



ING. O. FIORENTINI S.R.L.  
INDUSTRIAL CLEANING MACHINES

**SCRUBBER and FLOOR BURNISHER  
MOD. FHP851**



**USER MANUAL**

## Congratulations for your choice!

**FIorentini S.r.l.** thanking you for the preference to its product, would like to remind you that **FIorentini S.r.l** production covers manufacture and marketing of industrial cleaning machines and is a leading company in this sector.

**FIorentini** tradition and competence guarantee the technical quality of your choice. Its products are built with first quality materials and are therefore reliable, solid and functional in order to satisfy all customers. **FIorentini** has recently obtained the quality system certificate conforming to the requirements of **UNI EN ISO 9001:2000**.

We wish therefore inviting you to contact us for every kind of request, as technical or commercial. We will be at your disposal for any information you may need.

Vi invitiamo pertanto a contattarci, senza alcuna esitazione, per ogni vostra richiesta, sia di natura tecnica sia di natura commerciale; saremo lieti d'essere a vostra disposizione per qualsiasi chiarimento ed informazione.

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## 1. GENERAL INFORMATION

### 2. SYMBOLS

	<p><i>This symbol is used to get the operator's attention on procedures or precautions to be followed in order to avoid damages to users or to the support</i></p>
	<p><i>This symbol is used to get the operator's attention on general information.</i></p>

### 3. PREMISE

	<p><b>FIorentini S. r. l.</b> is the only owner of this manual.  <i>The reproduction of all or part of the manual or the transmission to third parties with mechanic or electronic devices are forbidden without a written manufacturer's authorization. This manual is supplied to the customers in one original copy when differently specified during the order.</i></p> <p><i>This manual is supplied to the customer with the machine and it must be kept with it even when the machine has to be transferred.  Please, keep the manual in a safe place and for all the machine lifetime. Purchaser is responsible for showing the manual to qualified people. In case of loss ask for a duplicate to FIORENTINI Co..</i></p> <p><i>FIORENTINI S.r.l. is not responsible for any kind of damages caused by people or things due to the non-observance of the instructions of this manual.</i></p> <p><i>FIORENTINI reserves the right to add at any time and without notice all the technical and commercial changes considered useful for the customer. Therefore data and information in this manual can be updated.</i></p>
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#### 3.1. MANUAL CONSULTING

This manual deals exhaustively with all arguments that are necessary for an easy and safe use of the machine as it is recommended by European Directives on product safety.

Therefore we suggest to all authorized operators to read carefully this manual contacting FIORENTINI S.r.l. for any explanation. The manual has to be used every time the operator forgets a procedure or when new operators have to be trained.

For publishing reasons, pictures and drawings can look different from the reality but without arising doubts.

Special symbols and **bold type** and/or *sloping* get the attention of the reader on remarkable information in particular for safety.

The revision index is written on the left at the bottom of every page. The list of those pages that have been updated has to be found at the end of the manual.

#### 3.2. WARRANTY

Warranty conditions are stated as below when not differently specified in the order confirmation.

##### 3.2.1. WARRANTY OBJECT

The machine has been designed and built for a long-lasting use without relevant problems. Anyway, if problems arise during the warranty period, FIORENTINI S.r.l. is engaged to repair or substitute for free those parts that are broken or damaged by defective materials, working defects or imperfect assembly.

Warranty is not given for parts whose early breaking or wear and tear are due to:

- Non-respect of instructions included in this manual;
- Breaking and/or changes made up without FIORENTINI's approval;
- Not-use of genuine spare parts;

- Interventions made up by unauthorized personnel;
- Missing maintenance;
- Natural calamities.

FIORENTINI S.r.l., its purchasers and its suppliers have the same warranty for the electric and expendable materials that are sold by external suppliers.

### 3.2.2. WARRANTY LIFE

The warranty is granted for 24 months since the machine delivery date. This is a single warranty term and it cannot be extended.

### 3.2.3. APPLICATION MODALITY

Defective components must be sent back to FIORENTINI S.r.l. in order to establish the causes of the anomalies and apply therefore the warranty. Repair and replacement under warranty will be done in FIORENTINI's workshop, by third parties or in loco. In case of repair or replacement in loco, energy sources and the use of particular equipment have to be paid by the customer himself.

### 3.2.4. RETURNED GOODS

Intervention demands must be sent to FIORENTINI Service Dept. only after a careful analysis of the problem and its causes. Following information have to be given to FIORENTINI's agent:

- Serial number you get it from the silver label stucked on the machine (§ 2.1.);
- Code and position of the component taken from the spare parts list (§ 7.2.);
- A detailed description of the problem and its causes.

The components considered under warranty are delivered ex works; those ones being substituted belong to FIORENTINI Co..

### 3.2.5. EXCEPTIONS

Expandable materials like brushes, squeegee blades and materials whose lifetime cannot be predetermined are not under warranty.

### 3.2.6. GOODS TO BE RETURNED

In case of goods to be returned for warranty replacement, it is necessary to have a written acceptance from FIORENTINI technical department before sending them.

All defective parts must be carefully packed in order to avoid further damages during transport. Goods must be shipped ex-warehouse and followed by :

- **serial number of the equipment where they were installed on;**
- **item code of the defective part;**
- **detailed description of the defect and of the conditions where it happened.**

In case of defective electric or electronic goods, please return them separately from other materials, in order to help us in dividing dangerous wastegoods and recicle the (RAEE) as DER 2002/96/CEE LOW.



*The machine warranty is no more available in case of the loss of the silver label.*

## **1.5. CONFORMITY DECLARATION**

The conformity declaration is released with the machine and the user manual.

**DICHIARAZIONE CE DI CONFORMITA'****ING. O. FIORENTINI s.r.l.**

Loc. Rombola

**50030 PIANCALDOLI (FI) ITALIA**SISTEMA QUALITA' AZIENDALE  
CERTIFICATO ISO9001**DICHIARIAMO SOTTO LA NOSTRA RESPONSABILITA' CHE LA MACCHINA**

**Marca** FIORENTINI  
**Tipo**  
**N° serie**  
**Anno di costruzione** 2006

**RISULTA IN CONFORMITA'**

con quanto previsto dalle seguenti direttive e normative armonizzate comunitarie:

**DIRETTIVA COMUNITARIA****DIRETTIVA MACCHINE**  
**98/37/CEE****DIRETTIVA COMPATIBILITA' ELETTRROMAGNETICA**  
**89/336/CEE****DIRETTIVA SULLA RESTRIZIONE DI SOSTANZE PERICOLOSE**  
**2002/95/CE****DIRETTIVA SULL'ESPOSIZIONE DEI LAVORATORI ALLE VIBRAZIONI**  
**2002/44/CE**

Piancaldoli

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***Luogo e  
data***Ing. O. Fiorentini S.r.l.  
Il titolare  
Ing. O. Fiorentini

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***Firma***

A handwritten signature in black ink, appearing to read 'O. Fiorentini', written over a horizontal line.

## 2. MACHINE FEATURES AND TECHNICAL DATA

### 2.1. IDENTIFYING THE MACHINE

A silver label is stuck on the protection case of the steering column and clearly shows the data referring to the "CE" marking.

Ing. O. Fiorentini S.r.l. Piancaldoli (FI)		MADE IN ITALY	CE
Mod. FHP851	S.N.		2006
V 36	Hz.		
Kg 625	A	W3050	



PICTURE No. 2.1



*The label has never to be removed and should always be kept readable. In case of damage it is necessary to ask for a duplicate. The machine cannot be sold without the label.*

### 2.2. DESCRIPTION AND COMPONENTS

FHP851 is both a ride on scrubber and a floor polisher. It has been designed to clean flat surfaces by means of a washing phase and a suction phase. This machine is equipped with a front washing system, a central polishing system and a rear drying system. This machine scrubs the floor by means of one or more abrasive rotating brushes and polishes thanks to the emulsifying detergent solution.

First of all, the operator has to fill the solution tank with water and detergent in order to scrub the floor. Water has never to be hot and the quantity of detergent depends on how much dirt the floor is. Then the operator has to start the machine, which spreads the detergent near the rotating brushes and begins scrubbing the floor. In the meantime, the rear squeegee suck the detergent solution and the dirt, which fall into the recovery tank. Whilst washing the floor, the operator can adjust the brushes pressure by means of a switch of the dashboard (low/high pressure).

Secondly, the operator has to replace the rotating brushes with pad brushes and change some controls on the dashboard in order to polish the floor.

FHP851 is available in battery powered version. The brushes engine, the squeegee engine and the suction engine are fed by the same batteries.

The accelerator pedal starts both the washing brushes and the suction motor which stop automatically after a few seconds when you leave the pedal. When the washing brushes standstill, they are non more in contact with the ground. In this way the bristles will not be damaged while the brushes are not working.

Thanks to the dashboard the operator can control all the machine functions and a series of LEDs shows to the operator the battery status or the errors detected by the electronic card.

FHP851 is equipped with a safety switch under the seat that stops every function of the scrubber/polisher, if the operator leaves the machine unattended.

The operator can control all the main functions of the machine and in particular:

- start the washing brushes;
- choose between the washing or the polishing system;
- start the solenoid valve (optional);
- regulate the quantità of water;
- start the suction engine;
- lift up or sink down the squeegee;
- lift up or sink down the brushes
- Choose the forward or back gear;
- Start or stop the machine.

The frame of the machine is made of zinc-plated steel or stainless steel or painted iron in order to avoid oxidation which may compromise its reliability.

Main parts of the machine:

- Zinc-plated steel or stainless steel frame;
- ABS plastic solution tank;
- ABS plastic recovery tank supplied with flexible suction and drainage piping system;
- a series of batteries, that can be fit into a mobile trolley for an easy replacement ;
- Right and left rotating brush;
- main rotating brush;
- washing roller brushes system;
- Water recovery system;
- one driving wheel;
- two idle wheels;
- steering wheel;
- driving seat.

FIORENTINI Co., taking the new CE safety rules into consideration, manufactures the machine following the CE directives about safety and health. The materials high quality, the high technology and FIORENTINI's experience guarantee the performance and the reliability of this machine .

Each machine is tested during the manufacturing process and the final check is done before the machine is shipped out.



## 2.3. TECHNICAL DATA

### CARATTERISTICHE TECNICHE – TECHNICAL FEATURES – CARACTERISTIQUES TECHNIQUES

	<b>FHP851</b>
Alimentazione – Voltage – Alimentation	<b>36 V (6 x 6 V – 330 Amp/h)</b>
Sistema di trazione – Drive system - Systeme de traction	<b>Front driving wheel 36V 800W</b>
Larghezza di lavaggio – Cleaning width – Largeur de nettoyage	<b>860 mm.</b>
Larghezza squeegee – Squeegee width – Largeur suceur	<b>1050 mm.</b>
N° spazzole – Brushes no. – Nr. des brosses	<b>2 x Ø 430 mm.</b>
Pressione spazzole – Scrubbing pressure – pression des brosses	<b>5 kg. ÷ 160 kg.</b>
N°Giri spazzole per lavare –Scrubbing brush revolutions per minute – Nr. de tours des brosses de lavage	<b>250 RPM</b>
N°Giri Spazzole per lucidare- Burnishing brush revolutions per minute - Nr. de tours des brosses de cirage (2x750W)	<b>1150 RPM</b>
N°Giri Spazzole per lucidare- Burnishing brush revolutions per minute - Nr. de tours des brosses de cirage (2x1150W)	<b>1600 RPM</b>
Area pulita per ora – Performance – Rendement jusqu'à	<b>2,600 mq/h</b>
Autonomia – Autonomy - Autonomie	<b>3 h</b>
Serbatoio soluzione – Solution tank – Cuve solution	<b>120 lt.</b>
Serbatoio di recupero – Recovery tank – Cuve recuperation	<b>125 lt.</b>
Velocità di marcia avanti – Forward speed - Vitesse en marche avant	<b>0 – 6 km/h</b>

### CARATTERISTICHE TECNICHE MOTORI – ENGINES TECHNICAL DATA – CARACTERISTIQUES TECHNIQUES

Motore trazione – Traction drive motor – Moteur des tracion	<b>800 W</b>
Motore aspirazione – Vacuum motor – Moteur d'aspiration	<b>800 W</b>
Motore spazzole – Brush motor – Moteur des brosses	<b>1.1 kW 60A      1 kW 40A</b>

### DIMENSIONI – DIMENSIONS - DIMENSIONS

<b>Lunghezza – Length – Longueur</b>	<b>1340 mm.</b>
Larghezza senza carter spazzole- Width without brushes carters – Largeur sans carter brosses	<b>700 mm.</b>
Larghezza con carter spazzola - Width with brushes carters      Largeur avec carter brosses	<b>870 mm.</b>
Altezza – Height – Hauteur	<b>1260 mm.</b>
Peso senza batteria – Weight without battery – Poids sans batteries	<b>320 kg.</b>
Guida – Drive -Conduite	<b>Uomo a Bordo - Ride on - Autoportée</b>
Corridoio min. per inversione ad U – Minimum aisle turn – Place pour demi-tournage	<b>2000 mm.</b>
Pendenza max. superabile – Max. gradient at full load – Pente superable	<b>10 %</b>
Rumorosità. – Noise level – Bruit	<b>&lt; 70 dB(A)</b>



*The above mentioned characteristics are not binding for the manufacturer; they can be changed without any notice . ING.O.FIORENTINI Co. is always at disposal for any information (par.7.1.).*

### MEASUREMENT UNITS CONVERSION

<b>Length</b>	1 inch = 1" = 25,4 mm	<b>Power</b>	1 kW = 1,36 CV = 1,34 BHP
<b>Temperature</b>	T (K) = t (°C) + 273 / t (°F) = 1,8 t (°C) + 32	<b>Pressure</b>	1 bar =100 kPa = 14,5 psi

### 3. SAFETY

#### 3.1. RIGHT USE OF THE MACHINE



*This machine is a scrubbing machine and it has been designed and built to clean in an industrial place. It can work on flat surfaces or on sloping surfaces not higher than 10% and with a speed not higher than 5 km/h while the machine is reversing.*

#### 3.2. WRONG USE OF THE MACHINE



- *The machine cannot be driven by non-authorized personnel;*
- *The machine cannot wash sloping surfaces whose gradient is higher than 10% or surfaces with holes;*
- *The machine cannot reverse with a speed higher than 1 km/h and cannot overwhelm slopes higher than 5%;*
- *The machine cannot be used in places with dangerous substances and in particular with explosive atmospheres or with a bad microclimate;*
- *The machine cannot clean surfaces with inflammable products;*
- *The machine cannot be used as a means of transport for people or other means of transport;*
- *The protection devices of the machine cannot be modified or tampered;*
- *Batteries must be recharged in a fanned room;*
- *The operator have always to respect safety rules;*
- *The operator cannot use equipments or devices that can create problems to the machine working;*
- *The machine components cannot be modified without FIORENTINI's authorization;*
- *The operator cannot use acids that can damage the machine;*
- *The operator has always to respect the rules written in the user manual.*



*Please read carefully and do not cover the labels sticked on the machine. FIORENTINI S.r.l. is not responsible for a wrong use of the machine (see § 3.2.)*

#### 3.3. SUGGESTED EQUIPMENT

In order to use the machine in a proper way, we suggest to use the FIORENTINI's equipment and original spare parts.

FIORENTINI S.r.l. Technical Dept. is always at your disposal to design components or parts for a particular use of machine as requested by the customer.

### 3.4. OPERATOR'S QUALIFY

The scheme below summarizes the operator qualify requested for each kind of operation.

OPERATION	OPERATOR'S QUALIFY
Driving/control of the machine	Trained operator
Installation/ disinstallation	Fiorentini technician
Mechanical parts maintenance	Fiorentini technician
Electric parts maintenance	Fiorentini technician
Cleaning maintenance	Trained operator
Dismantling and demolition	Fiorentini technician

FIorentINI S.r.l. suggests to train the operator before using the machine. The operator also must be trained about safety rules and carefully read this manual.



*FIorentINI S.r.l. is not responsible for any possible damage to people and/or things caused by the non-observance of the instructions dealt within this manual.*

### 3.5. SAFETY AND WARNING DEVICES



- ***It is absolutely forbidden to tamper or disconnect safety and warning devices while the machine is working;***
- ***safety and warning devices must be periodically checked (see § about maintenance).***

<b>Side brushes protection</b>	FHP851 is equipped with two rotanting brushes made of nylon. The machine cannot reach dangerous areas thanks to fixed steel protections set up on each brush. These cases can be only willingly removed.
<b>Solenoid valve (OPTIONAL)</b>	FHP851 is equipped with a solenoid valve that avoid water leaks if the brushes are not on.
<b>Warning devices</b>	FHP851 is equipped with several warning devices: <ul style="list-style-type: none"> <li>➤ One acustic warning device like a claxon. It has to warn people who are near the machine while its operating;</li> <li>➤ One intermittent bleeper to warn people while the machine is reversing;</li> <li>➤ One flashing yellow light to signal the machine is operating.</li> </ul>
<b>Seat safety switch</b>	FHP851 is equipped with a safety switch under the seat that stops every function of the machine when the operator is not on board.

### 3.6 SAFETY DEVICES

The scrubbing/polishing machine is equipped with the following safety devices:

- **Mains socket** (picture 4.5), the same socket used for the battery charger. In case of emergency, this socket must be taken away from the plug by means of its handle.  
The operator must be trained about safety rules. Do never restore this safety system before the problem has been sorted out. If it is necessary ask for the technician help.
- **Seat safety switch** : the machine is equipped with an emergency button under the driver's seat. If the operator is not aboard, the machine does not start. Moreover, the machine stops automatically if the operator forgets to switch the machine off. In this way the operator must seats again on the machine, switch the machine off, wait for a few seconds and start the machine again.
- **unsufficient load**: the electronic card, that controls all the machine functions except for the traction, disconnect all these functions when the battery charge is lower than 20%. In this way the batteries' lifetime can be longer.
- **Floater**: the recovery tank is equipped with a floater that stops the suction engine if the recovery tank is full. The operator has to empty the recovery tank and start the machine again.
- **Solenoid valve (optional)**: the machine can be equipped with a solenoid valve that regulate the quantità of solution. The solution can be spread on the floor by means of a switch and the forward gear pedal.
- **High speed**: it is used for the floor polishing. The operator has to replace the washing brushes and set up those with smooth bristles.

### 3.7 SAFETY DIAGNOSTIC SIGNALLING

The electronic card for the traction can detect every disfunctioning of the machine by means of a red LED. The number of red LEDs show the type of anomaly as listed in the scheme below:

Red LEDs	Description	Solution
1	The machine has been started with turned on gear.	Release the gear in order to switch the red LED off. Otherwise, the acceleration system has to be set again.
2	The battery charge is low or under tension because of a power breakdown. The tension is under the minimum level for a right functioning.	Check the battery charge and recharge it if necessary. Check that there are no loose connections, too. If the error does not disappear, the electric system may be changed.
3	Battery over tension. The regulator could break.	
4	The engine is not connected or there a wrong contact. It may occur when the coal brushes of the engine are not well in contact with the rotor or the cables are loosen.	Check the engine connections and the engine in general.
5	Internal error of the regulator or the engine is not grounded.	May be there is a current leakage on the electric system of the engine. Otherwise, check the regulator.
6		
7	The temperature of the power circuit is too high. It may occur when the MOSFET temperature is higher than $75^{\circ}\text{C} \pm 5^{\circ}\text{C}$ , i.e. when the machine is used on sloping surfaces or when the environment is higher than $40^{\circ}\text{C}$ . It may occur even when the engine windings provoke an anomalous mains absorption.	Wait until the temperature decreases.
8	The engine is already running when the operator starts the machine.	Switch off and start again the machine.
9	Error on the microcontroller or on the hardware. It may occur, if there is a breakdown on the mains measurement circuits or on the mains charge circuit.	Switch off and start again the machine. If the error do not disappear, check the regulator.
10	Battery over: brushes are blocked.	Recharge the battery.

### 3.8. OTHER DANGERS

FIORENTINI S.r.l. analyzes – starting from the design of the machine - all dangers that can occur while the machine is operating in order to prevent or at least low the operator's accidents. Thanks to a series of warning labels stuck on the machine the operator can avoid many risks.

#### SQUASHING

This kind of danger can occur:

- During the side brushes regulation;
- During the batteries change;
- During the batteries recharge (the recovery tank may fall down)

Whilst regulating the side brushes, the ignition key must be kept away from the dashboard in order to avoid the casual starting of the machine. Moreover, the operator has to pay attention whilst recharging the batteries.



Squashing ranger is shown by pictures sticked on the brushes protections and the recovery tank (§ 3.7.).

#### TURNOVER

This kind of ranger can occur:

- during the normal operating of the machine when the operator exceeds sloping limits as specified in the manual and the operator uses the machine to clean disconnected surfaces or with holes and high depressions (see 3.2)





**Do not use the machine to wash sloping surfaces higher than 12% or surfaces with holes or depressions which might compromise the stability of the machine.**




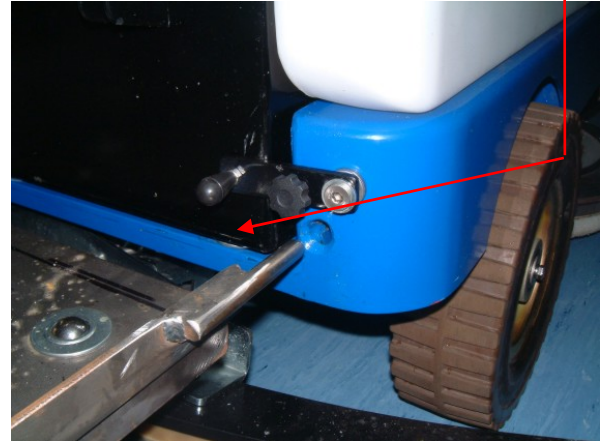
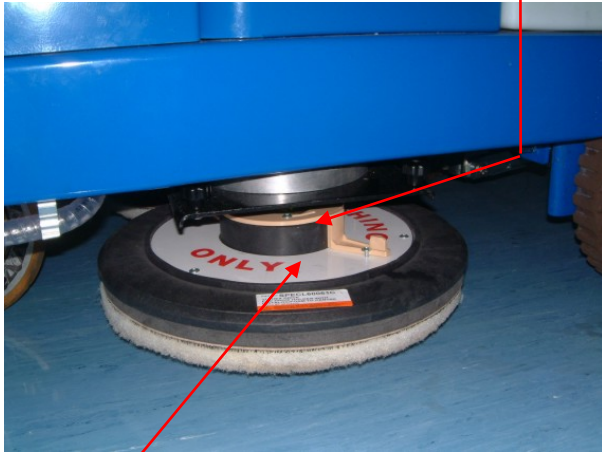
*FIORENTINI is not responsible for accidents occurred to people or things provoked by a wrong use of the machine, i.e. using the machine on surfaces which can compromise its stability.  
The purchaser must stick proper labels on the machine to show the operator the right use of the scrubber.*


### 3.9. SAFETY SIGNALS

La segnaletica di sicurezza comprende cartelli di:


<b>DANGERS</b>		Dangers' signals are triangular with black pictures on a yellow background
<b>PROHIBITIONS</b>		Prohibitions' signals are round with black pictures and a red stripe

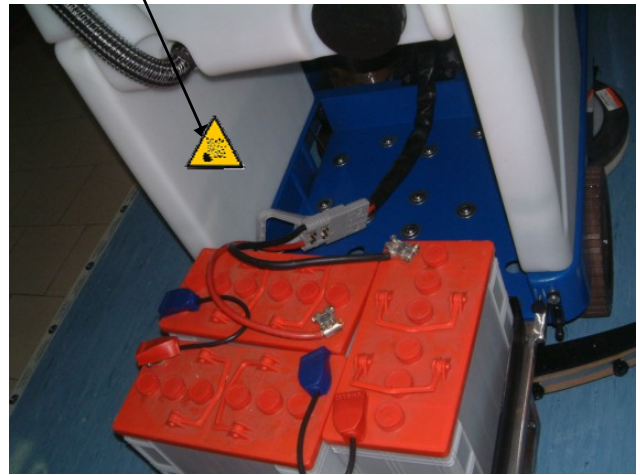
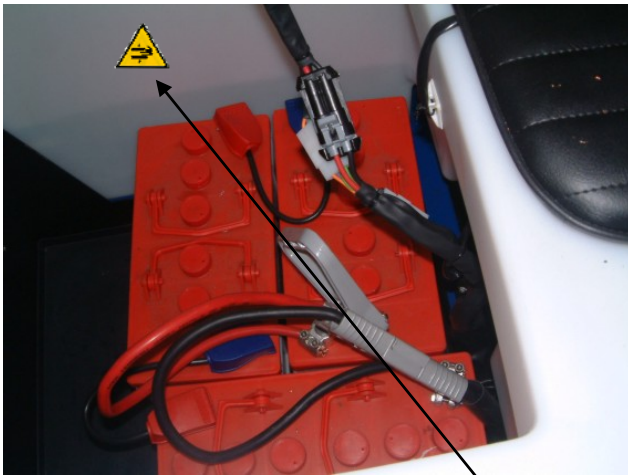
	<b>What is it?</b>	This signal forbids to remove the protection of pieces in movement.
	<b>What to do</b>	During the installation or the maintenance make sure that the ignition key is not in the dashboard before removing the mobile protections. While the machine is operating make sure that all covers are well fixed.




	<b>What is it?</b>	Squashing danger: it can be due to parts in movement of the machine.
	<b>What to do</b>	During the installation or the maintenance make sure that the ignition key is not in the dashboard before removing the mobile protections.



***The purchaser must replace danger signals on the machine if they are deteriorated. It is absolutely forbidden to remove or temper danger signals.***

	<b>What is it?</b>	Explosion danger: it may occur while recharging the batteries because of hydrogen spread.
	<b>What to do</b>	During the batteries recharge, please place the machine under a suction chimney or in a ventilated area and keep it away from heat and corrosive substances.



	<b>What is it?</b>	Squashing danger: it may be caused by the turnover of the recovery tank.
	<b>What to do</b>	Whilst recharging the batteries or the charge tank, it is necessary to use a proper support.

	<p><b>The purchaser must replace danger signals on the machine if they are deteriorated. It is absolutely forbidden to remove or temper danger signals.</b></p>
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	<b>What is it?</b>	This label shows the range of sloping surfaces higher than 10%.
	<b>What to do</b>	Check if the sloping is not higher than 10%. If it is, do not drive the machine on that slope in order to avoid a turnover.

	<p><b>Do not drive too fast on sloping surfaces. Please, drive at 1 km/h during a U reverse.</b></p>
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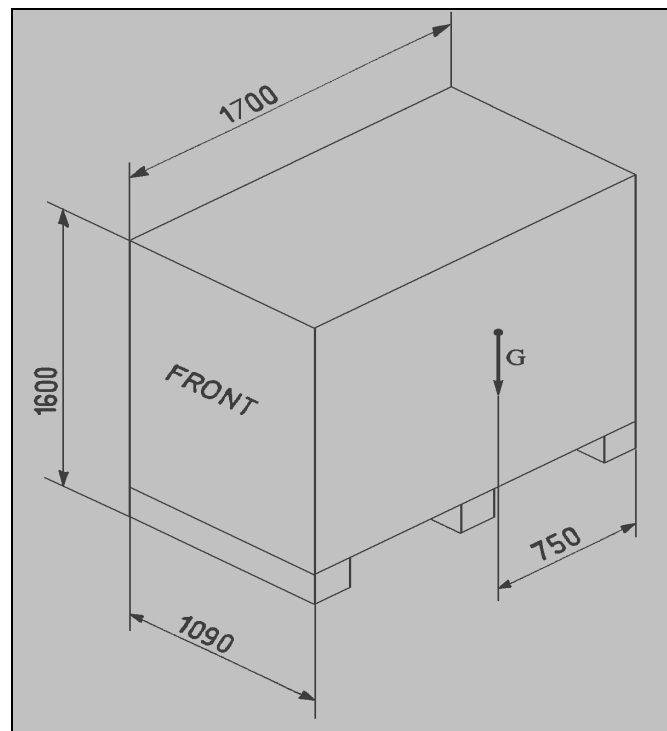
## 4. STARTING AND USE INSTRUCTIONS

### 4.1. TRANSPORT AND HANDLING

The machine is delivered to the purchaser in a proper package (see picture 4.1 below). A black arrow on the package shows the barycentre. This arrow must be in the middle of the elevator or transpallet forks. The package must be carefully handled. Do not place one package onto another one.



*The purchaser must make sure that the machine has not been damaged during the transport and that all papers are on the machine. Otherwise, the purchaser must immediately contact FIORENTINI in order to sort out the problem.  
The purchaser is responsible for the transport of the machine if not differently agreed with FIORENTINI.*



PICTURE 4.1

The machine must be handled with proper devices as stated in the scheme below. Please, make sure that the black arrow on the package are always in the middle of the elevator forks or the sling bands.

PACKAGE	HANDLING EQUIPMENT	PICTURE
Paperboard or plywood box on a pallet	Fork elevator	Nr. 4.2.
None	Fork elevator or crane truck with a two-band-sling and equalizer	Nr. 4.3.



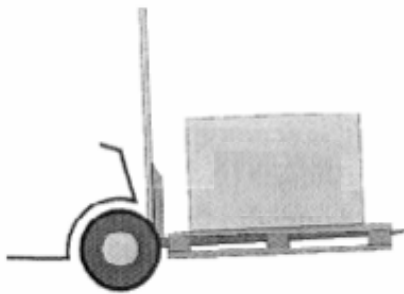


**The bands used for lifting the machine up must have the same loading capacity as the machine load. Handling operations must be done without causing a loss of stability of the machine. Otherwise, the machine can be damaged or the operator can be in danger.**



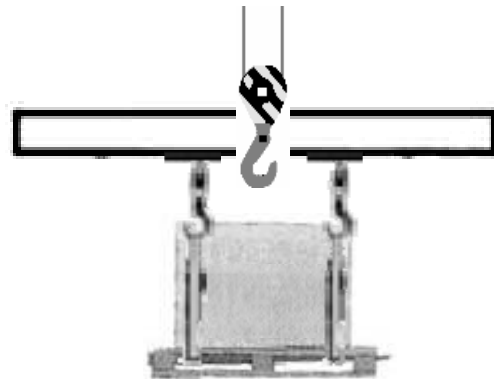
*FIORENTINI suggest to use authorized personnel (see § 2.3.) to handle the machine.*

## LOADING SYSTEM



PICTURE 4.2

SI



PICTURE 4.3

## **4.2. STORAGE**

The machine must be stored in a closed and dry place if it is not immediately installed in order to keep every part safe.

Relative humidity must be lower than 80% and the storage temperature must be between  $3^{\circ}\text{C} \leq t \leq + 45^{\circ}\text{C}$ .

## **4.3. INDICAZIONE PER SBALLARE LA MACCHINA**

- Cut the straps paying attention to the back spring;
- Remove the clips that join the paperboard and the pallet;
- If the package is made of plywood, remove the clips from every panel;
- Lay the machine on the floor.

## **4.4 HOW TO HANDLE THE UNPACKED MACHINE**

- Check the machine and install the batteries if not already installed;
- For a brief transport of the machine, please disconnect the batteries cables and remove brushes and squeegee; for a longer transport, please use the original package of the machine.

## 4.5. INSTALLATION

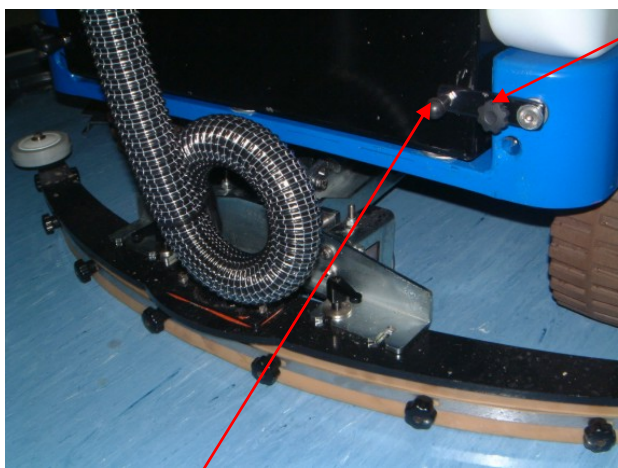


*Installation must be carried out by authorized personnel after reading this manual.*

### 4.5.1 BATTERIES INSTALLATION

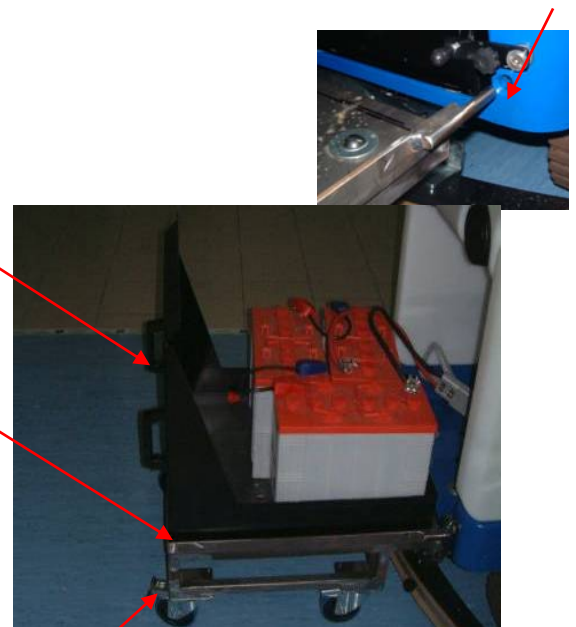
Please follow the instructions below to install the batteries. Make sure that the parking brake is on.

- Unloose the knobs (see detail 1 in picture 4.3) set up in the lower and rear side of the machine and turn the stop lever (see detail 2 in picture 4.3) of the batteries room;
- Approach the batteries trolley (see detail 3 in picture 4.3) to the machine and insert its pins into the frame holes (see detail 6 in picture 4.3);
- stop the wheels of the trolley (see detail 4 in picture 4.3);
- By means of the handles put the batteries room (see detail 5 in picture 4.3) onto the trolley;
- Replace or use the same batteries;
- clean the surfaces for the connections;
- do now the opposite operations.



2

PICTURE 4.3



4

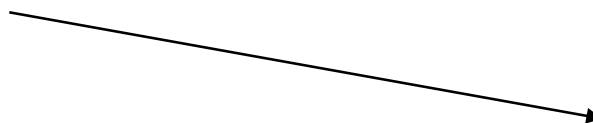
### 4.5.2 BATTERIES CHARGER INSTALLATION

Batteries must be recharged in a place equipped with a proper suction system of gases spread during this operation. Otherwise, batteries must be charged in a ventilated and dry place far from heat sources and corrosive substances.

Protect the electric network with a delayed switch or with a fuse whose capacity is higher than the battery charger maximum input.

Control the battery outlet polarity

Connect the battery charger to the machine socket

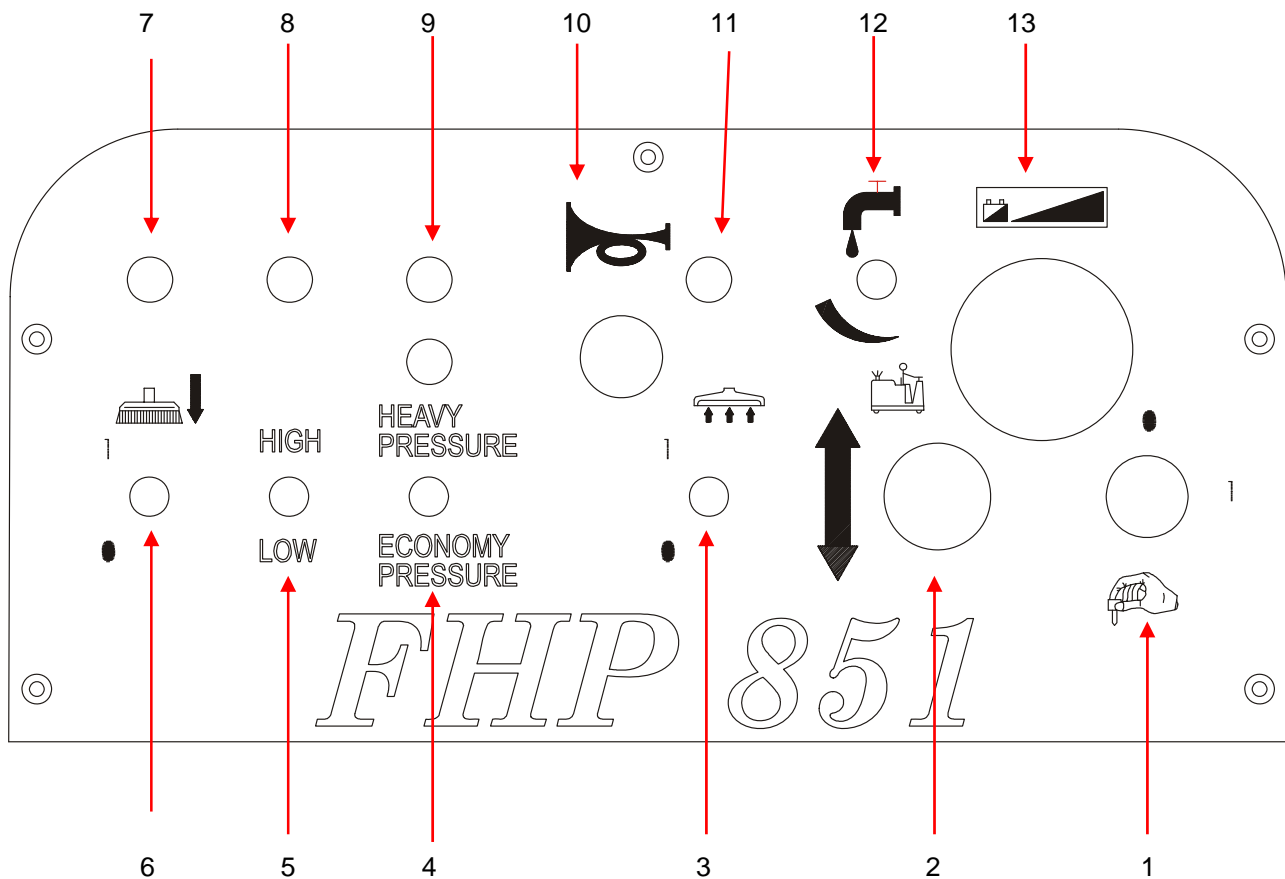


PICTURE 4.5

**4.6. CONTROL DEVICES**

**4.6.1. DASHBOARD**

The dashboard is made of a series of switches that activate or deactivate all the machine functions. The function of each switch is shown by a picture. Picture 4.6. shows the dashboard of the machine and the switches function is explained in the scheme in the following page.



1	MAIN SWITCH KEY
2	FORWARD GEAR/REVERSE GEAR SWITCH
3	SUCTION SWITCH
4	HIGH/LOW PRESSURE SWITCH
5	WASHING/POLISHING SWITCH
6	BRUSHES SWITCH
7	BRUSHES PILOT LIGHT
8	WASHING PILOT LIGHT
9	HIGH/LOW PRESSURE PILOT LIGHT
10	HORN
11	SUCTION PILOT LIGHT
12	SOLUTION LEVER
13	BATTERY CHARGE INDICATOR

**PICTURE 4.6**

#### 4.7. FUNZIONAMENTO

FHP851 can wash and polish the floor at the same time. Please follow the instructions below for a perfect cleaning:

- start the side brushes, the central brush and the sweeping brushes suction by means of the feed pedal;
- low the squeegee;
- start the washing brushes;
- open the solution cock and regulate the solution quantity;
- press the suction switch;
- close the water cock because it does not depend on the feed pedal.

The operator, thanks to his/her experience, has to choose the right kind of brush and detergent for the surfaces that has to be washed and to decide if the floor needs a second washing. If the floor is particularly dirty, the operator has to:

- wash the floor with washing brushes down and squeegee up;
- open the water cock;
- leave the solution on the surface to dissolve the dirt;
- do a second washing with brushes and squeegee down, the suction activated and the solution solenoid valve open.

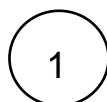
After the washing phase, the operator can begin the polishing phase. First of all, the operator has to replace the washing brushes and set up those with smooth bristles. Then, the operator has to low the brushes plate and choose 'high speed' from the dashboard. The polishing phase has to be done with low squeegee.



*Please check that every protection is well fixed before going any operation.*

##### 4.7.1 PREPARING AND STARTING THE MACHINE

If the machine is connected with the battery charger, the operator must firstly disconnect the battery charger plug from the batteries one and connect the batteries plug with the power supply plug (see picture 4.7. – battery version). Secondly, the operator must fill water lifting the recovery tank up and turning the cap (see detail nr. 1 in picture nr. 4.7.). Moreover, the operator has to check the hydraulic oil level lifting the batteries cover up (see picture nr. 4.7 detail 1) and unscrewing the red cap under the electric system (see picture nr. 4.7 detail 1). Now the operator can seat on the machine and start it.



**PICTURE 4.7**

20/33

#### 4.7.2 CHOOSING THE RIGHT DETERGENT

Choosing the right detergent is very important for a perfect cleaning. A too strong detergent could damage the surface. A good quality detergent has to produce little foam. Alternatively, the operator can add an antifoaming additive or 50 cc of wine vinaigre in the recovery tank in order to avoid the suction motor damage.



*Make sure that the detergent is suitable for the dirty surface. FIORENTINI S.r.l. is not responsible for damages provoked by too aggressive detergents.*

#### 4.7.3 RUDDER BAR FUNCTIONING

The rudder bar of this machine is composed by:

- Accelerator pedal (see detail 1 in picture 4.09). The operator has to press the front side of the pedal for the forward gear or the back side of the pedal for the reverse gear;



*Il pedale dell'acceleratore ha la funzione di attivare tutte le parti mobili della macchina. Quindi soltanto quando è premuto, con operatore a bordo, partiranno le spazzole ed il motore di aspirazione attivati dagli interruttori posti sulla plancia comandi. Il pedale non ha nessun controllo sull'elettrovalvola (optional) dell'acqua quindi quest'ultima deve essere aperta e chiusa direttamente dall'operatore.*

- Service/parking brake (see detail 2 in picture 4.9): It has to stop the machine and it is activated by a pedal placed on the left side of the footboard. the operator has to pull the lever up until the developed pressure can stop the machine.



PICTURE 4.9

#### 4.7.4 DETERGENT CONTROL

During the washing phase the operator can control the detergent quantity by means of a cock on the dashboard. Before opening the cock, the operator has to open the solenoid valve (see detail 1 in picture 4.10).

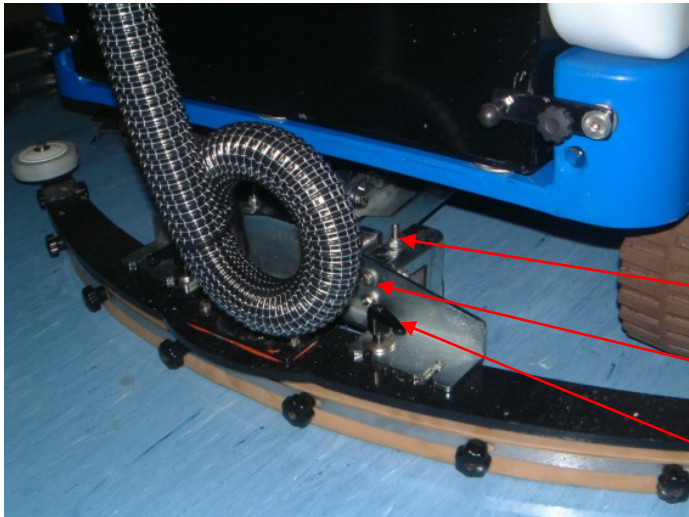
PICTURE 4.10



#### 4.7.5 SQUEEGEE ADJUSTMENT

The squeegee has to be well regulated in order to have a perfect dry system. This kind of squeegee can perfectly suck water, which flows into the suction pipe, but it must be parallel to the surface.

- Remove the ignition key from the dashboard in order to avoid the casual starting of the machine.
- By means of the knob (see detail 3 in picture 4.11) adjust the squeegee. The right pressure of the squeegee onto the floor is reached when the corner of the rubber blade is at 45°/60° from the surface.



1. squeegee height screw
2. squeegee fixing knob
3. squeegee adjustment screw

**PICTURE 4.11**

Regulate the squeegee pressure by means of the ring nuts that control the distance between the wheels of the squeegee and the floor.



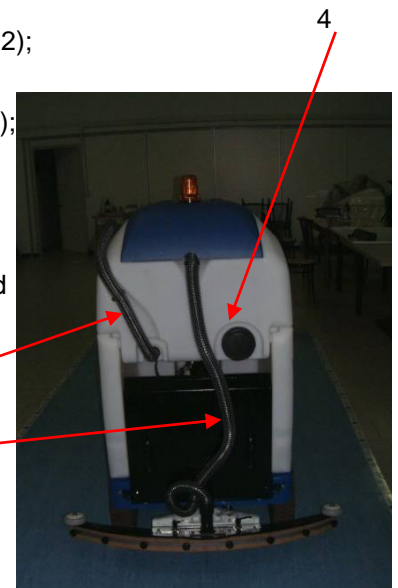
*Make sure that the two wheels of the squeegee are well regulated in order to keep both its blades parallel to the floor.*

#### 4.7.6 WATER DISCHARGE

This machine is equipped with two pipes for water discharge (picture 4.12):

- A pipe for the recovery tank discharge (see detail nr. 1 in picture nr. 4.12);
- A pipe for the solution tank discharge (see detail 3 in picture nr. 4.12);
- A pipe for the recovery tank cleaning (see detail nr. 3 in picture nr. 4.12);
- A suction pipe (see detail 3 in picture nr. 4.13).

If you need to discharge water from the tanks, you have to place the machine on a dump well, release the pipe of the tank and open the rubber cap at the end of the pipe itself.

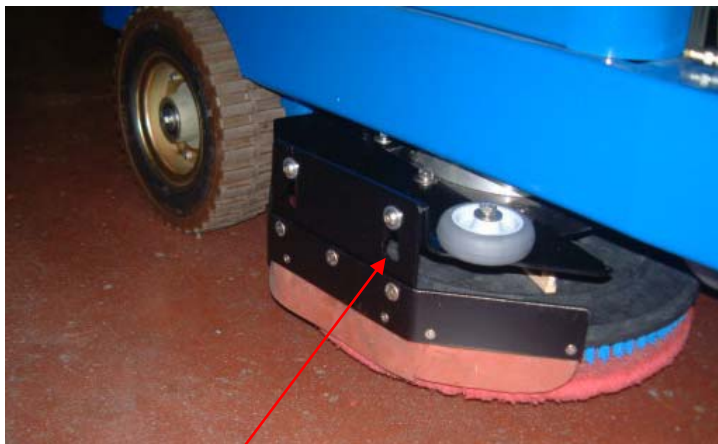


**PICTURE 4.12**

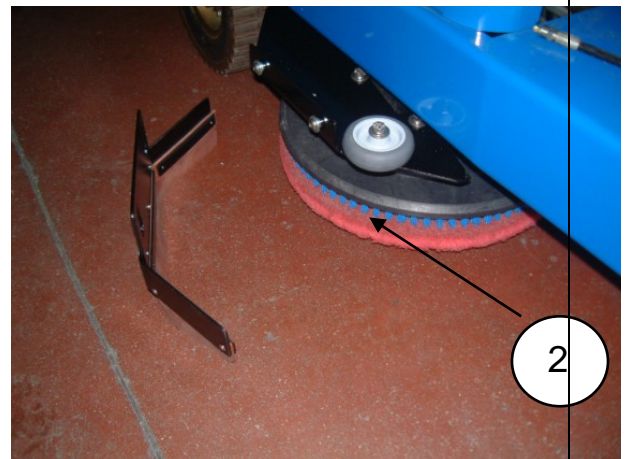
#### 4.7.7 BRUSHES REPLACEMENT

Please follow the instructions below:

- Remove the ignition key from the dashboard in order to avoid the accidental start of the machine after having translated the brushes plate outside.
- Remove the split pin that hold the bumper wheel support pin (see detail 1 in picture nr. 4.17);
- Remove the right brush turning it until you can see the pin, pull the pin and remove the brush (see detail 2 in picture 4.17);
- Set the new brush up: place it under the exagonal support and press it up (see detail 3 in picture nr. 4.17);
- Start now the machine, place the brushes plate in its original position and switch the machine off;
- Follow the same instructions for the left and central washing brush;
- After having replaced the brushes, the operator has to set the cases and the split pin up again;
- Blade replacement: the operator has to unscrew the screws on the case and replace the blade.

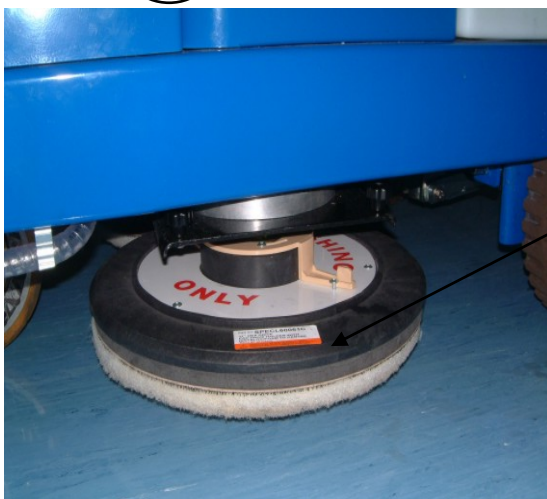


1

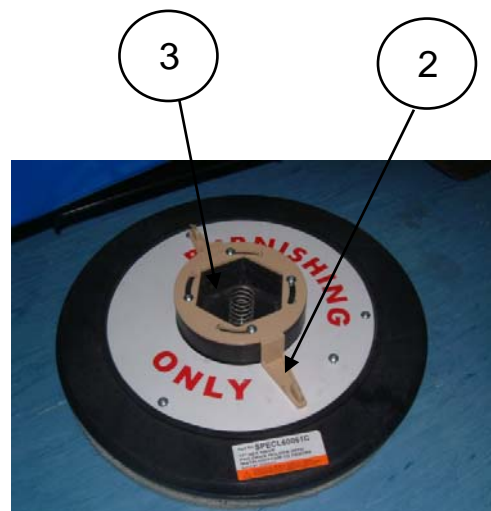


2

PICTURE 4.17



PICTURE 4.18



3

2



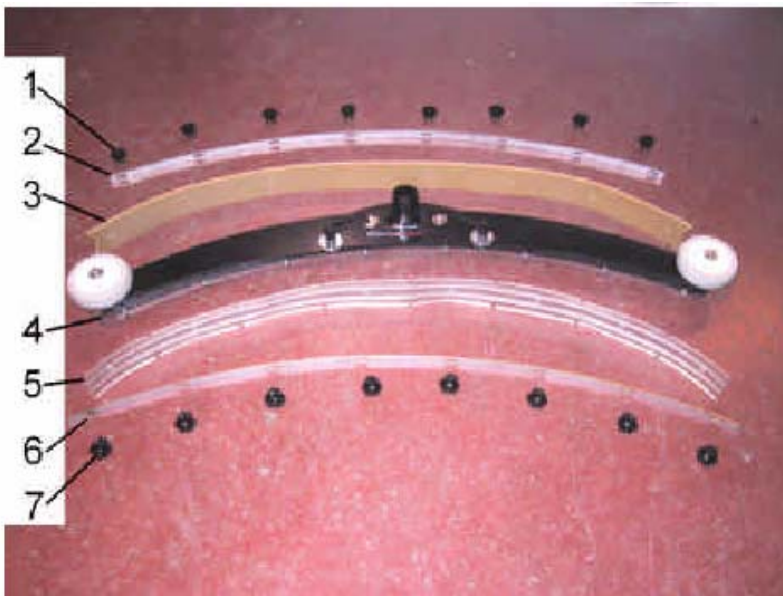
*Before starting the machine again, please make sure that all the protection cases are well set up.*

#### 4.7.8 SQUEEGEE BLADES REPLACEMENT

Squeegee blades must be replaced when their hedges are worn. A perfect hedge allows a perfect dry (picture 4.19).

Follow these instructions to replace the squeegee blades:

- Lift the squeegee support up, remove the suction pipe (picture no. 12) and unloose the screws;
- Remove the squeegee from the machine and lay it on a table;
- Remove the internal and external knobs, the steel strips and the worn blades;
- Set the new blades up, tighten the knobs and regulate the squeegee.




1. pomelli per listello posteriore
2. listello lama posteriore
3. lama posteriore
4. corpo squeegee
5. lama anteriore
6. listello anteriore
7. pomelli per listello anteriore





## 5. MAINTENANCE

### 7.1. PERIODICAL MAINTENANCE

A periodical maintenance is very important in order to keep the machine in a perfect state. Please write down in the format below all the interventions done on the machine.

	<p><b>If one of the machine components shows a defect, please do not use it until it will be repaired or replaced.</b></p>
---	--

	<p><b>Trained personnel only can service the machine and especially electric and electromechanical parts by means of suitable tools and equipments. Make reference to FIORENTINI S.r.l. only for service and spare parts (§ 7.1. and § 7.2.).</b></p>
---	---

<b>OPERATION</b>	<b>INTERVENTION</b>	<b>HOW OFTEN</b>
Cleaning	Clean the recovery tank and the oil filter of the suction motor	Every day
	 <ul style="list-style-type: none"> <li>• <b>Do not use corrosive substances.</b></li> <li>• <b>Do not use bolts of water.</b></li> </ul>	
Check up	<ul style="list-style-type: none"> <li>• Check the suction pipes and the squeegee</li> </ul>	Every week
	<ul style="list-style-type: none"> <li>➤ Check the rubber suction blades of the squeegee</li> <li>➤ Grease the gearing chains</li> </ul>	Every month
	<ul style="list-style-type: none"> <li>○ Check the filter of the clean water tank</li> </ul>	
	Check the valve for the regulation of the washing solution	Every 3 months
	Check and regulate the breaking system	
	Check the connection of the battery cables	Every 6 months
Check the coal brushes of each motor	Ogni anno	
<ul style="list-style-type: none"> <li>➤ Check the safety devices</li> </ul>	Every year	
Check the electric system		

### 5.2 BATTERIES MAINTENANCE

The operator has to check the batteries charge when the machine is on duty by means of the indicator on the dashboard, which shows:

- Green light: charged battery
- Yellow light: slightly charged battery
- Red light: uncharged battery



*The operator must keep the battery room open during the batteries recharge. Moreover:*

- *It is forbidden to use flames and/or to smoke near the batteries;*
- *Pay attention to the battery acid;*
- *Do not develop sparks near the batteries;*
- *Pay attention to the batteries gazes, which can burst;*
- *Do not invert battery polarities.*

### **5.2.1 HYDROMETRY**

In order to check the batteries hydrometry the operator has to follow the instructions below:

- By means of a hydrometre draw a small quantity of electrolyte so that the floater reaches the surface;
- Make sure that the floater inside the hydrometre is not blocked;
- For a new measurement, after having filled the batteries with distilled water, the operator has to wait until the liquid inside each battery becomes homogeneous.

### **5.2.2 WATER FILLING UP**

- Fill distilled water up in each battery cell before the recharge. The liquid inside the batteries has to be of 6 mm. over the plates;
- The operator has to repeat the same operation every time the level decreases (every week).

### **5.2.3 CHARGE LIMITS**

It is not necessary to recharge the batteries if the hydrometry, after a work day, is not under 1,24 (28 Bè). The highest suggested temperature is 45°C. If the electrolyte temperature increases more than 10/12 °C compared to the outside temperature, the batteries can be overcharged.

### **5.2.4 OFF DUTY OR INACTIVE BATTERIES**

Inactive batteries loses their automatically their charge. If batteries do not continually work, the operator has to:

- Charge the batteries once a month with a 'final' stream intensity until gas is spread and the batteries voltage and weight are constant for 3-4 hours. This operation has to be done even if the absolute weight is high;
- Keep the batteries in a dry room.

### 5.2.5 BATTERY CHARGER TECHNICAL FEATURES

The battery charger has to show the features listed in the scheme below:

IN	230V, 50Hz, 5A
OUT	36V, 30A



This kind of batteries charger can recharge batteries of other brands.



See § 2.3 TECHNICAL DATA for the batteries technical features

### 5.2.6 BATTERIES DISPOSAL

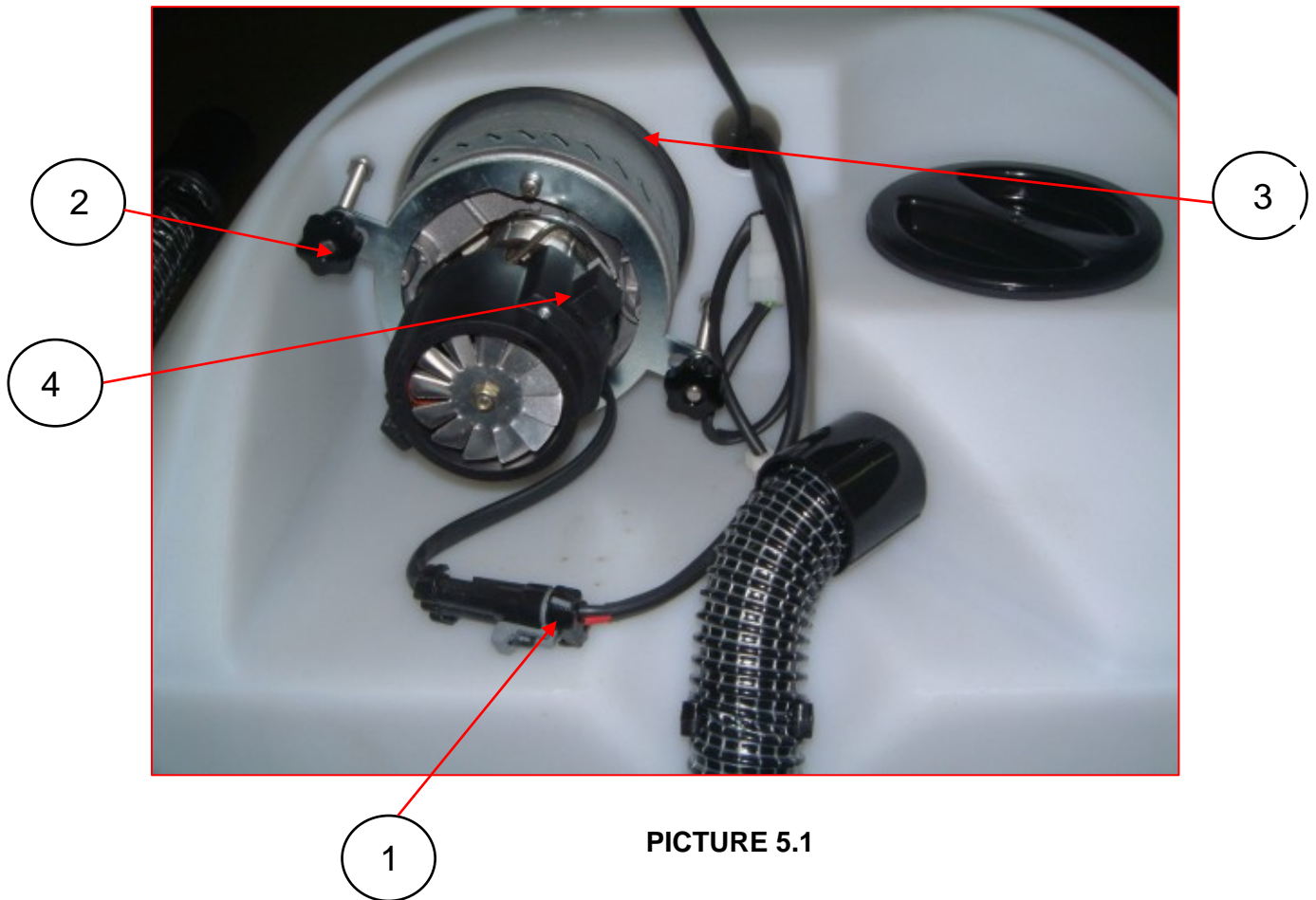
Old batteries are toxic wastes and they have to be thrown in a suitable and authorized place for the batteries disposal. For a short storage, old batteries must be located in an authorized room. Moreover, they must be stored in sealed plastic tanks, whose capacity is not lower than the electrolyte.

### 5.3 SUCTION MOTOR MAINTENANCE

The suction motor has to be checked up and cleaned. Every six months motor brushes have to be checked and replaced if it is necessary.

To maintain the suction motor please follow the instructions below:

- Take the ignition key off the dashboard, disconnect the plug (see detail 3 in picture 5.1), remove the steel plate that fixes the suction motor and the motor itself (see detail 1 in picture 5.1);
- Remove the sponge filter under the motor, wash it and put it again in its position;
- Check the motor fan through the hole in the front side of the suction motor;
- Remove the plastic cover, loosen the screws and both the brushes supports and check the motor brushes (see detail 2 in picture 5.1);
- Do now the opposite operations to set everything up again.



PICTURE 5.1

#### 5.4 ELECTRIC EQUIPMENT CONTROL

It is very important to check the electric system up every two years. Disconnected cables or burnt cables must be immediately replaced.



*Interventions on the electric system must be carried out by a trained technician.  
Every kind of intervention not explained in the operator manual must be carried out by FIORENTINI's technicians.*

**5.5 Tests to be carried out**

	<b>HOW OFTEN</b>	<b>OPERATOR/TECHNICIAN</b>
<b>CHECK</b>		
Safety devices	Every 2 years	Trained technician
Electric system	Every 2 years	FIORENTINI technician
Breaking system	Every 3 months	Trained technician
Top overhaul	Every 5 years	FIORENTINI technician
<b>MAINTENANCE</b>		
Recovery tank cleaning	Daily	Operator
Suction engine filter	Daily	Operator



## 6. SERVICE

### 6.1. SERVICE ADRESSES

Do not hesitate to contact FIORENTINI S.r.l. service for any kind of information or request.

# **ING. O. FIORENTINI s.r.l.**

**“THE BEST IN FLOOR MACHINES”**

**FILIALI:**

**20132 MILANO – Fax. 02/2592779**

**Via Palmanova 211/a – Tel. 02/27207783 - 2564810**

**00155 ROMA – Fax. 06/22754075**

**Via Carlo Carrà 13 – Tel. 06/22754040-2275060**

**STABILIMENTO:**

**50030 PIANCALDOLI (FI) – Fax. 055/817144**

**Loc. Rombola – Tel. 055/8173610**

Most of the technical problems can be sorted out with short intervention. This is why FIORENTINI S.r.l. suggest to read carefully this manual before using the machine. On the contrary, if the customer needs the help of a FIORENTINI technician, please inform us about the problem in order to sort it out with the right material.

**6.2 CLAIM REPORT**

Please, fill in the format below if the machine shows particular problems.

<b>Operator:</b>	
Company:	_____
Operator's name:	_____
Role:	_____
Date:	Signature: _____
<b>Machine description:</b>	
Machine: <u>I115SS</u>	Type: _____
Purchase date: _____	S.N.: _____
Warranty: <input type="checkbox"/> YES <input type="checkbox"/> NO	Work hours: _____
Where does the machine normally work? _____	
<b>Fault:</b>	
Code of the defected component: _____	Description: _____
Fault:	Fault short description:
<input type="checkbox"/> Mechanical component	_____
<input type="checkbox"/> Wrong functioning	_____
<input type="checkbox"/> Electric system	_____
<input type="checkbox"/> Engine	_____
<input type="checkbox"/> Missing component	_____
<input type="checkbox"/> Extremely noisy	_____
<input type="checkbox"/> Water leak	_____
<input type="checkbox"/> Other	_____
<b>Customer's suggestion:</b>	
_____	
_____	
_____	



Mat. n.  
Serial no.  
Nr. de serie

\_\_\_\_\_

Data di spedizione  
Shipment date  
Date de spedition

\_\_\_\_\_

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