USE AND MAINTENANCE

FIMAP®

MINNY 20 – 20 CB

ED. 10-2007 EN

Doc. 10006510

The contained descriptions in the present publication are not binding. The company therefore reserves itself the right to bring in whatever moment possible organs changes, details or supplies of accessories, that it holds convenient for an improvement, or for any demand of constructive or commercial character.
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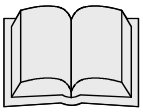
Symbols used in the manual

Symbol of the book open with letter i
It points out that this document is a manual of instructions.



Symbol of the open book
It points out to the operator to read the manual of use before using the machine.

Symbol of warning
Read attentively the sections preceded by this symbol for the safety of the operator and the machine.

TABLE OF CONTENTS

Receiving the machine

Immediately check, when receiving the machine, that all the material indicated on delivery documents has been received and also that the machine has not been damaged in transit. If it has been damaged, this damage must be immediately reported to the shipper and also to our customer service department. Only acting promptly in this manner will make it possible to receive missing material and to be compensated for damage.

Foreword

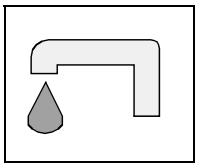
This is a floor scrubbing machine that is able to clean any type of floor by using the mechanical action of the rotating brush and the chemical action of a water-detergent solution. As it moves forward it also gathers up the dirt removed and the detergent solution that has not been absorbed by the floor.

The machine must only be used for this function. Even the best machines will only operate efficiently and work with profit if they are used properly and kept in perfect operating order. Read this instruction booklet carefully and consult it every time problems arise with machine operation. Remember that, if necessary, our service organization, in collaboration with our dealers, is always available for helpful hints or direct intervention.

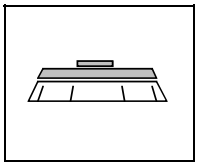
Identification plate

TECHNICAL DESCRIPTION	U/M	Minny 20	Minny 20 CB
Working width	mm	500	500
Squeegee width	mm	660	660
Working capacity, up to	m^2/h	1750	1750
Brush diameter	mm	500	500
Brush revolutions	RPM	140	140
Pressure on the brush	Kg	25	25
Brush motor, supply voltage	V	24	24
Brush motor, rated power	W	400	400
Drive type		Semi-aut.	Semi-aut.
Maximum slope		2%	2%
Suction motor, supply voltage	V	24	24
Suction motor, rated power	W	410	410
Suction unit vacuum	mbar	120	120
Solution tank	l	26	26
Recovery tank	l	26	26
Machine length	mm	1000	1000
Machine height	mm	1005	1005
Machine width (without squeegee)	mm	500	500
Battery charter	V/Ah		24/70
Batteries	V/Ah	24/70	24/70
Batteries weight	kg	55	55
Batteries compartment	mm	175x335x255 (2x)	175x335x255 (2x)
Machine weight (empty and without batteries)	kg	65	66
Sound pressure level (in compliance with IEC 704/1)	dB (A)	71	71
Vibration level	m/s^2	0,004	0,004

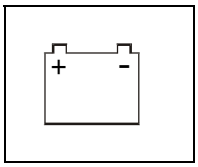
SYMBOLS USED ON THE MACHINE



Cock symbol
Used to indicate the cock opening solenoid valve switch



Brush symbol
Used to indicate the main/brush motor switch



Battery symbol

SYMBOLS USED IN THE MANUAL

Indicates the waste disposal.
Keep the regulations. .

GENERAL SAFETY REGULATIONS

Follow these regulations carefully to avoid harm to the operator and damage to the machine.

- ❒ Read the labels on the machine with attention. Never cover them for any reason and always immediately replace them if they are damaged.
- ❒ The machine must be used exclusively by authorized and trained personnel.
- ❒ When operating the machine be careful of other persons and of children in particular.
- ❒ The machine is not suitable for cleaning carpets.
- ❒ Never mix different types of detergents: this could generate noxious gases.
- ❑ Never set containers of liquid on the machine.
- ❒ Storage temperature must be between -25°C and +55°C, do not store outdoors in the damp.
- ❑ Operating conditions: room temperature between 0°C and 40°C with relative humidity between 30 and 95%.
- ❒ Never use the machine in an explosive environment.
- ❑ Never use the machine to transport goods.
- ❒ Never use acid solutions which could damage the machine and be hazardous for persons.
- ❑ Avoid running the brushes with the machine stopped: this could damage the floor.
- ❑ Never suck flammable liquids.
- ❑ Never use the appliance to gather dangerous powders.
- ❒ Use a powder fire extinguisher in case of fire. Do not use water.
- ❒ Do not hit against shelving or scaffolding when there is a danger of falling objects.
- ❒ Adapt operating speed to adherence conditions
- ❒ Do not use the appliance on surfaces with a slope higher than the one indicated on the name-plate.
- ❑ The machine must perform washing and drying operations simultaneously. Any other operations must be done in zones where the presence of unauthorized persons is prohibited. Signal wet floors with suitable signs.
- ❑ Whenever the machine has operating troubles make sure that these are not due to insufficient ordinary maintenance. If this is not the case then enquire with a **FIMAP** service center.
- ❒ When replacing parts ask for ORIGINAL spare parts from an Authorized **FIMAP** Dealer and/or Retailer.
- ❒ Always turn the machine off and disconnect the battery connector when performing maintenance.
- ❒ Warning: restore all electrical connections after performing maintenance.
- ❑ Never remove guards that require tools for removal.
- ❒ Never wash the machine with direct or pressurized jets of water or with corrosive substances.
- ❒ Have a **FIMAP** service center check the machine every year or after 200 hours.
- ❒ Avoid clogging the solution tank filter: do not fill with detergent solution a long time before starting to use the machine.
- ❒ Before you use the machine make sure that all doors and covers are positioned as shown in this operating and maintenance manual.
- ❒ Dispose of consumables in accordance with existing laws.
- ❒ When, after years of precious work, a **FIMAP** machine is ready to be retired all of its component materials must be properly disposed of: they contain oils and electronic components. Remember that the machine itself was built using totally recyclable materials
- ❒ Use only the brushes supplied with the appliance or those specified in the instruction manual (page 21). Use of other brushes may jeopardize safety.
- ❒ The battery must be removed from the appliance before it is disposed of.
- ❒ Make sure the recovery tank is empty before you remove it.
- ❒ The machine is not suitable for use by children or persons with physical, mental or sensorial handicaps or persons who lack the necessary experience and knowledge unless they are supervised and trained on how to use the machine by a person who is responsible for their safety.
- ❒ Children should be superintended to make sure they do not play with the appliance.
- ❒ For CB models with battery charger:
  - The outlet for the battery charger power supply cable must have a proper ground.
  - Avoid damaging the battery charger power supply cable by crushing, bending or stressing it.
  - Immediately turn to a **FIMAP** Service Center when you find that the battery charger power supply cable has been damaged.
  - The appliance must always be disconnected from the power supply when the battery is being removed.
  - The battery and the battery charger in the appliance must be disposed of in a safe manner, complying rigorously with current laws.

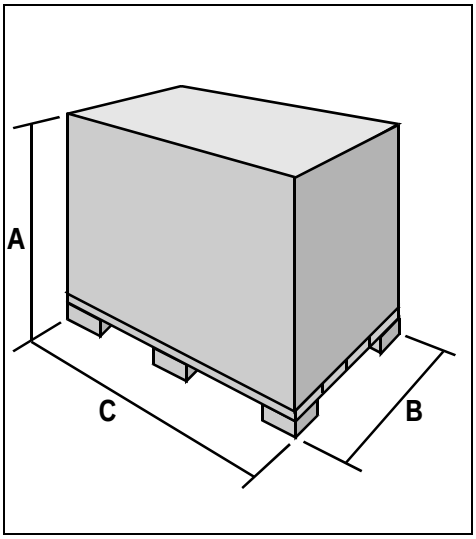
PREPARING THE MACHINE

1. HANDLING THE PACKAGED MACHINE

Figure 1
The machine is contained in a specifically designed package with platform for being handled by fork lifts. No more than two packages can be stacked.
Total weight is 80 kg (without batteries)

Package dimensions are:

A : 1240 mm
B : 660 mm
C : 1230 mm



2. HOW TO UNPACK THE MACHINE

Figure 2
1. Remove the outer package
2. The machine is strapped to the platform.
3. Remove the strap.

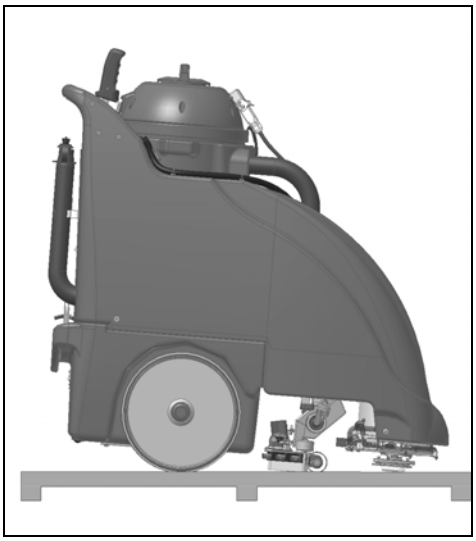


Figure 3
4. Keep the front of the machine slightly lifted and push counterclockwise release lever (1) and lower the side wheel, sliding support arm (2) until it locks at the bottom.
5. Perform the opposite procedure to lower the machine when working.

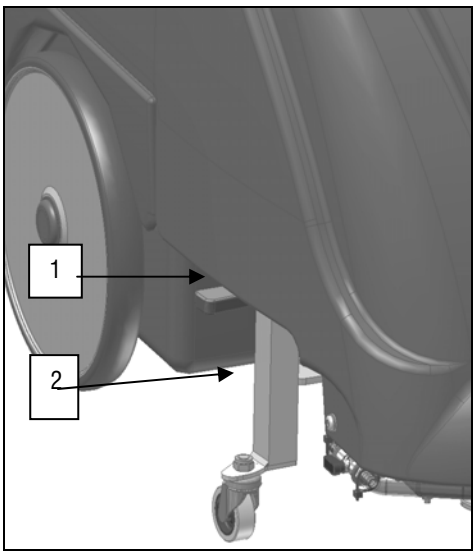


Figure 4

6. Check that the squeegee body is lifted. Otherwise use the control lever as described in the figure.

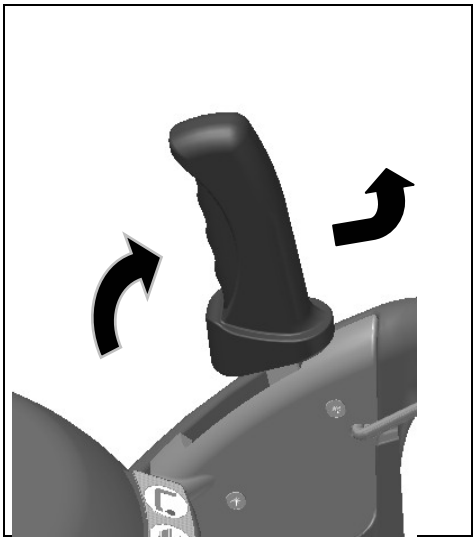
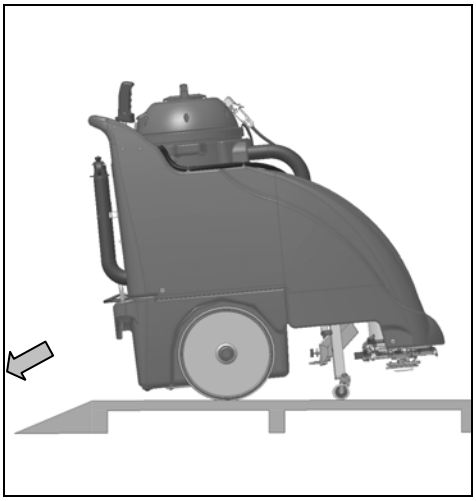


Figure 5

7. Use a ramp to lower the machine from the platform, pushing it in reverse. Avoid violent blows to the base.
8. Store the platform for any shipping needs.



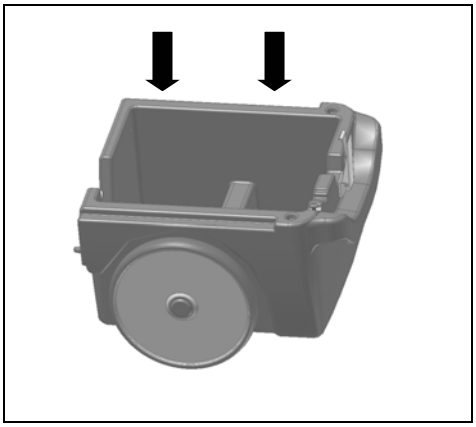
3. INSERTING THE BATTERIES IN THE MACHINE

Figure 6

Batteries must be housed in the battery compartment (Figure 6) provided under the tank. They must be handled using lifting equipment suitable both for their weights and for the hook-up system.

They must also comply with the requirements specified in CEI 21-5 standards.

WARNING: Comply scrupulously with the instructions given by the manufacturer or his retailer for daily battery charging and maintenance. All installation and maintenance procedures must be done by expert personnel. Danger of inhalation of gases and leakage of corrosive fluids. Danger of fire: do not approach with open flames.



PREPARING THE MACHINE

Figure 7

To insert the batteries proceed as follows:

1. Open the rear hook and pull out the battery compartment (1)
2. The machine is supported by stand (2) that automatically lowers when the battery compartment is removed
3. Check that the trestle is in the right position.

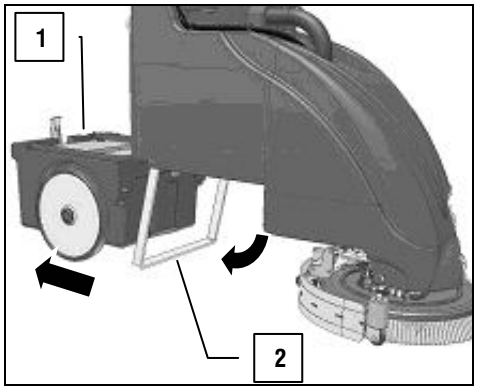
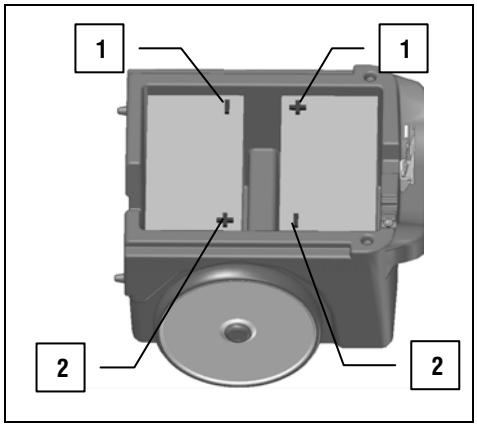


Figure 8

4. Put the batteries in place.
5. Connect the cable terminals with the connector in position 01 (fig. 8)
6. Connect the bridge cable terminals to position 02 (fig. 08).
7. Insert the battery compartment in its housing and block everything in place with the previously-actuated hook (fig. 7)



WARNING: This procedure must be performed by qualified personnel. Mistaken or imperfect connection of the cables on the batteries may cause severe damage to persons or property

4. RICARICA BATTERIE

Figure 9

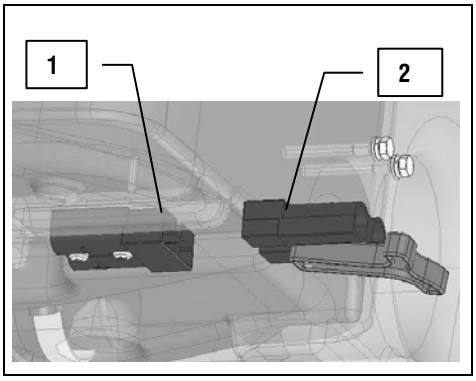
Perform a deep charge cycle before start using the machine.

If the batteries replacement needed be sure to install batteries suitable with battery charge (use only 12V AGM o Gel batteries).
After having turned off the machine, remove the protection lid and plug the power supply cable to the battery charger, then plug the power cable to the electric supply plug. To use properly the battery charger refer to the battery charger manual.

WARNING: The machine has an automatic system that remove the power supply to the electric plant of the machine when the batteries are in charging conditions.
WARNING: To not damage permanently the batteries you have to not discharge completely them to avoid a complete discharge. Recharge them as soon as the low battery level signal appear.
WARNING: Never left the battery totally discharged as well the machine will not be used.
WARNING: For the daily recharge of the batteries you need to follow scrupulously the manifacturer indications. All the installation and manintenance operations had to be performed by authorized personnel only. Gas leakage and acid leakage hazards. Fire hazard, don't approach flames.

5. CONNECTING THE BATTERY/SYSTEM CONNECTOR

Figure 11
Battery connector (2) must be connected to machine connector (1).



6. BATTERY CHARGE LEVEL GAUGE

Figure 12
The battery charge level gauge operates with a microprocessor. The lighted LEDs on the display give an approximate reading of the level of charge:

4 = maximum charge, **3** = 3/4 charge,
2 = 2/4 charge, **1** = 1/4 charge,
0= batteries discharged (flashing).

WARNING! The brush motor automatically turns off a few seconds after the flashing "0" appears. The remaining charge permits to finish drying before carrying out recharge

7. INSTALLING THE SQUEEGEE

Figure 13
Lower the squeegee support arm by pushing the control lever forward.

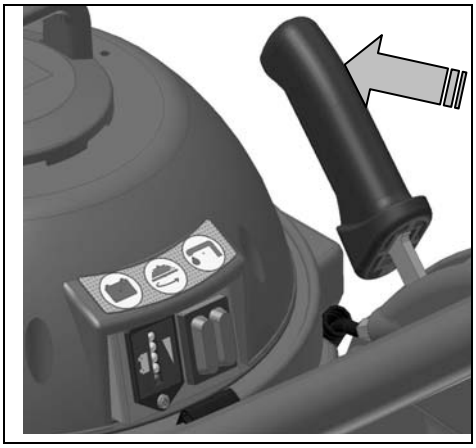
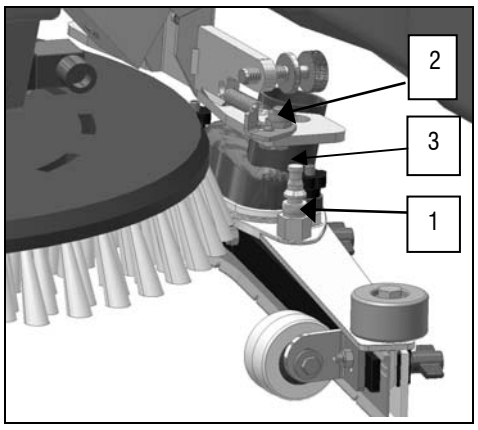
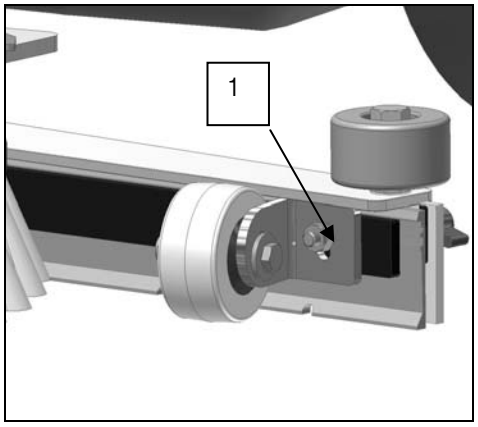


Figure 14
Install the squeegee, threading the studs in their holes on the support. Before threading stud (1) release lock lever (2), rotating it counterclockwise.
Connect the suction tube to the squeegee by threading the sleeve in body (3)



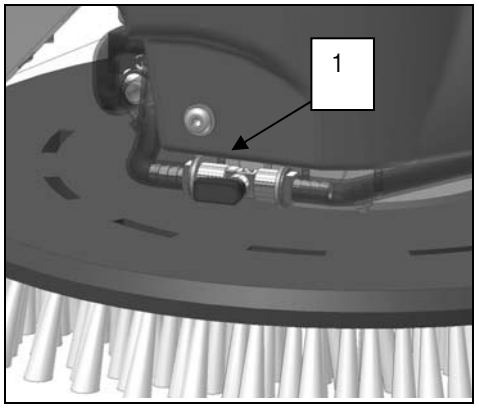
8. ADJUSTING THE HEIGHT OF THE SQUEEGEE

Figure 15
The squeegee can be adjusted in height depending on the rubber wear.
Loosen the small wheel (placed on the side of the squeegee) using nut (1).
Lift it until the rubber touches the floor again.
Retighten nut (1).
When drying is insufficient rotate the rear rubber or replace it if it has not yet been replaced.



9. ADJUSTING THE COCK

Figure 16
Ball cock (1) is located on the base body.
Adjust the ball cock lever to adjust the flow.



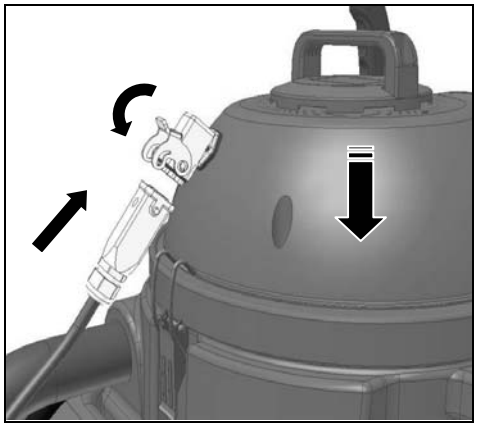
PREPARING THE MACHINE

10. INSTALLING THE BRUSH

Figure 17
Lift the machine (fig.3) and position the brush in the central part of the base.
Lower the machine on the brush (fig.3).
The brush will automatically hook up when the motor is actuated (fig.21-23).

11. SUCTION COWLING

Figure 18
Check that the suction unit is correctly inserted.
Check that the power connectors are connected together. If this is the case proceed as follows:
Insert the male connector coming from the machine body all the way into the seat of the female connector fastened on the cover of the cowling.
Rotate the bayonet joint hook counterclockwise until it locks in place.



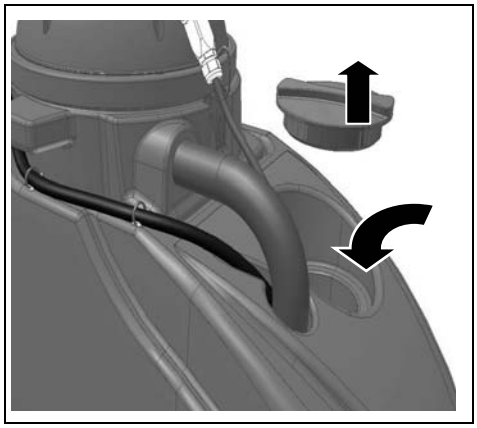
12. RECOVERY TANK

Figure 19
Check that the squeegee tube is properly inserted in its seat.
Check that the plug of the drain tube, located in the rear part of the machine, is closed.

13. DETERGENT SOLUTION

Figure 20
Unscrew the solution tank filling plug.
Fill with clean water at a temperature that does not exceed 50°C. Add liquid detergent in the concentration and according to the procedures recommended by the manufacturer. Use only a minimal percentage of detergent to prevent formation of an excess amount of foam since too much foam may damage the suction motor. Put the plug back in its place.

WARNING: Always use low-foam detergent. Introduce a small amount of anti-foam liquid in the recovery tank before starting to work to be sure to prevent foam from being generated. **Never use pure acids.**



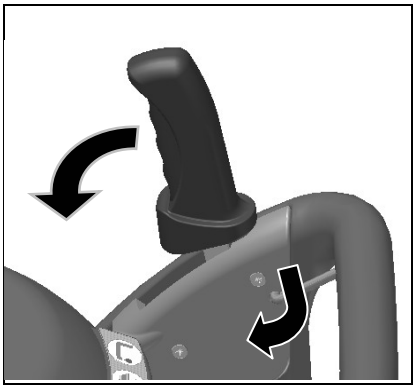
OPERATION

1. PREPARING TO WORK

Check that the connectors (suction and supply cowlings) are correctly connected (fig.11-18)

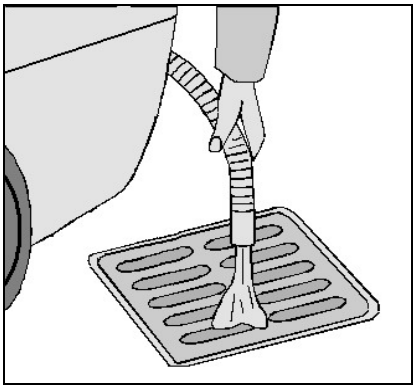
Figure 22
1. Press main/brush switch (1)
2. Press cock/solenoid valve switch (2)

Figure 23
3. Use the lever to lower the squeegee body. The suction motor will start to operate.



2. OVERFLOW DEVICE

Figure 25
The machine has a float that trips when the recovery tank is full, closing the suction tube.
At this point you must empty the recovery tank by removing the plug that closes the drain tube..



WARNING: Always wear gloves when doing this operation to protect yourself from contact with hazardous solutions.

3. FORWARD MOVEMENT

Figure 26
Drive of these machines is done using the brush. When the brush is slightly inclined it pulls the machine forward.

WARNING: Always make sure the squeegee is lifted when moving backwards, even for short distances.

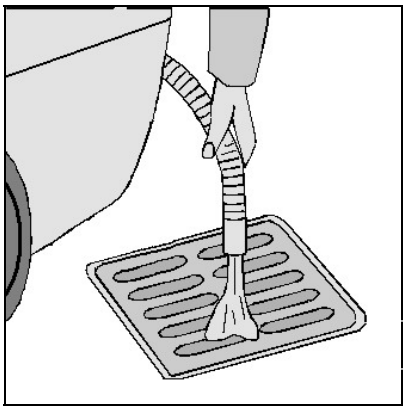
AFTER WORK IS TERMINATED

Figure 27

After finishing work and before performing any type of maintenance:

1. Press cock push-button (2) to close the water exit solenoid valve.
2. Wait a few seconds and then lift the squeegee using the lever (fig.4) to turn the suction motor off. This lets the inside of the squeegee body tube to dry out.
3. Press main push-button (1).
4. Lower front wheel (fig.3)
5. Move the machine to where water can be drained.

Figure 28



6. Move the machine to where water can be drained
7. Remove the brush and clean it with a jet of water (to remove the brush refer to the "DISMANTLING THE BRUSH" section)

WARNING: Always wear gloves when doing this operation to protect yourself from contact with hazardous solutions.

DAILY MAINTENANCE

1. CLEANING THE RECOVERY TANK

WARNING: Always wear gloves when doing this operation to protect yourself from contact with hazardous solutions.

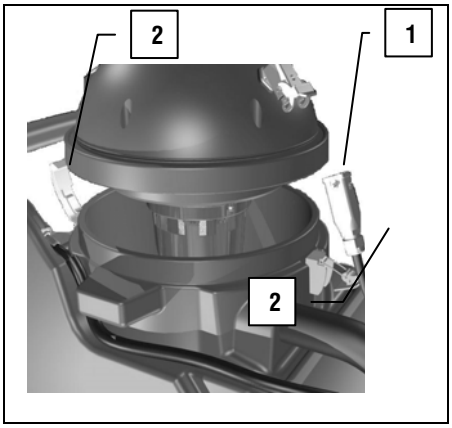


Figure 29

1. Disconnect the power supply connector located between the suction cowling and the recovery tank (1).
2. Remove the suction unit from the tank after freeing it from the two safety hooks (2)

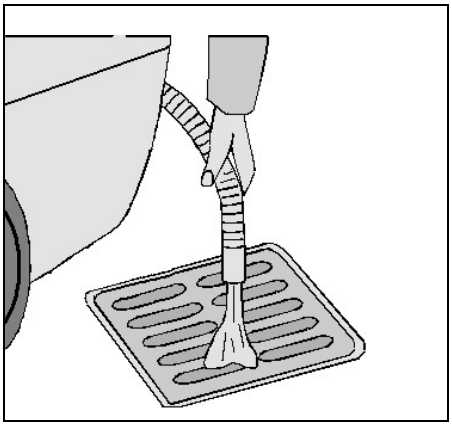


Figure 30

3. Rinse the inside of the tank with a jet of running water and drain directly using the tube (fig.25)

2. CLEANING THE SUCTION FILTER

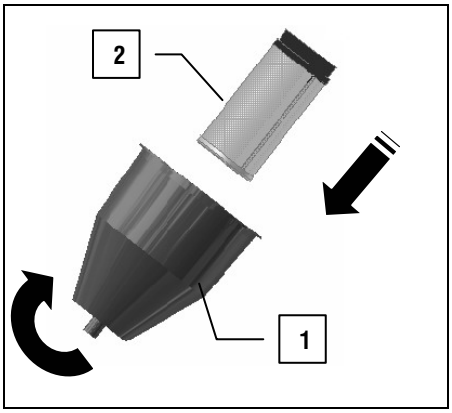


Figure 31

1. Remove the suction unit from the tank (fig.29)
2. Remove the black guard by making a circular movement (1).
3. Detach filter (2) and clean it carefully with a jet of water.
4. Reinstall everything by performing these procedures in reverse order

3. CLEANING THE SQUEEGEE

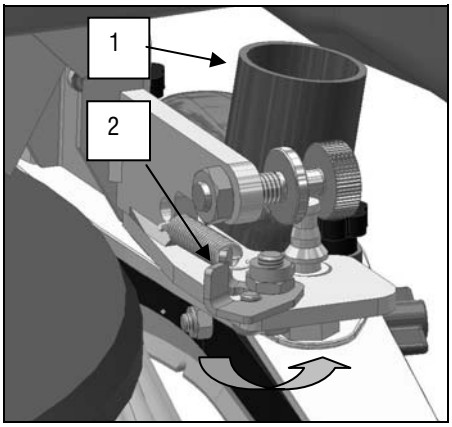


Figure 32

Check that the squeegee is always clean. This ensures optimum drying.
To clean it:

1. Remove the suction tube from the squeegee.
2. Unhook the squeegee, pushing hook-up plate (2) backwards.
3. Unhook the body from its support by pushing it towards the back of the machine and removing it from the side.
4. Carefully clean the inside of the squeegee
5. Carefully clean the squeegee rubbers
6. Reinstall everything

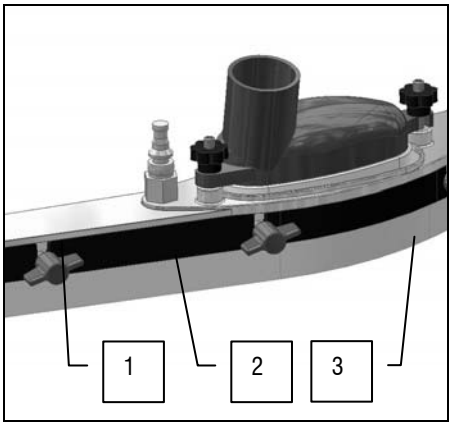
4. REPLACING THE REAR SQUEEGEE RUBBER

Figure 33

The drying edge of the rear squeegee rubber can be changed if it is worn and no longer dries properly. To do this proceed as follows:

1. Pull out the squeegee body as specified in “CLEANING THE SQUEEGEE”
2. Unscrew threaded knobs (1)
3. Pull out blade (2) and remove rubber (3)
4. Rotate the rubber or replace as necessary

To reinstall the squeegee repeat these procedures in reverse order



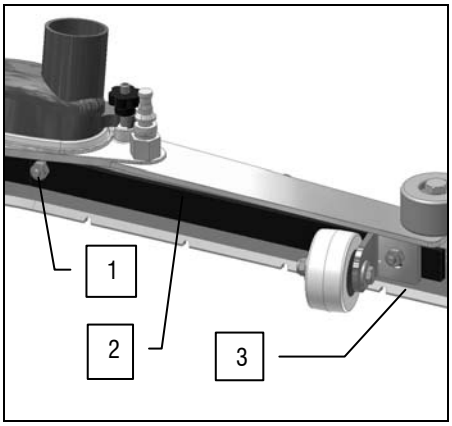
5. REPLACING THE FRONT SQUEEGEE RUBBER

Figure 34

The drying edge of the front squeegee rubber can be changed if it is worn and no longer dries properly. To do this proceed as follows:

1. Pull out the squeegee body as specified in “CLEANING THE SQUEEGEE”
2. Unscrew threaded knobs (1)
3. Pull out blade (2) and remove rubber (3)
4. Rotate the rubber or replace as necessary

To reinstall the squeegee repeat these procedures in reverse order

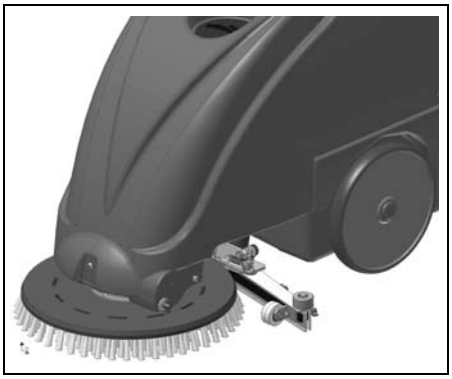


6. DISMANTLING THE BRUSH

Figure 35

1. Lift the machine (fig.3)
2. Actuate the main push-button (fig.20)
3. Actuate the deadman lever (fig.24) and the brush automatically unhooks.

WARNING: Always wear gloves when doing this operation to protect yourself from contact with hazardous solutions.

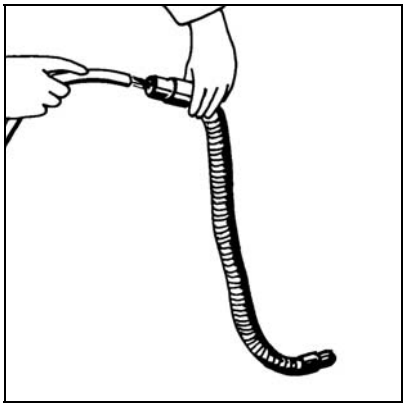


WEEKLY MAINTENANCE

1. CLEANING THE SQUEEGEE TUBE

Figure 36

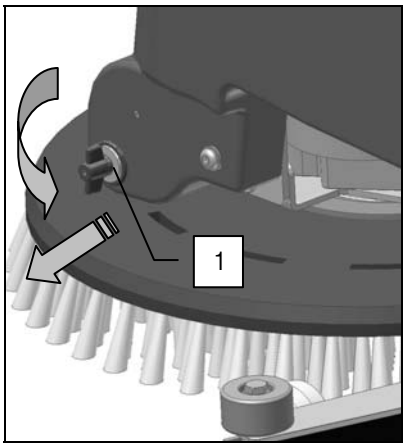
1. If suction is inadequate check that the suction tube is not clogged. Clean out as necessary by introducing a jet of water from the top part of the tank.



2. CLEANING THE SOLUTION TANK

Figure 37

1. Unscrew the filling plug on the solution tank (fig.20)
2. Rinse with a jet of water
3. Unscrew drain plug (1) and pull it out from the tank
4. Empty the tank
5. Carefully clean the filter mounted on the plug
6. Carefully clean the edge of the drain hole
7. At the end of the cleaning process reinstall drain plug (1)



CHECKING OPERATION

1. INSUFFICIENT WATER ON THE BRUSHES

1. Check that the main switches and solenoid valve are on (fig. 22)
2. Check that the cock is open (fig. 16)
3. Check that there is water in the solution tank.

2. THE MACHINE DOES NOT CLEAN WELL

1. Check the condition of wear of the brush and replace as necessary (the brush must be replaced when bristles are about 15 mm tall).
   To replace the brush refer to “DISMANTLING THE BRUSH” (fig. 35) and “INSTALLING THE BRUSH” (fig. 17).
2. Use a type of brush different from the standard brush. When cleaning floors where dirt is particularly difficult to remove you should use special brushes. These are supplied on request to meet specific requirements (see: “BRUSH SELECTION AND USE”).

3. THE SQUEEGEE DOES NOT DRY PERFECTLY

1. Check that the squeegee rubbers are clean
2. Check that the suction tube is properly inserted in its housing on the recovery tank
3. Dismantle the entire suction unit and clean it (fig. 29-30-31)
4. Replace rubbers if worn (fig. 33-34)
5. Check that the suction motor is on (fig.23)

4. TOO MUCH FOAM IS GENERATED

Check that low-foam detergent is being used. If necessary add a small amount of anti-foam liquid to the recovery tank.
Remember that more foam is generated when the floor is not very dirty. Dilute the detergent more when cleaning floors that are not very dirty.

BRUSH SELECTION AND USE

POLYPROPYLENE BRUSH (PPL)

This is used on all types of floors and offers good resistance to wear and to hot water (not more than 50°C). PPL is not hygroscopic and consequently preserves its characteristics even when wet.

BRISTLE THICKNESS

The thicker bristles are more rigid and consequently are used on smooth floors or with thin gaps.
It is better to use softer bristle brushes on uneven floors or floors with deep gaps or humps since these penetrate more easily.
Remember that when brush bristles are worn and then too short they become rigid and are unable to penetrate and clean in depth. Bristles which become too big, among other things, cause the brush to tend to skip.

DRIVE DISK

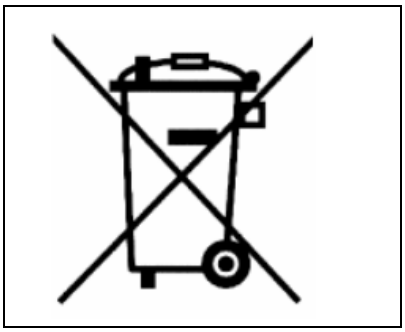
Drive disk, recommended for cleaning polished surfaces, is equipped with a set of anchor stubs that retain and drive the abrasive disk during operation.

BRUSH SELECTION TABLE

Machine	No. Brushes	Code	Type of bristle	Ø bristle	Ø Brush	Notes
Minny 20 Minny 20 CB	1	405661 405654 405658 423760	PPL PPL Abrasive Drive disk	0.45 0.7	500 500 500 500	20”
		405644 405659 405645 405653 405646 405647 405529	PPL PPL PPL PPL PPL Abrasive Drive disk	0.3 0.45 0.6 0.7 1	420 420 420 420 420 420 420	17”

WASTE DISPOSAL

Product subject to WEEE 2002/96/CE normative



CE STATEMENT OF COMPLIANCE model Minny 20 CB

The undersigned company:

FIMAP S.p.A.

Via Invalidi del Lavoro No.1

37050 Santa Maria di Zevio (VR)

states under its own exclusive responsibility that the product

FLOOR SCRUBBING MACHINE model Minny 20 CB

complies with the provisions of Directives:

- 98/37/EEC: Machine directive.
- 73/23/EEC: Low voltage directive and following modification 93/68/EEC.
- 89/336/EEC: Electromagnetic compatibility directive and following modifications 91/263/EEC, 92/31/EEC and 93/68/EEC.

It also complies with the following standards:

- EN 60335-1: Safety of electric home appliances and the like – Safety. Part 1: General regulations.
- EN 60335-2-72: Safety of electric home appliances and the like. Part 2: Special regulations for automatic machines for processing industrial and community-use floors.
- EN 60335-2-29 Safety of electric home appliances and the like. Part 2: Special regulations for battery chargers.
- EN 12100-1: Machine safety – Basic concepts, general design principles – Part 1: Base terminology and methodology.
- EN 12100-2: Machine safety – Basic concepts, general design principles – Part 2: Technical principles.
- EN 55014-1: Electromagnetic compatibility – Requirements for home appliances, electric tools and similar appliances. Part 1: Emission – Standards by family of products.
- EN 55014-2: Electromagnetic compatibility – Requirements for home appliances, electric tools and similar appliances. Part 2: Immunity – Standards by family of products.
- EN 55022: Equipment for information technology – Radio interference characteristics – Limits and measuring methods.
- EN 61000-6-2: Electromagnetic compatibility (EMC) - Part 6-2: General standards – Immunity for industrial environments.
- EN 61000-6-3: Electromagnetic compatibility (EMC) - Part 6-3: General standards – Emission for residential, commercial and light industrial environments.
- EN 61000-3-2: Electromagnetic compatibility (EMC) – Part 3-2: Limits – Limits for emission of harmonic currents (Equipment with input current $\leq$ 16 A per phase).
- EN 61000-3-3: Electromagnetic compatibility (EMC) – Part 3-3: Limits – Limitation of voltage fluctuations and flicker in low voltage supply systems for equipment with rated currents $\leq$ 16 A.
- EN 50366: Appliances for home use and the like – Electromagnetic fields – Evaluation and measurement methods.

Santa Maria di Zevio, 05/02/2007

FIMAP S.p.A.
Legal Representative

Giancarlo Ruffo

CE STATEMENT OF COMPLIANCE model Minny 20

The undersigned company:

FIMAP S.p.A.

Via Invalidi del Lavoro No.1

37050 Santa Maria di Zevio (VR)

states under its own exclusive responsibility that the product

FLOOR SCRUBBING MACHINE model Minny 20

complies with the provisions of Directives:

- 98/37/EEC: Machine directive.
- 89/336/EEC: Electromagnetic compatibility directive and following modifications 91/263/EEC, 92/31/EEC and 93/68/EEC.

It also complies with the following standards:

- EN 60335-1: Safety of electric home appliances and the like – Safety. Part 1: General regulations.
- EN 60335-2-72: Safety of electric home appliances and the like. Part 2: Special regulations for automatic machines for processing industrial and community-use floors.
- EN 12100-1: Machine safety – Basic concepts, general design principles – Part 1: Base terminology and methodology.
- EN 12100-2: Machine safety – Basic concepts, general design principles – Part 2: Technical principles.
- EN 61000-6-3: Electromagnetic compatibility (EMC) - Part 6-3: General standards – Emission for residential, commercial and light industrial environments.
- EN 61000-6-1: Electromagnetic compatibility (EMC) - Part 6-1: General standards – Immunity for residential, commercial and light industrial environments.
- EN 50366: Appliances for home use and the like – Electromagnetic fields – Evaluation and measurement methods.

Santa Maria di Zevio, 05/02/2007

FIMAP S.p.A.
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