



ING. O. FIORENTINI S.p.A.  
INDUSTRIAL CLEANING MACHINES

# SCRUBBER MOD. PINKY 26/32



## USER AND MAINTENANCE MANUAL

Rev.00

## Congratulations for your choice!

**ING. O. FIORENTINI S.p.A.** thanking you for the preference to our product, would like to remind you that FIORENTINI's production covers manufacture and marketing of industrial cleaning machines and is currently a leading company in this sector.

Our tradition and competence guarantee technical quality of your choice; actually all our products are being built first quality materials through criteria that can give reliability, solidity and functionality satisfying every kind of customers. FIORENTINI has recently obtained the quality system certificate conforming to the requirements of UNI EN ISO 9001:2000.

## INDEX

<b>1. GENERAL INFORMATION</b>	<b>4</b>
1.1. Symbols.....	4
1.2. Warning.....	4
1.3. Manual Consulting.....	4
1.4. Warranty.....	5
1.5. Conformity Declaration.....	6
<b>2. FEATURES AND TECHNICAL DATA OF THE MACHINE</b>	<b>8</b>
2.1. Identifying the Machine.....	8
2.2. Description and Parts of the Machine.....	8
2.3. Technical Data.....	10
<b>3. SAFETY</b>	<b>12</b>
3.1. Right Use of the Machine.....	12
3.2. Wrong Use of the Machine.....	12
3.3. Suggested Equipment.....	12
3.4. Operator Qualify.....	13
3.5. Protection and Warning Devices.....	13
3.6. Safety Devices.....	14
3.7. Safety diagnostic signaling.....	14
3.8. Other Dangers.....	15
3.9. Safety Signals.....	16
<b>4. STARTING AND USE INSTRUCTIONS</b>	<b>18</b>
4.1. Trasport and Handling.....	18
4.2. Storage.....	19
4.3. Unpacking the Machine.....	19
4.4. Handling the Unpacked Machine.....	19
4.5. Installation.....	20
4.5.1. Batteries Installation.....	20
4.5.2. Battery charger Installation.....	20
4.6. Control Devices.....	21
4.6.1. Dashboard.....	21
4.6.2. Symbols on the Dashboerd.....	22
4.7. Functioning.....	23
4.7.1. Starting the Machine .....	23
4.7.2. Choosing the right detergent .....	24
4.7.3. Handlebar regulation (battery version).....	24
4.7.4. Levers Functionig .....	25
4.7.5. Detergent solution Regulation .....	27
4.7.6. Squeegee Regulation .....	27
4.7.7. Water discharge .....	28

4.7.8. Brushes Replacement .....	29
4.7.9. Squeegee Blades Replacement .....	29
4.7.10 Cylinder Brushes Replacement (Cylinder Brushes Version).....	30
4.7.11 Waste Tank Cleaning (Cylinder Brushes Version) .....	30
4.7.12 Cylinder brushes belt regulation and Replacement (Cylinder Brushes Version)	31
<b>5. MAINTENANCE</b>	<b>32</b>
5.1. Maintenance Program.....	32
5.2. Batteries Maintenance.....	32
5.2.1. Hydrometry.....	33
5.2.2. Water Filling Up.....	33
5.2.3. Charge Limits.....	33
5.2.4. Off duty or inactive batteries .....	33
5.2.5. Battery Charter Technical Data .....	33
5.2.6. Batteries disposal .....	34
5.3. Electric System Control.....	34
5.4. Tests to be carried out .....	35
5.5. Maintenance Register.....	35
5.6. Maintenance Register.....	36
<b>6. SERVICE</b>	<b>37</b>
6.1. Service Adresses.....	37
6.2. Claim Report.....	37

## 1. GENERAL INFORMATION

### 1.1. SYMBOLS

	<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>
	<i>This symbol is used to get the operator's attention on general information.</i>

### 1.2. PREMISE



*ING. O. FIORENTINI S. p. A. is the only owner of this manual.*

*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 in the order.*

*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. In case of loss ask for a duplicate to FIORENTINI S.p.A..*

*FIORENTINI S.p.A. is not responsible for any kind of damages caused by people or things due to the non-observance of the instructions dealt in this manual.*

*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.*

### 1.3. 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 ING. O. FIORENTINI S.p.A. 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.

## 1.4. WARRANTY

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

### 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, ING. O. 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.

ING. O. FIORENTINI S.p.A., its purchasers and its suppliers have the same warranty for the electric and expendable materials that are sold by external suppliers.

### WARRANTY CONDITIONS

The Ing.O.Fiorentini S.p.A. general terms conditions also apply to the warranty.

The manufacturer cannot be held responsible in any way for damages resulting from unauthorised modifications made to the appliance, from the use of unsuitable brushes and accessories and after use of the device other than that intended.

### RETURNED GOODS

Intervention demands must be sent to ING. O. FIORENTINI Service Dpt. 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 sticked 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 factory. Those ones being substituted belong to FIORENTINI Co..

Please send defected electric or electronic material separately in order to divide and recycle material with dangerous substances (see directive about RAEE 2002/96/CEE).



## EXCEPTIONS

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

## APPLICATION MODALITY

Defective components must be sent back to ING. O. FIORENTINI S.p.A. in order to establish the anomalies causes 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.

## INTERVENTION DEMANDS

Intervention demands must be sent to FIORENTINI Service Dpt. 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 sticked 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 factory. Those ones being substituted belong to FIORENTINI Co.



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

## **1.5. CONFORMITY DECLARATION**

Conformity declaration is released with the machine and the user manual.

**DICHIARAZIONE CE DI CONFORMITA'-DECLARATION OF CONFORMITY  
DECLARATION DE CONFORMITE-EG-KONFORMITÄTSEKTLÄRUNG-  
DECLARACION DE CONFORMIDAD**

(ai sensi dell'allegato II 1.A della Direttiva Macchine 2006/42/CE)

**La ING.O.FIORENTINI SPA**

con sede in Via Piancaldoli 1896 Firenzuola, 50033, (FI)

**DICHIARA/DECLARES/DECLARE/ERKLÄRT/ DECLARA**

in qualità di costruttore sotto la propria responsabilità che la macchina  
As manufacturer under its own responsibility that the machine  
En tant que fabricant sous sa propre responsabilité que la machine  
Als Hersteller, erklären, in alleiniger Verantwortung, dass das Produkt  
Como fabricante, bajo su responsabilidad que la máquina



**Modello/model/modèle/Typ/modelo**

**Matricola/serial number/numero de série/**

**Fabriknummer/ Número matricula**

**Anno di costruzione /**

**Year of production/ Année de production/**

**Baujahr/ Año de producción**

a cui la presente dichiarazione si riferisce è conforme alle prescrizioni  
which this declaration refers to, is in conformity with the requirements  
à laquelle se réfère cette déclaration, est en conformité avec les prescriptions  
Auf das sich diese Erklärung bezieht, mit der normativen übereinstimmt.  
que esta declaración se refiere, está en conformidad con los requisitos

della direttiva macchine 2006/42/CE/ Directive 2006/42/CE / de la Directive 2006/42/CE / der EG-Richtlinie 2006/42/EG über  
Maschinen / De la directiva máquinas 2006/42/CE

della direttiva compatibilità elettromagnetica 2014/30/EU/ the Electromagnetic Compatibility Directive 2014/30 / EU / de la Directive  
Compatibilité Electromagnétique 2014/30 / EU / elektromagnetische Verträglichkeit (EMV) 2014/30/EU / la directiva de  
compatibilidad electromagnetica 2014/30/EU

della direttiva sui rifiuti di apparecchiature elettriche ed elettroniche (RAEE) 2012/19/UE/ Directive on Waste of Electrical and  
Electronic Equipment (WEEE) 2012/19 / EU/ de la directive relative aux déchets d'équipements électriques et électroniques (DEEE)  
2012/19 / UE / Elektrische und elektronische Geräte Abfälle (DEEE)2012/19/UE Directiva sobre residuos de aparatos eléctricos y  
electrónicos (RAEE) 2012/19/UE/  
(ISCRIZIONE AL REGISTRO PRODUTTORI A.E.E.: N° IT1201000007391)

In particolare alle disposizioni normative  
In particular, the regulatory rules  
En particulier, les dispositions réglementaires  
Gemäß den Bestimmungen der Richtlinie  
En particular, las normas reguladoras

**EN ISO 12100, EN ISO 13857, EN ISO 13850, EN 60204-1, EN 349,  
EN 953, EN ISO 4413, EN 60335, EN 60335-1, EN 60335-2-69, EN 60335-2-72, EN 55014-1, EN 55014-2,  
EN 62233, EN 61000-6-2, EN 61000-6-4**

Il fascicolo tecnico è costituito da Ing.O.Fiorentini S.p.a. in qualità di persona giuridica- via Piancaldoli 1896 Firenzuola 50033 Fraz. Piancaldoli (FI) - Italia  
The technical dossier consists of Ing.O.Fiorentini Spa as a legal person - via Piancaldoli 1896 Firenzuola 50033 Fraz. Piancaldoli (FI) - Italy  
Le dossier technique est constitué de Ing.O.Fiorentini Spa comme personne juridique - via Piancaldoli 1896 Firenzuola 50033 Fraz. Piancaldoli (FI) - Italie  
Die technische Dokumentation besteht aus Ing.O.Fiorentini Spa as a legal person - via Piancaldoli 1896 Firenzuola 50033 Fraz. Piancaldoli (FI) - Italy  
El expediente técnico se compone de Ing.O.Fiorentini Spa como una persona jurídica - via Piancaldoli 1896 Firenzuola 50033 Fraz. Piancaldoli (FI) - Italia

**Piancaldoli**

*Luogo e data*

**Ing. O. Fiorentini S.p.a.**

Il Legale Rappresentante/president/gérant/ representante

**Angelica Maria Cerutti**

*Firma*

*Cerutti Angelica Maria*

**2. FEATURES AND TECHNICAL DATA OF THE MACHINE**

**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” brand.

Ing. O.Fiorentini S.r.l.		MADE		CE
50030 Piancaldoli (FI)		IN ITALY		
Mod	PINKY 26	S.		2 0 1 0
V		Hz		
Kg	A	W		



PICTURE N° 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 scrubber machine cannot be sold without the label.*

**2.2. DESCRIPTION AND COMPONENTS**

The scrubber machine – PINKY 26 - has been designed for the cleaning of all flat surfaces by means of washing and suction of the washing water. A series of batteries feeds all engines and electric devices.

The machine is equipped with two rotating brushes which wash the surface by means of water and detergent. Whilst the machine is running forward, the back brush (squeegee) picks the water up that is directly sucked into the recovery tank.

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.

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

- switch the machine on and off;
- select speed;
- start suction;
- start brushes;
- select forward/reverse gear;
- start traction;
- start service and parking brake;

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

The main parts of the machine are:

- zinc-plated steel frame or stainless steel frame or painted frame;
- PE-HD plastic solution tank;
- PE-HD plastic recovery tank supplied with flexible suction piping system and drainage;
- Series of batteries placed in the recovery tank room;
- rotatine brushes;
- suction system (squeegee);
- one driving wheel with electric brake;
- handlebar.

ING. O. FIORENTINI SRL, 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**

	<b>PINKY 26</b>	<b>PINKY 32</b>	<b>PINKY26 CYLINDER BRUSHES VERSION</b>
<b>DIMENSIONS</b>			
LENGTH	1033 mm		1150 mm
WIDTH	700 mm		800 mm
HEIGHT	1070 mm		1070 mm
NUMBER OF BRUSHES AND DIAMETER	2x Ø330 mm	2x Ø410 mm	N°2 cylinder brushes Ø110 x 650 mm
SCRUBBING WIDTH	650 mm	850 mm	650 mm
SQUEEGEE WIDTH	890 mm	980 mm	890 mm
SOLUTION TANK	75 l		75 l
RECOVERY TANK	75 l		75 l
TRACTION	front traction		front traction
WEIGHT WITHOUT BATTERIES	145 kg	150 kg	150 kg
BATTERIES WEIGHT	4x 26 kg		4x 26 kg
<b>ELECTRIC FEATURES</b>			
POWER TENSION	24 V		24 V
POWER	4x 6V 320A/h		4x 6V 320A/h
GEAR MOTOR BRUSHES	1/10 2 x 24V 300W	1/10 2 x 24V 650W	1 x 24V 650W
SUCTION ENGINE	24V 500W conv.		
TRACTION GEARMOTOR	24V 10A 200W		
<b>FUNCTIONS</b>			
SQUEEGEE LIFTING UP	Lever		
SUCTION	Switch		
BRUSHES	Switch		
<b>PERFORMANCES</b>			
WATER LIFT	2200 mBar		
BRUSHES PRESSURE	20 kg	25 kg	20 kg
FORWARD SPEED	0-5 km/h		
OVERWHELMING SLOPE WITH FULL LOAD	10%		
CLEANING CAPACITY UP TO	3250 m <sup>2</sup> /h	4250 m <sup>2</sup> /h	3250 m <sup>2</sup> /h
AUTONOMY	5 h		
<b>ECOLOGIC FEATURES</b>			
NOISE AT OPERATOR'S EAR	73 dB		71 dB



*The above mentioned characteristics are not binding for the manufacturer; they can be changed without any notice . ING.O.FIORENTINI SRL. is always at disposal for any information (par.6.1.).*

**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



*Pinky 26 is a scrubber machine which has been designed for an industrial use. It can wash and dry flat surfaces or with a max. 10% slope. It can overwhelm a max. 5% sloping surface at 1km/h.*

#### 3.2. WRONG USE OF THE MACHINE



- *the machine cannot be driver by non authorized personnel;*
- *this machine cannot work on surfaces with holes;*
- *this machine cannot wash on sloping surfaces;*
- *The machine cannot wash sloping surfaces whose gradient is higher than 10%;*
- *U-turn is forbidden on sloping surfaces whose gradient is higher than 5% (speed 1 km/h);*
- *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 stuck on the machine. ING.O. FIORENTINI S.p.A. is not responsible for a wrong use of the machine.

#### 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.

ING. O. FIORENTINI S.p.A. 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. OPERATORS' QUALIFICATION**

The below scheme shows the requested operator's qualifications for each operation/maintenance to do on the machine:

<b>OPERATION</b>	<b>OPERATORS' QUALIFICATION</b>
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

ING.O. 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.



*ING. O. 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 PROTECTION AND WARNING DEVICES**



- ***It is absolutely forbidden to tamper or disconnect safety and warning devices while the machine is working;***
- ***It is important to check periodically safety and warning devices.***

<b>Brushes Protections</b>	PINKY 26 is equipped with two rotating brushes made of nylon. The machine cannot reach dangerous areas thanks to one fixed steel protection and one fixed plastic or PEHD protection set up on each brush. These cases can be only willingly removed.
<b>Suction Engine Protection</b>	PINKY 26 is equipped with a cover set up on the recovery tank which allows suction engine inspection and protection whilst the machine is functioning. Therefore, it is very important that the cover is well set up on the machine.
<b>Parking Brake</b>	PINKY 26 is equipped with a braking device which allows to stop the machine safely and avoid the risk to start the machine again unwillingly.

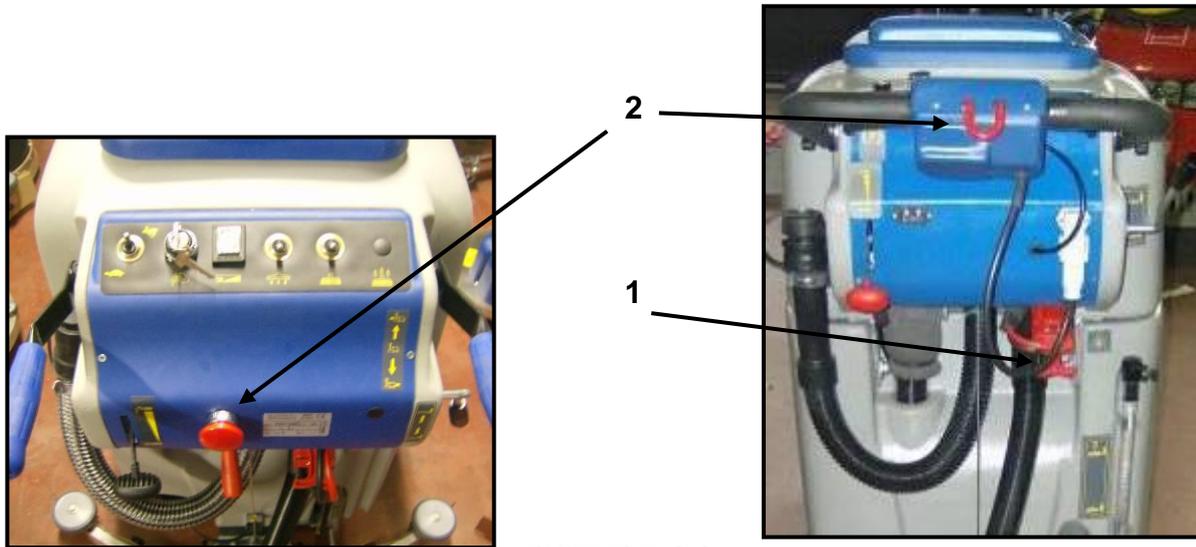
### 3.6 SAFETY DEVICES

The machine is equipped with the following safety devices.

- **Socket** (picture 3.1), 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.

- **Safety Device:** PINKY 26 is equipped with a special device which avoid the risk of squashing whilst the machine is reversing (see detail 1 in picture 3.2). Thanks to a safety lever, the machine is blocked when the lever gets in contact with the operator's stomach. Moreover, the machine starts running reverse for a couple of meters in order to avoid the operator's squashing during a wrong manoeuvre.



PICTURE 3.1

### 3.7 SAFETY DIAGNOSTIC SIGNALING

The electronic card is equipped with a particular system which shows the machine errors through quick flashings on the battery charger display placed on the dashboard.

The number of switched on LEDs represents one of the errors listed below:

1 FLASH	Running microswitches fault. One flash shows that one of the running microswitches is already on
2 FLASHES	The battery is down or under tension
3 FLASHES	Off duty code
4 FLASHES	Engine circuit open
5 FLASHES	Fault inside the regulator or the engine
6 FLASHES	Potentiometer fault. This diagnostic signaling is off duty for the 2-cable potentiometer
7 FLASHES	MOSFET (Metal Oxide Semiconductor Field Effect Transistor) high temperature. This alarm is activated when the temperature reaches $75^{\circ}\text{C} \pm 5^{\circ}\text{C}$ and it has to decrease the engine max. current.
8 FLASHES	The engine is already rotating, i.e. the operator switches the regulator on while the machine is descending a slope
9 FLASHES	Software fault

### **3.8 OTHER DANGERS**

ING. O. FIORENTINI S.r.l. analyzes – starting from the design of the machine - all the 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 signals on the machine the operator can avoid many risks that can occur.

#### **SQUASHING DANGER**

This kind of danger can occur:

- whilst regulating the washing brushes
- whilst regulating the squeegee;
- whilst checking the engine or filling water into the solution tank up;

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.

Special labels stuck on the brush covers or on the recovery tank prevent dangers to the operator (see § 4.7.).

#### **TURNOVER**

This kind of danger can occur:

- during the normal operating of the machine when you exceed sloping limits as specified in the manual and you use the machine to clean disconnected surfaces or with holes and high depressions (photo 3.2)



**Do not use the machine to wash sloping surfaces higher than 10% or surfaces with holes or depressions which might compromise the stability of the machine.**

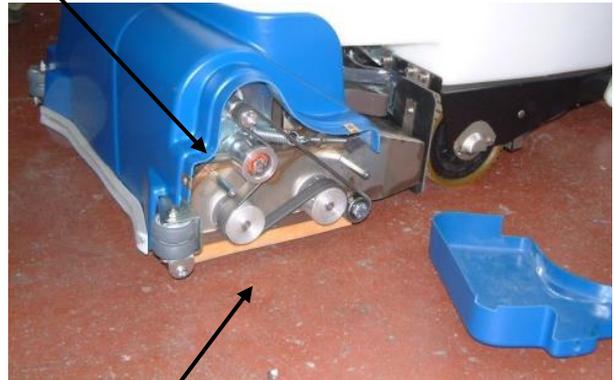


*FIORENTINI is not responsible for accidents occurred to people or things provoked by a wrong use of the machine, i.e. using the machine on surfaces which can compromise its stability.  
The purchaser must stick proper labels on the machine to show the operator its right use.*

**3.9 SAFETY SIGNALS**

<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.

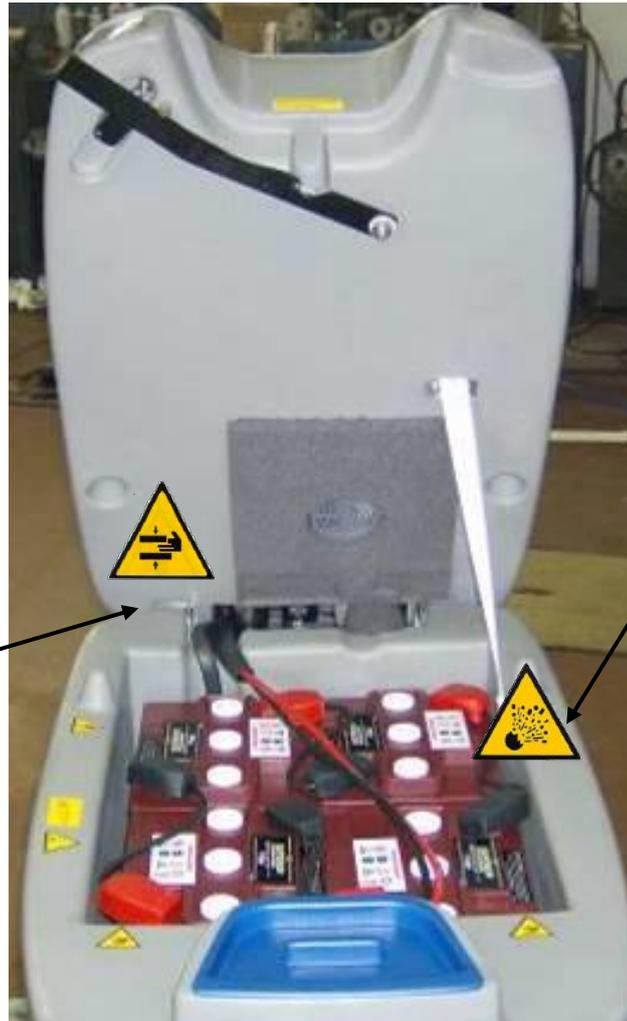


**PICTURE 3.2**

	<b>What is it?</b>	Crushing 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 damaged. 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.



PICTURE 3.3

	<b>What is it?</b>	Crushing 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 damaged. It is absolutely forbidden to remove or temper danger signals.***

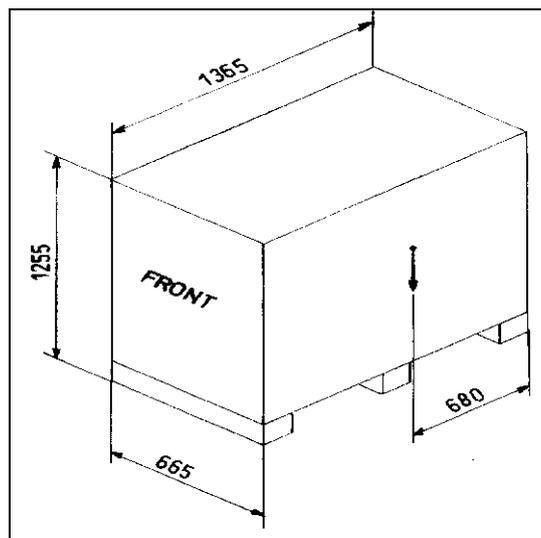
**4. STARTING AND USE INSTRUCTIONS**

**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 indicates 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 on another one. If agreed with the purchaser, the machine can be delivered without package, placed on a pallet and fixed by means of straps.



*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.

Make always sure that the black arrow on the package is in the middle of the elevator forks or the straps. Anchorage and/or strapping points are set up in order to keep the machine on balance during the transport.

<b>PACKAGE</b>	<b>HANDLING EQUIPMENT</b>	<b>PIC.</b>
Carton box or plywood box on a pallet	Fork elevator	Nr. 4.2

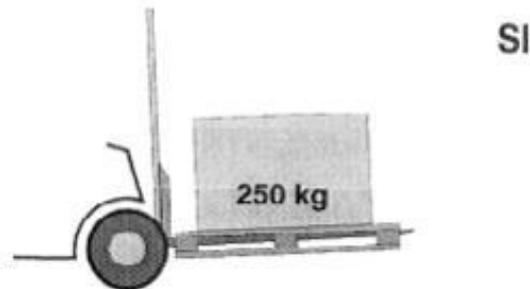


**Bands used for lifting the machine up must have the same loading capacity as the machine load. Handling operations must be done without causing a loss of stability of the machine. Otherwise, the machine can be damaged or the operator can be in danger.**



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

## LOADING SYSTEM



PICTURE N° 4.2

## 4.2. STORAGE

The machine must be stored in a closed and dry place if 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. HOW TO UNPACK THE MACHINE

- Cut the straps paying attention to the back spring.
- Remove clips that join pallet and carton;
- in case of plywood box, please remove clips from both sides and basis of each panel:
- Cut the strips that hold the machine.
- Lay the machine on the floor.

## 4.4 HANDLING 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; 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:

- the batteries room is under the operator’s seat protected by a cover;
- lift the cover of the batteries room up (picture no. 4.4 detail 2);
- install the batteries in their room (picture 4.4 detail 2 and make sure the batteries boxes are not broken);
- do never add distilled water after batteries recharge;
- clean the surfaces for the cables connections;
- use the handles on the batteries to move them.



PICTURE N° 4.3

**4.5.2 BATTERY 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

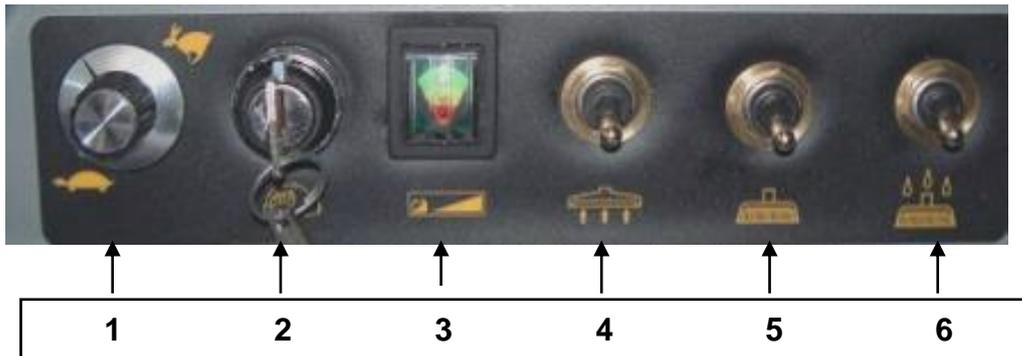


PICTURE N° 4.4

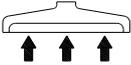
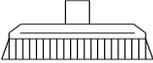
**4.6 CONTROL DEVICES**

**4.6.1 DASHBOARD**

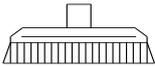
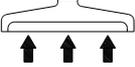
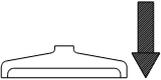
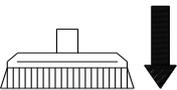
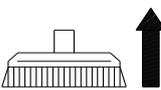
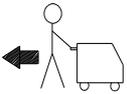
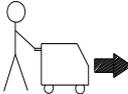
The dashboard is made of a series of switches that activate or inactivate all the machine functions. The function of each switch is shown by a picture. Picture 4.6. shows the dashboard of the machine and the switches function is explained in the scheme in the following page.



PICTURE N° 4.5

POS.	BUTTON	FUNCTION
1		POTENTIOMETER
2		KEY SWITCH
3		BATTERY CHARGER PILOT LIGHT
4		SUCTION SWITCH
5		BRUSHES SWITCH
6		SOLENOID VALVE SWITCH (optional)

**4.6.2 SYMBOLS ON THE DASHBOARD**

0	closed (off)	1	Switched on
	Main switch		Washing brush
	Squeegee suction		Progressive increasing
	Squeegee down		Squeegee up
	Washing brush down		Washing brush up
	Reverse gear		Forward gear
	Solenoid valve		potentiometer
	Emergency switch		Service/parking brake

## **4.7 FUNCTIONING**

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. Follow these instructions for a correct washing:

1. press the brushes motor switch;
2. press the solution solenoid valve switch;
3. press the suction switch.

By means of the accelerator pedal the washing brushes and the suction motor are activated. On the contrary, both the washing brushes and the suction motor are deactivated after a few seconds if the operator leaves this pedal. Before the surface is completely dry, the operator must switch the solution solenoid valve off because this is not activated/deactivated by the accelerator pedal. The operator has to do a second washing if the surface is particularly dirty:

1. wash the surface with the squeegee up and the brushes down;
2. activate the brushes;
3. press the solution solenoid valve switch;
4. leave the solution on the surface to dissolve the dirt;
5. do a second washing with brushes and squeegee down, the suction activated and the solution solenoid valve open.

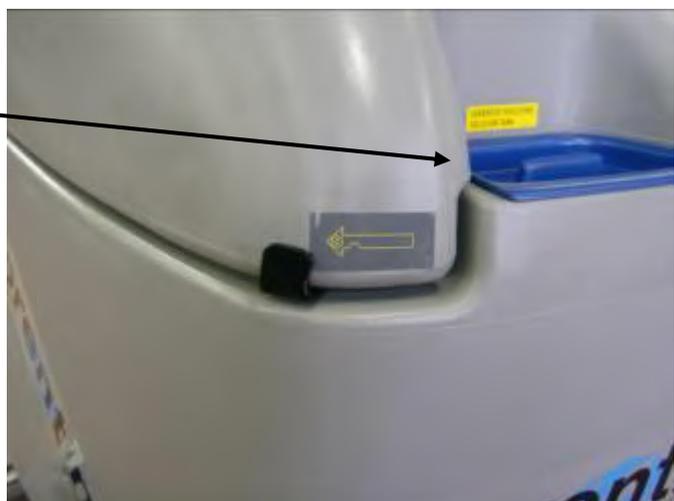


*Before any operation, make sure that all protections are well fixed.*

### **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 4.6. – 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.). Now the operator can seat on the machine and start it.

1



**PICTURE N° 4.6**

#### **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. Otherwise, the operator can add an antifoaming additive or 50 cc of wine vinegar 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 HANDLEBAR REGULATION (ELECTRIC VERSION)**

The operator can regulate the handle bar in order to choose a comfortable position:

- knob for the regulation of the handle bar (see detail 1 in picture 4.7).



1

PICTURE N° 4.7

**4.7.4 LEVERS FUNCTIONS**

**ELECTRIC VERSION**

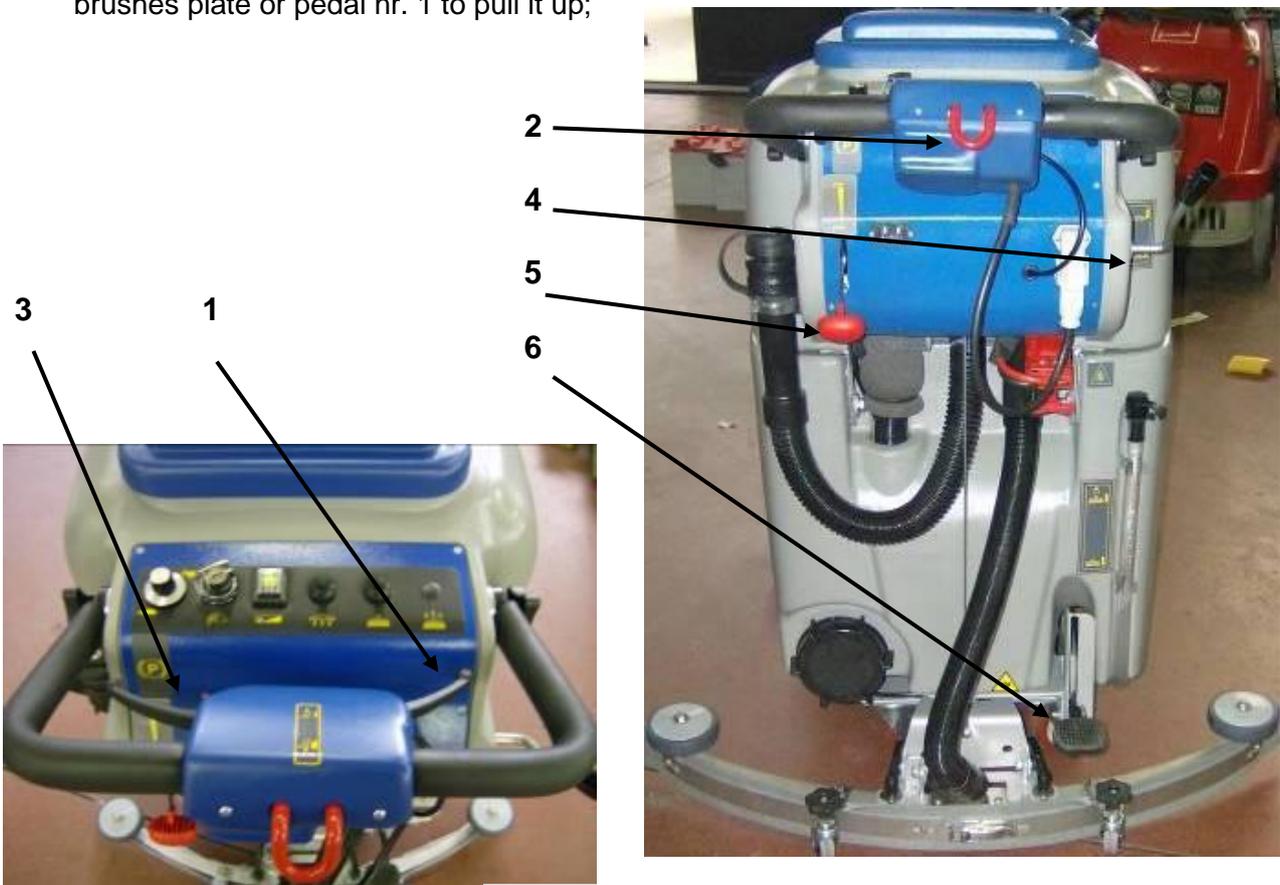
The machine is equipped with a series of levers and pedals:

- gas lever (see detail 1 picture 4.8).
- U lever (see detail 2 picture 4.8): push this lever against the machine then pull the gas lever (n. 1) to make the machine go forward. Vice versa, pull the U lever for the reverse speed.



*The accelerator pedal activates all the machine moving parts. This is why the brushes and the suction motor are activated pressing the accelerator pedal and their switches on the dashboard. On the contrary, the accelerator pedal can't activate the solution solenoid valve, which has to be opened and closed by the operator.*

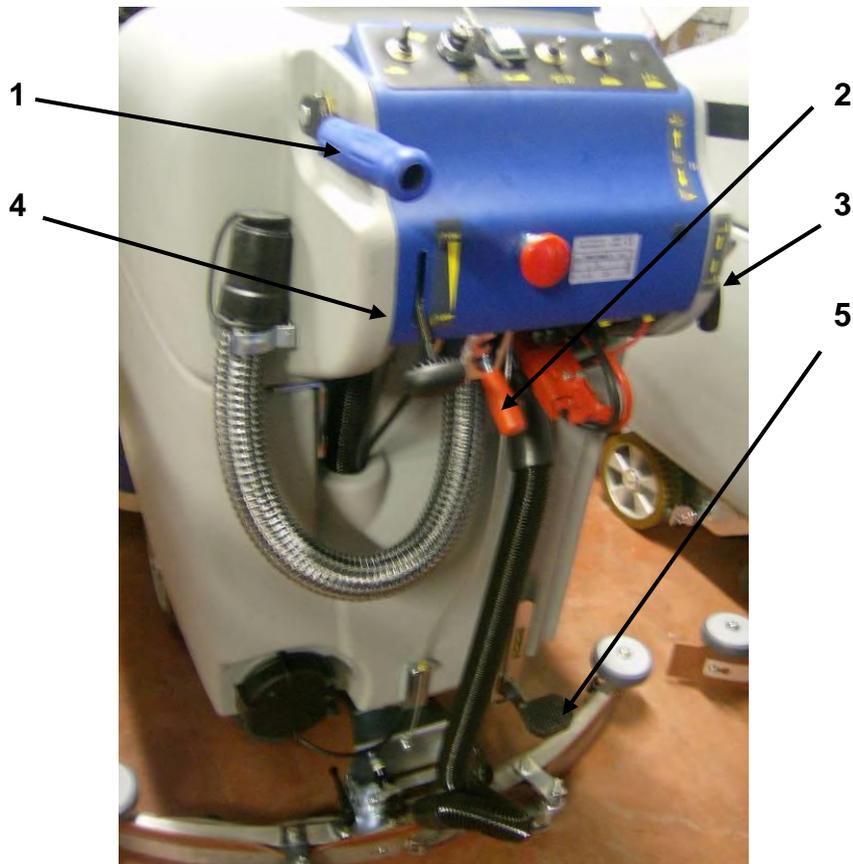
- Service/Parking Brake (see detail 3 in picture 4.9). it has to slow and stop the machine. If the operator wants to set the service brake on, he/she has to press the service brake pedal. If he /she wants to release the service brake, he/she has to press both the brake pedal and the release pedal and press the release knob.
- Squeegee lifting up lever (see detail 4 in picture 4.8). Pull the lever up in order to lift the squeegee up or pull it down to do the opposite.
- Solution lever (see detail 5 in picture 4.8). Turn the solution lever until the solution quantity that flows out is sufficient;
- Brushes Plate up/down Pedal (see detail 2 in picture 4.8). Press pedal nr. 2 to low the brushes plate or pedal nr. 1 to pull it up;



PICTURE N° 4.8

### MECHANIC VERSION

- Forward/reverse gear (see detail 1 in picture 4.8 B). In order to run the machine forward, the operator has to pull both levers on the handlebar up (and down for reverse gear);
- Service/Parking Brake (see detail 2). It has to slow and stop the machine. If the operator wants to set the service brake on, he/she has to press the service brake pedal ( . If he /she wants to release the service brake, he/she has to press both the brake pedal and the release pedal and press the release knob.
- Squeegee lifting up lever (see detail 3). Pull the lever up in order to lift the squeegee up or pull it down to do the opposite.
- Solution lever (see detail 4). Turn the solution lever until the solution quantity that flows out is sufficient;
- Lifting up brushes plate (detail 5). In order to lift the brushes plate up, the operator has to press the pedal until it is blocked by the plate. Do the opposite in order to lift the brushes plate down.



PICTURE N° 4.8 B

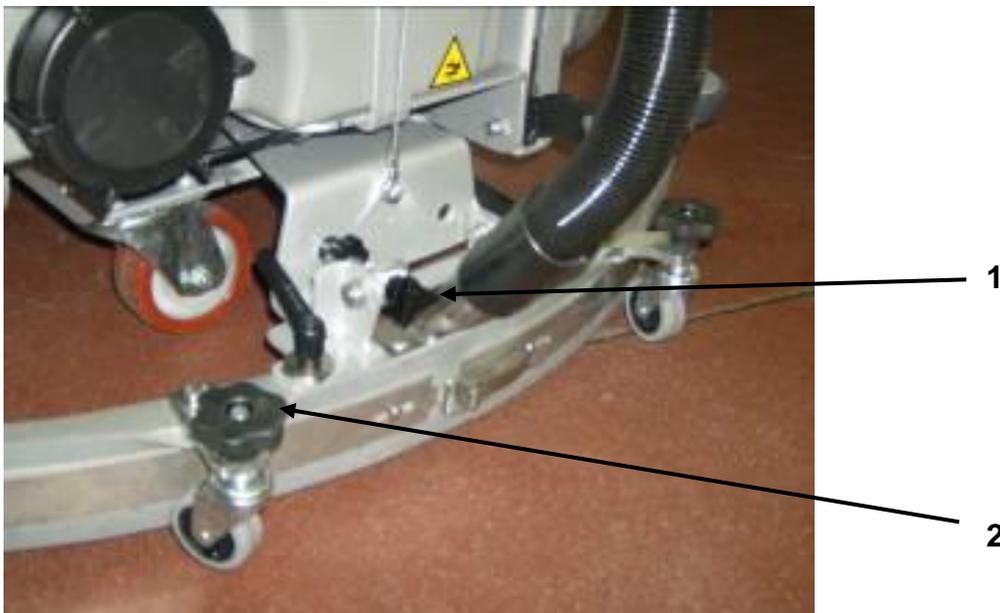
#### **4.7.5 DETERGENT SOLUTION REGULATION**

During the washing phase the operator can control the detergent quantity by means of a cock, which is at the bottom of the machine on the left inside the protection rubber (see detail nr. 5 in picture 4.8.).

#### **4.7.6 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 hexagonal tie rods regulate the squeegee inclination (see detail 1 in picture nr. 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 (see detail 1 in picture nr. 4.12).



**PICTURE N° 4.9**



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

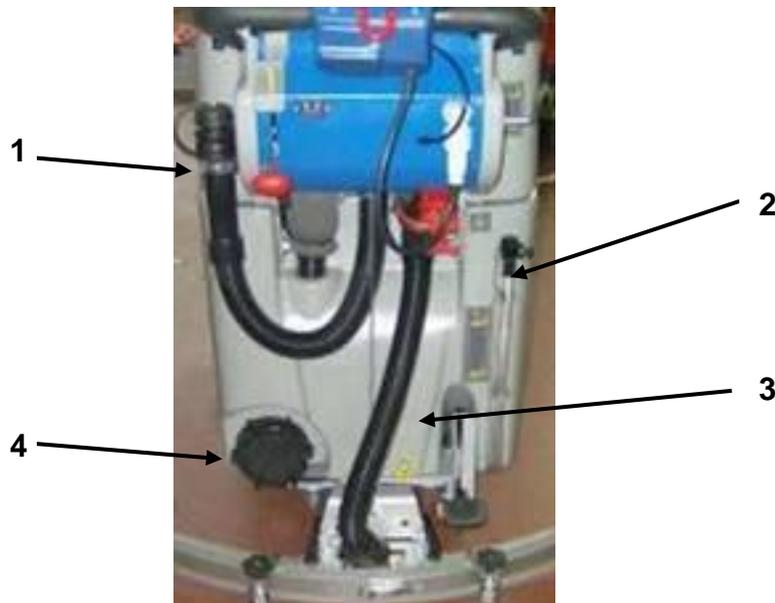
#### **4.7.7 WATER DISCHARGE**

This scrubber machine is equipped with two pipes for water discharge (picture 4.10.):

- A pipe for the recovery tank discharge (see detail nr. 1 in picture nr. 4.10.);
- A pipe for the solution tank discharge (see detail nr. 2 in picture nr. 4.10.);

Moreover, the scrubber is equipped with a flexible pipe system which intake dirty water (see detail 3 in picture 4.10) and a porthole in order to check and clean the recovery tank (see detail 4 in picture 4.10).

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.

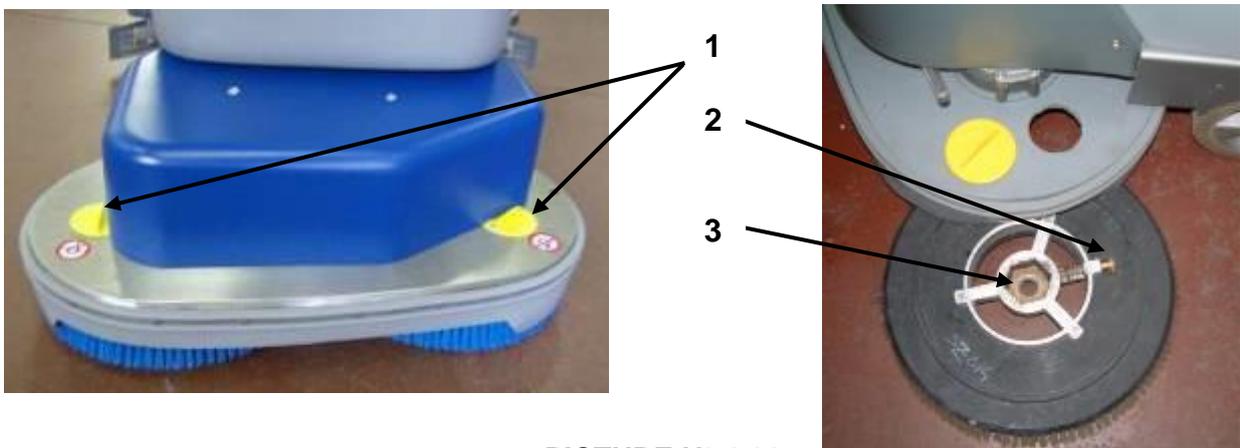


**PICTURE N° 4.10**

**4.7.8 BRUSHES REPLACEMENT**

Please follow the instructions below:

- Remove the ignition key from the dashboard in order to avoid the accidental start of the machine;
- remove the yellow caps (see detail 1 in picture 4.11);
- Remove the brushes turning them until you can see the pins, pull the pins and remove the brushes, (see detail 2 in picture 4.11);
- Set the new brush up: place it under the hexagonal support and press it up (see detail 3 in picture 4.13);
- After having replaced the brushes, the operator has to set the cases and the split pin up again.



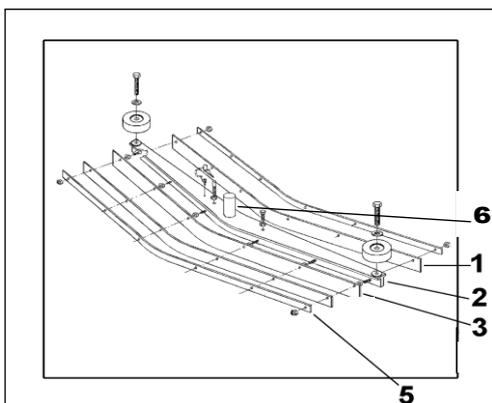
PICTURE N° 4.11

**4.7.9 SQUEEGEE BLADES REPLACEMENT**

Squeegee blades must be replaced when their hedges are worn. A perfect hedge allows a perfect dry (picture 4.12).

Please follow these instructions to replace the squeegee blades:

- Remove the squeegee from the machine and lay it on a table;
- Turn the lever, unloose the steel strip and the two side wing nuts;
- Remove the steel strips;
- Do now the opposite operation, set the new blades up and regulate the squeegee;
- Follow the same instructions to replace the front blade.



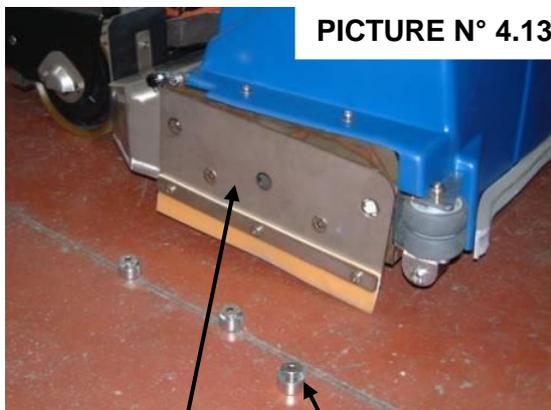
PICTURE N° 4.12

- |   |
|---|
| <ul style="list-style-type: none"> <li>1- Squeegee front blade</li> <li>2- Squeegee</li> <li>3- Squeegee suction blade</li> <li>5- Squeegee strap</li> <li>6- Siphon</li> </ul> |
|---|

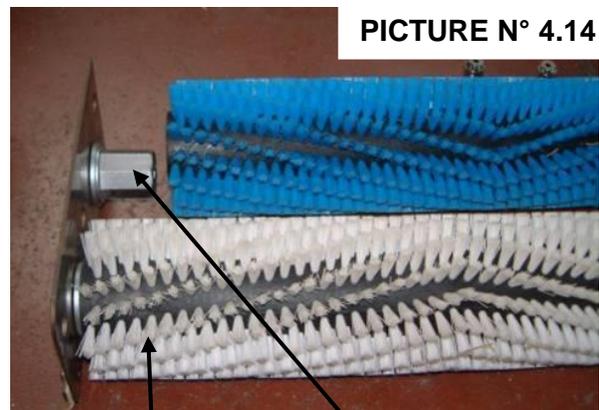
**4.7.10 CYLINDER BRUSHES REPLACEMENT (cylinder brushes group version)**

Please follow the instructions below:

- Remove the ignition key from the dashboard in order to avoid the accidental start of the machine.
- unscrew the three screws and remove the protection steel case (see detail 1 in picture 4.13) pulling it out;
- remove the cylinder brushes (see detail 3 in picture 4.13);
- set the new cylinder brushes up and match the hexagonal attachment of the brush with the one of the flange;
- set the protection steel case again up and make sure that the hexagonal attachment fits the cylinder brushes (see detail 4 in picture 4.13). Press the protection steel case against the machine and tighten the three screws.



1 2



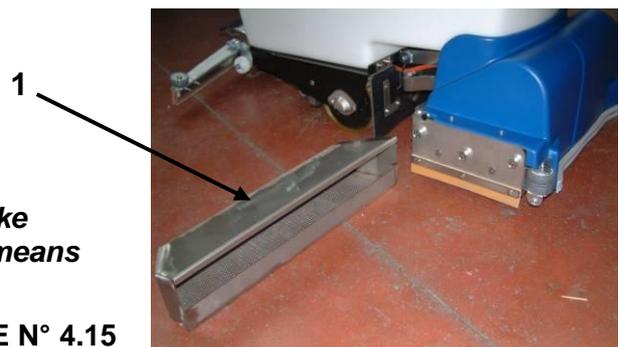
3 4

**4.7.11 WASTE TANK CLEANING (cylinder brushes group version)**

Please follow the instructions below:

- Remove the ignition key from the dashboard in order to avoid the accidental start of the machine;
- lift the waste tank stopper up in order to remove the tank itself (see detail 1 in picture 4.15);
- remove the waste tank pulling it out of the machine;
- empty and clean the waste tank;
- do now the opposite instructions.

***! Before starting the machine again, please make sure that the waste is fixed to the machine by means of the hook.***



PICTURE N° 4.15

#### **4.7.12 CYLINDER BRUSHES BELT REGULATION AND REPLACEMENT (cylinder brushes group version)**

Please follow the instructions below:

- Remove the ignition key from the dashboard in order to avoid the accidental start of the machine;
- unscrew the four screws and remove the plastic case (see detail 1 in picture 4.16);
- tighten the belt by means of the nut (see detail 2 in picture 4.16) in order to increase the draw of the spring that regulates the belt (see detail 3 in picture 4.16);
- unloose the nut in order to remove and replace the belt;
- tighten the nut until the belt is well tightened;
- set the case again up by means of the four screws.



PICTURE N° 4.16

1



2

3

5. MAINTENANCE

**5.1. PERIODICAL MAINTENANCE**

A periodical maintenance is very important.

Please write down in the format you find below all the interventions done on the machine.



- *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 (ref.: 6.1. / 6.2.).*

<b>OPERATION</b>	<b>INTERVENTION</b>	<b>HOW OFTEN</b>
Cleaning	Clean the recovery tank and the oil filter of the suction motor	Daily
	<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 the suction pipes and the squeegee	Weekly
Check	Clean the recovery tank and the oil filter of the suction motor	Weekly
	<ul style="list-style-type: none"> <li>➤ Check the rubber suction blades of the squeegee</li> <li>➤ Check the water battery level</li> </ul>	Every 15 days
	Check the filter of the clean water tank	Every month
	Check and regulate the breaking system	Every 3 months
	Check the connection of the battery cables	Every 6 months
	Check the brushes of each motor	Every year
<ul style="list-style-type: none"> <li>➤ Check the safety devices</li> <li>➤ Check the electric system</li> </ul>	Every year	

**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 hydrometer draw a small quantity of electrolyte so that the floater reaches the surface;
- Make sure that the floater inside the hydrometer 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:

**BATTERIES TECHNICAL FEATURES**

TENSION	24 V
POWER	320 A/h
WEIGHT	26 Kg

**BATTERY CHARGER TECHNICAL FEATURES**

IN	V 230, Hz 50, A5
OUT	V 24, A12

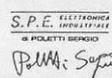
DICHIARAZIONE CE DI CONFORMITA' 

La Ditta  
S.P.E. ELETTRONICA INDUSTRIALE di Poletti Sergio  
Via di Mezzo Ponente 383 - 40014 Crevalcore (BO) Italy

dichiara sotto la propria responsabilita' che il prodotto:  
CARICA BATTERIE ELETTRONICO AUTOMATICO MOD.: \*  
ai quali questa dichiarazione si riferisce, sono conformi alle  
seguenti norme specifiche:  
EN 60335-2-29 1991  
EN 60742 1990  
EN 50081-1 1992  
EN 50082-1 1992

e quindi rispondenti ai requisiti essenziali delle direttive:  
EEC 93/68 1993  
EEC 89/336 1989  
EEC 73/23 1973

Crevalcore 03.02.95  
95



This kind of battery charger can support batteries of other brands, too.



See § 2.3 TECHNICAL DATA for the batteries technical features.

### **5.2.6 BATTERIES DISPOSAL**

#### **BATTERIES DISPOSAL**

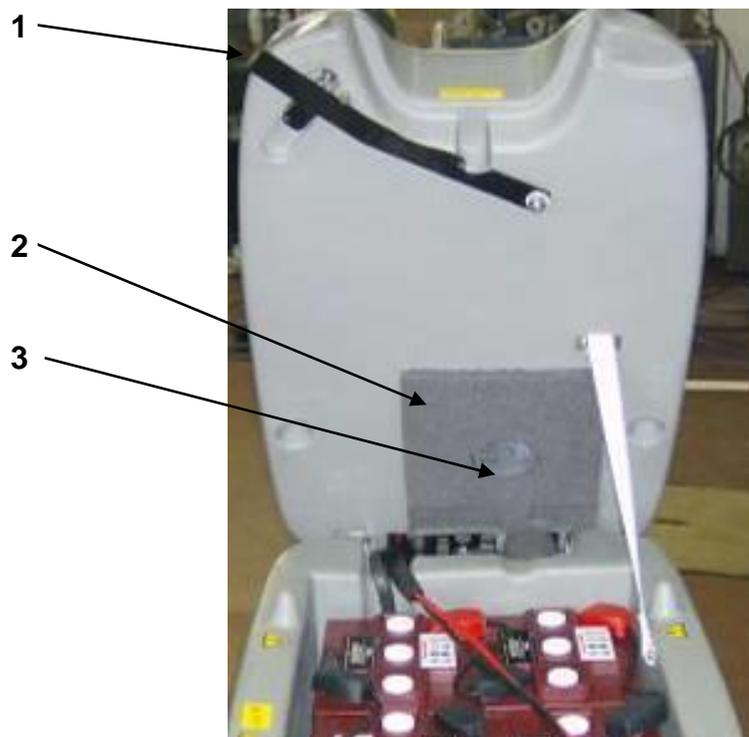
Old batteries are toxic wastes and they have to be thrown in a suitable and authorized place for the batteries disposal. For a short storage, old batteries must be located in an authorized room. Moreover, they must be stored in sealed plastic tanks, whose capacity is not lower than the electrolyte.

### **5.3 SUCTION ENGINE 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 and lift the recovery tank up (see detail 1 in picture 5.1);
- remove the soundproofing;
- unloose the screws that fix the suction engine onto the tank and remove the engine (see detail 3 in picture 5.1);
- 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 N° 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**

	HOW OFTEN	OPERATOR
<b>INSPECTION</b>		
Safety devices	Every 2 years	Trained technician
Electric system	Every 2 years	FIORENTINI technician
Braking system	Every 3 months	Trained technician
Complete check up	Every 5 years	FIORENTINI technician
<b>MAINTENANCE</b>		
Recovery tank cleaning	Every day	Operator
Clean water tank	Every month	Operator
Suction motor filter	Every day	Operator
Suction pipes cleaning	Every week	Operator
Squeegee cleaning	Every week	Operator
Squeegee blades	Every week	Operator
Battery water level	Every week	Operator
Battery cables fixing	Every 6 months	Trained technician
Brushes in each motor	Every year	Trained technician



## 6. SERVICE

### **6.1. SERVICE ADDRESSES**

Do not hesitate to contact ING. O. FIORENTINI S.p.A. service for any kind of information or request.

## **ING. O. FIORENTINI S.p.A.**

**“THE BEST IN FLOOR MACHINES”**

**FILIALI:**

20132 MILANO – Fax. 02/2592779

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

00012 Guidonia Montecelio (ROMA) – Fax. (0774)353419 - 353314

Via B. Pontecorvo 20 – Tel. (0774)357184 - 353015

**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 ING. O. FIORENTINI S.p.A. suggest to read carefully this manual before using the machine. On the contrary, if the customer needs 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.

**Operator:**

Company: \_\_\_\_\_

Operator's name: \_\_\_\_\_

Role: \_\_\_\_\_

Date: \_\_\_\_\_ Signature: \_\_\_\_\_

**Machine description:**

Machine: ET 65-75 Type: \_\_\_\_\_

Purchase date: \_\_\_\_\_ S.N.: \_\_\_\_\_

Warranty:  YES  NO Work hours: \_\_\_\_\_

Where does the machine normally work? \_\_\_\_\_  
\_\_\_\_\_

**Fault:**

Code of the defected component: \_\_\_\_\_ Description: \_\_\_\_\_

Fault: \_\_\_\_\_ Fault short description: \_\_\_\_\_

- Mechanical component
- Wrong functioning
- Electric system
- Engine
- Missing component
- Extremely noisy
- Water leak
- Other

**Customer's suggestion:**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Mat. n.  
Serial no. \_\_\_\_\_  
Nr. de serie

Data di spedizione  
Date of shipment \_\_\_\_\_  
Date de spedition

Distributed by:

**ING. O. FIORENTINI S.p.A.**  
“THE BEST IN FLOOR MACHINES”

**FILIALI:**

20132 MILANO – Fax. 02/2592779

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

00012 Guidonia Montecelio (ROMA) – Fax. (0774)353419 - 353314

Via B. Pontecorvo 20 – Tel. (0774)357184 - 353015

**STABILIMENTO:**

50030 PIANCALDOLI (FI) – Fax. 055/817144

Loc. Rombola – Tel. 055/8173610