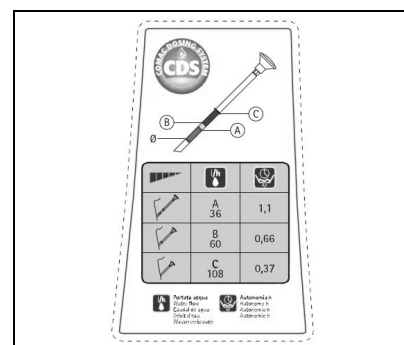
To regulate the flow of detergent solution, push the tap rod lever (1) on the rear left side of the solution tank (push the lever to increase the flow of solution onto the brush); when you press the dead man's levers, the brush is enabled and the machine begins to move. During the first few meters check that the amount of solution is sufficient to wet the floor, but not excessive to exit the splash guard. Bear in mind that the correct amount of solution always depends on the nature of the floor, the degree of dirt and the forward speed.



ATTENTION: Make sure the solution tap is turned off by pulling the tap rod lever (1) after using the machine; otherwise, the detergent solution will continue coming out (versions without the optional solenoid valve kit).



The solution flow can be mechanically limited by modifying the position of the elastic ring (3) on the lever (1). To do this, remove the rear casing (2). The detergent solution capacity varies according to the three steps indicated on the label on the rear of the machine.



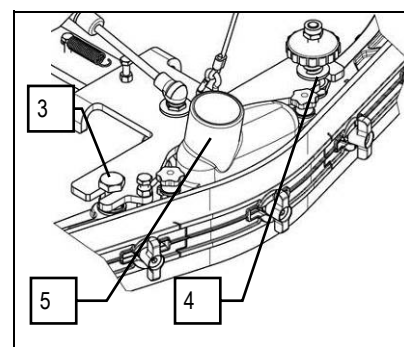
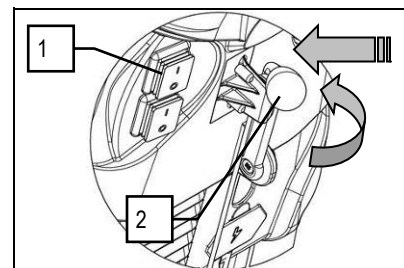
19. ASSEMBLING THE SQUEEGEE

The squeegee, that for reasons of packaging comes disassembled from the machine, must be assembled while assembling the machine. Proceed as follows for assembly:

1. Check the main machine switch (1) is set to "OFF"
2. Check the squeegee connection is raised from the floor; if necessary, lift it by means of lever (2)
3. Lift the squeegee and fit the left stud (3) in the left-hand slot on the squeegee connection
4. Rotate the squeegee, then fit the right stud (4) in the right-hand slot on the squeegee connection, keeping the spring and washer above the connection. This can be simplified by first loosening the handwheel on the pin
5. Then re-tighten the handwheel to block the squeegee in place
6. Insert the suction tube (5) in the appropriate sleeve in the squeegee



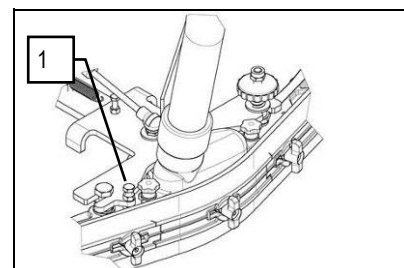
ATTENTION: these operations must be carried out using protective gloves to avoid any possible contact with the edges or tips of metal objects.



20. SQUEEGEE INCLINATION

During working operation, the rear rubber blade is slightly tilted backwards (by about 5mm) in a uniform way for its whole length.

If it is necessary to increase the bend of the rubber in the central part, you must tilt the squeegee backwards, rotating the adjuster screw (1) clockwise.





PREPARATION OF MACHINE

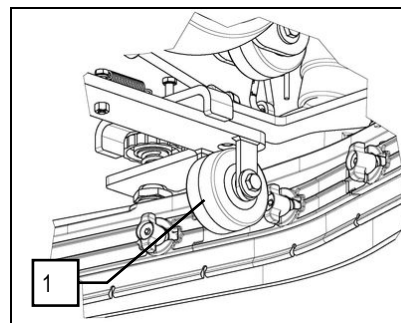
21. ADJUSTING THE SQUEEGEE SUPPORT HEIGHT

The height of the squeegee must be adjusted on the basis of the state of wear and tear of the rubber blades.

Carry out the following operations for adjustment:

1. Unscrew the locking nut
2. Raise or lower the wheel (1) by sliding it on the slot of the support
3. Block it by tightening the locking nut once the required height is reached.

NB: to facilitate the operation, completely lower the squeegee and put a spacer of a few millimetres (2 to 4 mm depending on the type of rubber) under the wheel.

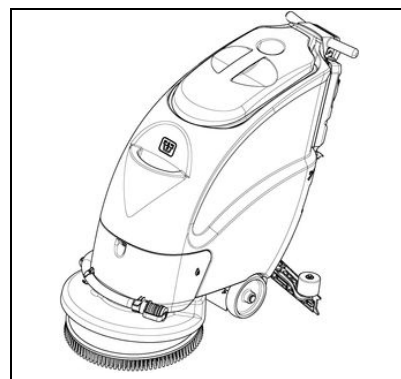


22. DISC BRUSH ASSEMBLY

1. Make sure the dirty water recovery tank is empty; if necessary, empty it completely
2. Connect the battery connector to the machine connector (battery-operated version)
3. Connect the extension cable to the electric system cable, then connect the extension cable to the mains socket (electric version)
4. Press the main switch to "ON"



ATTENTION: During this operation, check there are no people or objects near the brush.



5. Position the brush on the floor, near the machine brush head
6. Raise the brush head by using the handlebars as a lever
7. Place the brush head above the brush
8. Pulse press the dead man's lever to engage the brush to the brush head



WARNING! During this operation, check there are no people or objects near the brushes.



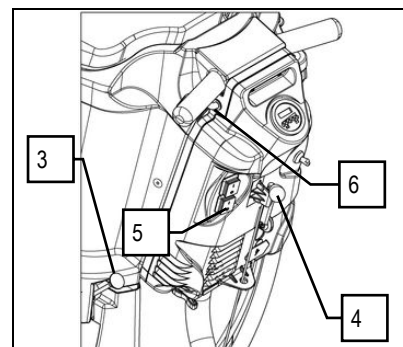
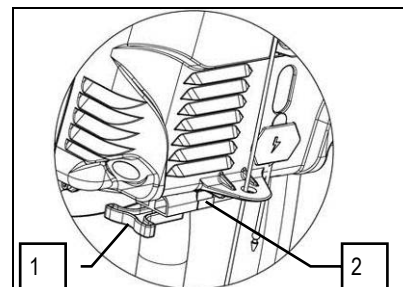
ATTENTION: users are advised to always wear protective gloves, to avoid the risk of serious injury to hands.



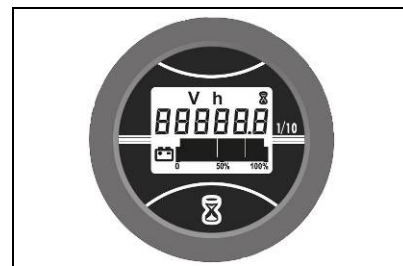
WORK

23. PREPARING TO WORK

1. Make sure the dirty water recovery tank is empty; if necessary, empty it completely
2. Check that the main switch of the machine is set to "OFF"
3. Check the brush is correctly inserted
4. Connect the battery connector cable (1) to the main machine connector cable (2) (battery-operated versions)
5. Connect the extension cable to the electric system cable, then connect the extension cable to the mains socket (electric version)
6. Press the main switch to "ON". Immediately, on the instrument panel, the display will turn on indicating the charge level of the batteries
7. Adjust the amount of detergent solution by means of the lever (3) on the back of the machine
8. Lower the squeegee by releasing lever (4) from its seat
9. Activate the suction motor via the relevant switch (5) on the command panel in the rear part of the machine
10. At this point, by using the dead man's lever (6) that activates the brushes, the machine can work efficiently until the detergent solution runs out or the batteries run flat

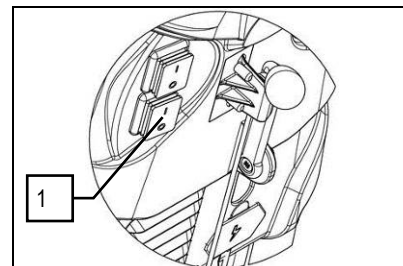


When the battery charge level is almost fully run down, the "battery" symbol will start flashing on the display and the brush motor will switch off automatically, but a residual charge will still allow you to complete the drying operation the batteries must be recharged as soon as possible.



24. OVERFLOW DEVICE

The machine is NOT equipped with an overflow device, because the capacity of the dirty water recovery tank is greater than the capacity of the solution tank. In particular cases, there is a mechanical device (float) on the rear wall of the recovery tank; when the dirty water level is too high, this device shuts off the air to the suction motor in order to protect it - in this case, the noise made by the suction motor will be deeper. Turn off the suction motor via the switch (1). Then empty the dirty water recovery tank by means of the special drainage tube. It is good practice, when restoring the level of the solution tank, to empty the dirty water recovery tank via the special drainage tube.



25. FORWARD MOVEMENT

The traction of these machines is obtained by means of the brush which, working with the right weight distribution, is able to drag the machine forwards.



ATTENTION: when making even brief reverse movements, verify that the squeegee is raised.



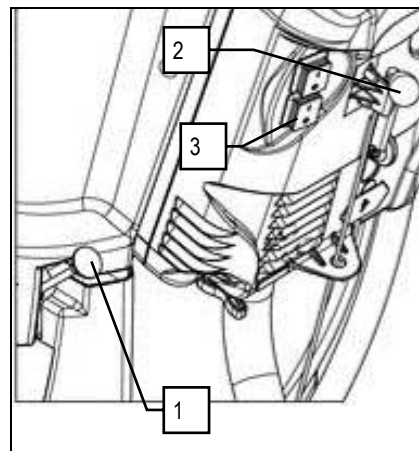
AT THE END OF THE WORK

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

1. Turn off the detergent solution tap (1) on the rear part of the machine
2. Lift the squeegee by inserting the squeegee cable tie-rod (2) in its seat on the back of the machine
3. Deactivate the suction motor via the relevant switch (3) on the command panel in the rear part of the machine
4. Disconnect the machine battery connector (battery-operated version)
5. Disconnect the power cable from the mains socket (electric versions)
6. Take the machine to the designated place for draining off the dirty water



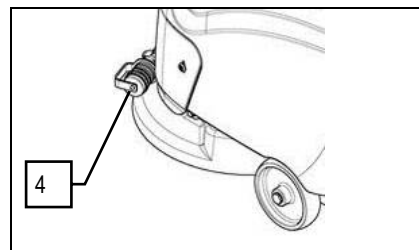
ATTENTION: Make sure the solution tap is turned off after using the machine; otherwise, the detergent solution will continue coming out (versions without the optional solenoid valve kit).



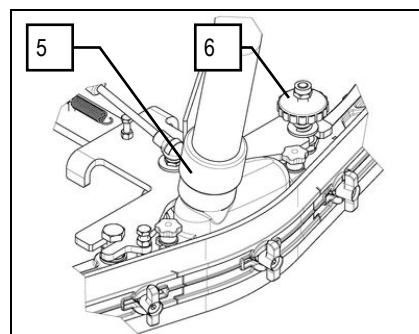
7. Disconnect the tube (4) from its seat, unscrew the drainage cap and empty the dirty water recovery tank



ATTENTION: This operation must be carried out wearing gloves to protect against contact with dangerous solutions.



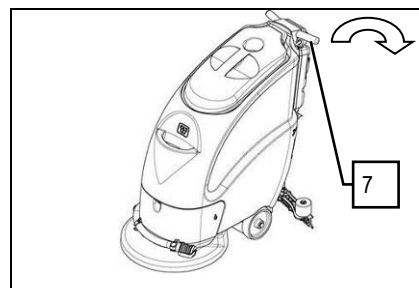
8. Slide the vacuum tube (5) from the squeegee sleeve
9. Remove the squeegee from its support arm by loosening the handwheel (6)
10. Clean the squeegee unit and the rubber blades thoroughly with a jet of water
11. After cleaning the squeegee and rubbers, replace the squeegee on the initial support, firstly inserting the left pin of the squeegee in the left slot of the arm, then the right pin in the right slot, being careful to keep the spring and washer on the plate of the arm. This can be simplified by first loosening the handwheel on the pin. Then re-tighten the handwheel to block the squeegee in place
12. Finally, insert the squeegee tube in the special sleeve



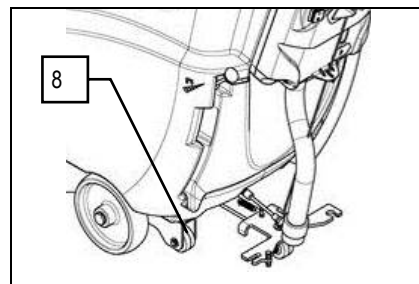
13. Park the machine in a closed place, on a flat and level surface, where it cannot cause harm to people or damage to other property, but also be protected from any accidental fall of objects.



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



ATTENTION: To bring the machine to its idle position, tilt it backwards by pressing on the handles (7) until the small wheel (8) is resting on the floor.



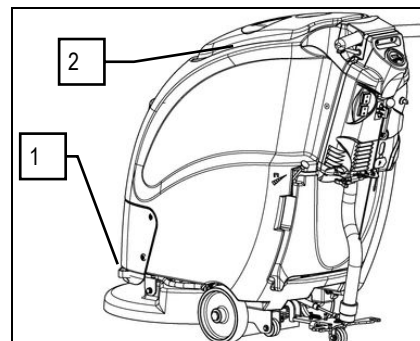


DAILY MAINTENANCE

PERFORM ALL MAINTENANCE OPERATIONS IN SEQUENCE

26. CLEANING THE DIRTY WATER RECOVERY TANK

1. Disconnect the tube (1) from its seat, unscrew the drainage cap, and empty the dirty water recovery tank
2. Remove the cover from the dirty water recovery tank (2)
3. Clean and rinse the recovery tank and the suction pipe (connecting pipe between the squeegee and the tank).
4. Replace the cap on the drainage tube, and the cover on the dirty water recovery tank



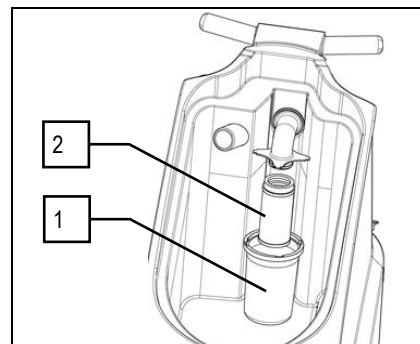
ATTENTION: Before performing any type of maintenance, turn the main switch to "OFF" and disconnect the battery connector of the machine (battery version), disconnect the power cord from the mains socket (electric version).



ATTENTION: This operation must be carried out wearing gloves to protect against contact with dangerous solutions.

27. CLEANING THE SUCTION MOTOR FILTER

1. Remove the cover from the dirty water recovery tank
2. Make sure the dirty water tank is empty; if necessary, empty it
3. Remove the suction filter protection (1) by rotating it clockwise
4. Remove the suction filter (2) from its seat
5. Use a jet of water to clean the walls and base of the filter
6. Reassemble all the elements



ATTENTION: These operations must be carried out using gloves to protect against contact with dangerous solutions.



ATTENTION: Before performing any type of maintenance, turn the main switch to "OFF" and disconnect the battery connector of the machine (battery version), disconnect the power cord from the mains socket (electric version).

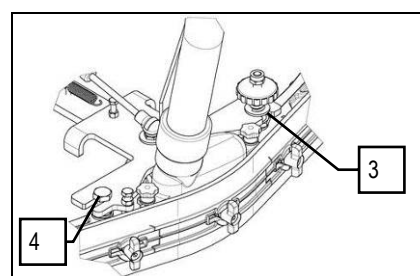
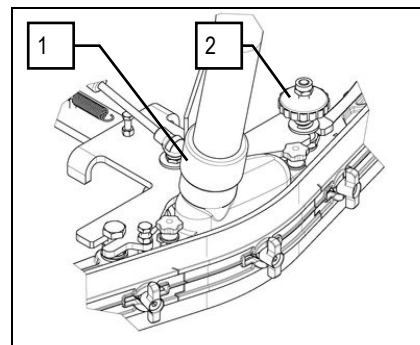


DAILY MAINTENANCE

28. CLEANING THE SQUEEGEE

The careful cleaning of the whole vacuum unit ensures better drying and cleaning of the floor as well as a longer suction motor life. Proceed as follows for cleaning:

1. Check that the main switch of the machine is set to "OFF"
2. Make sure the battery connector is disconnected from the machine connector (battery-operated versions)
3. Make sure the power supply cable is disconnected from the mains socket
4. Remove the suction hose from the squeegee nozzle (1)
5. Turn knob (2) clockwise
6. Extract the pin (3) from the slot on the squeegee connector
7. Extract the pin (4) from the slot on the squeegee connector
8. Clean well both the squeegee and the rubbers with a jet of water



If the front squeegee rubber is worn, vacuum will be poor and the machine will not dry the floor properly; in this case replace it (see section REPLACEMENT OF FRONT SQUEEGEE RUBBER).

If the rear squeegee rubber is worn, vacuum will be poor and the machine will not dry the floor properly; in this case replace it (see section REPLACEMENT OF REAR SQUEEGEE RUBBER).



ATTENTION: Before performing any type of maintenance, turn the main switch to "OFF" and disconnect the battery connector of the machine (battery version), disconnect the power cord from the mains socket (electric version).



ATTENTION: These operations must be carried out using gloves to protect against contact with dangerous solutions.

29. CLEANING THE SOLUTION TANK

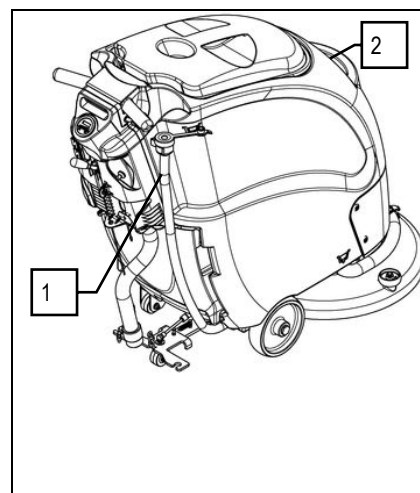
1. Turn off the detergent solution tap.
2. Disconnect the clean water drainage tube (1) from its housing on the back right side of the machine, and empty the tank
3. Remove the clean water filling filter (2) from the filling nozzle of the solution tank
4. Clean the clean water filling filter
5. Rinse the inside of the tank with a jet of water



ATTENTION: Before performing any type of maintenance, turn the main switch to "OFF" and disconnect the battery connector of the machine (battery version), disconnect the power cord from the mains socket (electric version).



ATTENTION: These operations must be carried out using gloves to protect against contact with dangerous solutions.

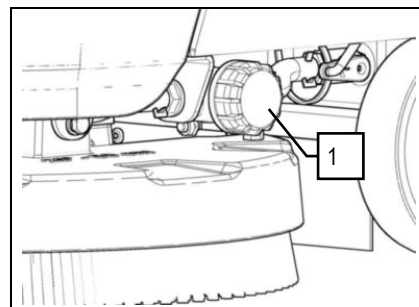




DAILY MAINTENANCE

30. CLEANING THE SOLUTION FILTER

1. Make sure the dirty water recovery tank is empty; if necessary, empty it completely
2. Check that the main switch of the machine is set to "OFF"
3. Disconnect the battery connector cable from the machine connector cable (battery-operated versions)
4. Disconnect the power cable from the mains socket (electric versions)
5. Turn off the detergent solution tap
6. Unscrew the cap (1) of the solution filter
7. Remove the solution filter cartridge and clean it under running water
8. Reassemble all the elements

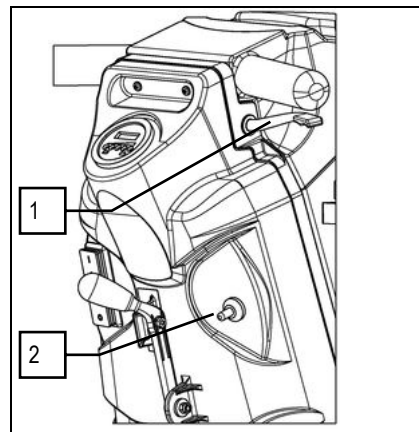


31. DISASSEMBLING THE DISC BRUSHES (B VERSION)

1. Activate the main switch by turning it to "ON"
2. Lift the machine by means of the handlebars
3. Press the dead man's levers (1)
4. Activate the bipolar switch by pulling the lever (2) down



ATTENTION: During this operation, check there are no people or objects near the brush.

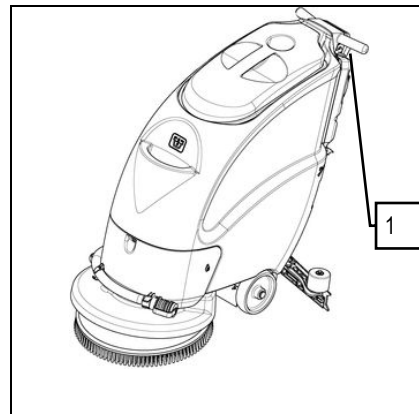


32. DISASSEMBLING THE DISC BRUSHES (E VERSION)

5. Activate the main switch by turning it to "ON"
6. Lift the machine by means of the handlebars
7. Pulse press the dead man's levers (1)



ATTENTION: During this operation, check there are no people or objects near the brush.



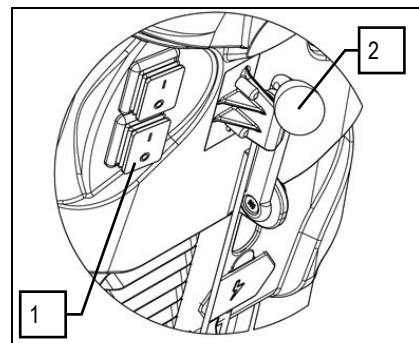


WEEKLY MAINTENANCE

33. CLEANING THE VACUUM HOSE

Whenever vacuum seems to be unsatisfactory, check that the vacuum hose is not obstructed. If necessary clean with a jet of water as follows:

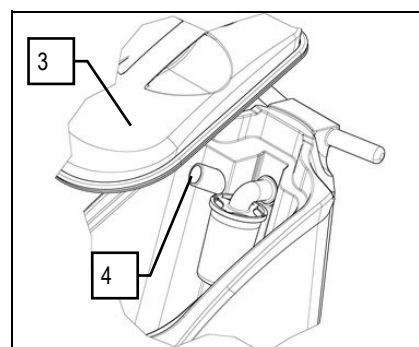
1. Deactivate the main switch (1) by turning it to "OFF"
2. Lift the squeegee by means of the cable control lever (2)
3. Remove the suction hose from the squeegee nozzle
4. Make sure the dirty water recovery tank is empty; if necessary, empty it completely
5. Remove the cover from the dirty water recovery tank (3)
6. Clean the tube with a water jet inserted from the side where it enters the tank (4)
7. Reassemble all the elements



ATTENTION: Before performing any type of maintenance, turn the main switch to "OFF" and disconnect the battery connector of the machine (battery version), disconnect the power cord from the mains socket (electric version).



ATTENTION: These operations must be carried out using gloves to protect against contact with dangerous solutions.





EXTRAORDINARY MAINTENANCE

34. REPLACING THE FRONT SQUEEGEE RUBBER

Vacuum will be poor and the machine will not dry perfectly if the front squeegee rubber is worn. Proceed as follows to replace it:

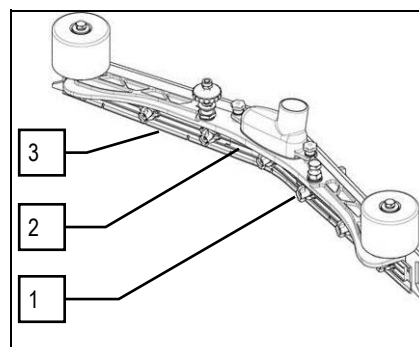
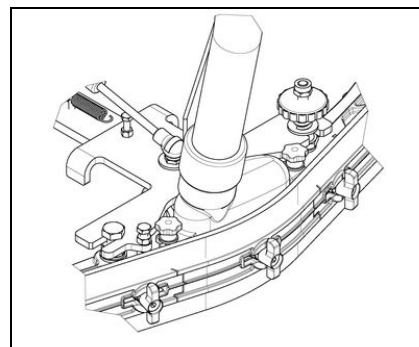
1. Deactivate the main switch by turning it to "OFF"
2. Remove the squeegee from its support arm by unscrewing the handwheel
3. Turn the wing nuts (1) to the horizontal position
4. Remove the front rubber-pressing blades (2)
5. Remove the rubber (3) and replace it
6. To replace the rubber, proceed in reverse order



ATTENTION: Before performing any type of maintenance, turn the main switch to "OFF" and disconnect the battery connector of the machine (battery version), disconnect the power cord from the mains socket (electric version).



ATTENTION: These operations must be carried out using gloves to protect against contact with dangerous solutions.



35. REPLACING THE REAR SQUEEGEE RUBBER

If the squeegee rear rubber blade is worn and does not dry well, it is possible to change the drying edge using one of the 4 edges of the rubber.

This operation can be done both with a squeegee fitted or removed as follows:

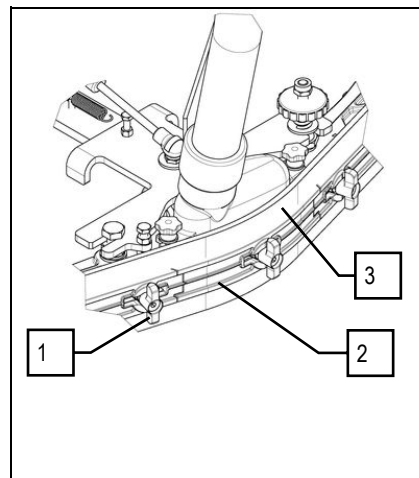
1. Deactivate the main switch by turning it to "OFF"
2. Turn the wing nuts (1) to the horizontal position
3. Remove the rear rubber-pressing blades (2)
4. Remove the rubber (3) and replace it
5. Adjust the height of the squeegee depending on the rubber (see "ADJUSTING THE SQUEEGEE SUPPORT HEIGHT")



ATTENTION: Before performing any type of maintenance, turn the main switch to "OFF" and disconnect the battery connector of the machine (battery version), disconnect the power cord from the mains socket (electric version).



ATTENTION: These operations must be carried out using gloves to protect against contact with dangerous solutions.

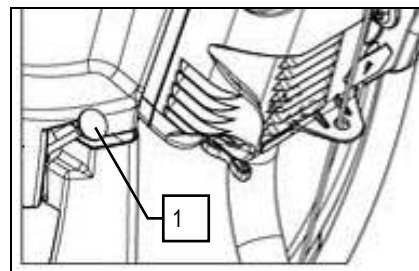




TROUBLESHOOTING

36. INSUFFICIENT WATER ON THE BRUSHES

1. Check there is water in the solution tank
2. Check the tap (1) is turned on
3. Clean the solution filter cartridge (behind the brush head casing - optional)



37. THE SQUEEGEE DOES NOT DRY PERFECTLY

1. Check the squeegee is clean
2. Check the squeegee settings (see "MACHINE PREPARATION")
3. Clean the entire vacuum unit (see "WEEKLY MAINTENANCE")
4. Replace the rubber blades, if worn

38. THE MACHINE DOES NOT CLEAN WELL

1. Check the state of wear and tear of the brush and, if necessary, replace it. The brush should be changed when the bristles are about 15mm long. To replace them, see "REPLACING THE BRUSH", or "DISASSEMBLING THE BRUSH" and "ASSEMBLING THE BRUSH". Working with over-worn brushes may cause damage to the floor.
2. Use a different kind of brush to the one fitted as standard. For cleaning floors where the dirt is particularly resistant, we recommend the use of special brushes supplied upon request and according to needs (see "CHOOSING AND USING THE BRUSHES").

39. EXCESSIVE FOAM PRODUCTION

Check that a low foam detergent has been used. If necessary, add a small quantity of antifoam liquid to the recovery tank.

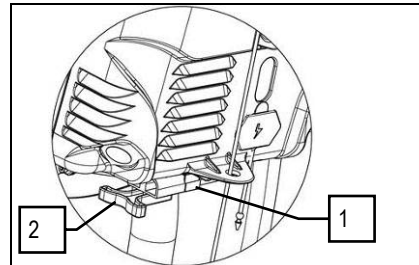
Remember that, when the floor is not very dirty, more foam is generated. In this case the detergent solution should be more diluted.

40. THE VACUUM CLEANER DOES NOT FUNCTION

1. Check whether the dirty water recovery tank is full and, if necessary, empty it
2. Check the float in the dirty water recovery tank is working well (see also "CLEANING THE DIRTY WATER RECOVERY TANK" in the chapter "DAILY MAINTENANCE")

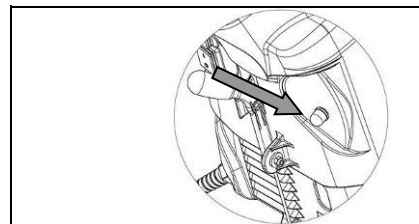
41. THE MACHINE DOES NOT START

1. Check the machine connector (1) is connected to the batteries (2) (battery-operated version)
2. Check the power supply cable is connected to the mains socket (electric version)
3. Check the main switch is "ON"
4. Check that batteries are charged



42. ELECTRIC SYSTEM SAFETY (E Version)

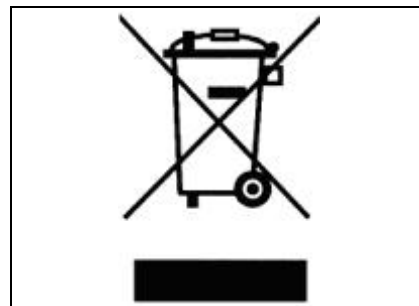
The machine is fitted with a thermal trip unit with manual reset, located in the rear part of the machine near the main switch. The brush motor is reset by pressing the thermal trip unit button. If the machine stops repeatedly in a short space of time, you must contact the FIMAP technical assistance centre.





DISPOSAL

Proceed with scrapping the machine in accordance with the waste disposal regulations in force in the country in which the machine is being used.





CHOOSING AND USING THE BRUSHES

POLYPROPYLENE BRUSH (PPL)

Used on all types of floors. Good resistance to wear and tear, and hot water (no greater than 60°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:

1. 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.
2. 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 disc to be perfectly centred and held without any risk of it becoming detached. This type of holder is especially suitable for machines with several brushes, where it is difficult to centre the abrasive discs.

TABLE FOR CHOOSING THE BRUSHES

Machine	No. Br.	Code	Type of bristles	Ø Bristles	Ø Br.	Length	Notes
L20 B-E	1	404653	PPL	0.9	508	-	BRUSH
		404654	PPL	0.3	508	-	BRUSH
		405631	PPL	0.6	508	-	BRUSH
		405632	ABRASIVE	1	508	-	BRUSH
		405527	-	-	500	-	PAD HOLDER



EC DECLARATION OF CONFORMITY

The undersigned manufacturer:
COMAC S.p.A.
Via Maestri del Lavoro n.13
37059 Santa Maria di Zevio (VR)
declares under its sole responsibility that the products

FLOOR SCRUBBING MACHINE mod. L20 2014 B CB

comply with the provisions of Directives:

2006/42/EC: Machinery Directive.
2014/35/EU: Low Voltage Directive.
2014/30/EU: Electromagnetic compatibility directive.

They also comply with the following standards:

EN 60335-1:2012/A11:2014
EN 60335-2-72:2012
EN 12100:2010
EN 60335-2-29:2004/A2:2010
EN 61000-6-2:2005/AC:2005
EN 61000-6-3:2007/A1:2011/AC:2012
EN 61000-3-2:2014
EN 61000-3-3:2013
EN 55014-1:2006/A1:2009/A2:2011
EN 55014-2:2015
EN 62233:2008/AC:2008

The person authorized to compile the technical file:

Mr. Giancarlo Ruffo
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37059 Santa Maria di Zevio (VR) - ITALY

Santa Maria di Zevio, 20/01/2020

Comac S.p.A.
Legal representative
Giancarlo Ruffo



The undersigned manufacturer:
COMAC S.p.A.
Via Maestri del Lavoro n.13
37059 Santa Maria di Zevio (VR)
declares under its sole responsibility that the products

FLOOR SCRUBBING MACHINE mod. L20 2014 B

comply with the provisions of Directives:

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

They also comply with the following standards:

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

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The undersigned manufacturer:
COMAC S.p.A.
Via Maestri del Lavoro n.13
37059 Santa Maria di Zevio (VR)
declares under its sole responsibility that the products

FLOOR SCRUBBING MACHINE mod. L20 E 230V - L20 E 110V

comply with the provisions of Directives:

2006/42/EC: Machinery Directive.
2014/35/EU: Low Voltage Directive.
2014/30/EU: Electromagnetic compatibility directive.

They also comply with the following standards:

EN 60335-1:2012/A11:2014
EN 60335-2-72:2012
EN 12100:2010
EN 61000-3-2:2014
EN 61000-3-3:2013
EN 55014-1:2006/A1:2009/A2:2011
EN 55014-2:2015
EN 62233:2008/AC:2008

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