



Clemas & Co Ltd

Industrial Cleaning Equipment
Sales - Hire - Service

CS70 90B SWEEPER OPERATOR MANUAL



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Congratulations for your choice!

FIorentini S.r.l. thanking you for the preference to our product, would like to remind you that **FIorentini's S.r.l** 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**.

We wish therefore inviting you to contact us, unhesitatingly, for every kind of request, as technical or commercial; we'll be pleased to be at your disposal for any information you may need.

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DICHIARAZIONE CE DI CONFORMITA'

ING. O. FIORENTINI s.r.l.

Loc. Rombola

50030 PIANCALDOLI (FI) ITALIA

DICHIARIAMO SOTTO LA NOSTRA RESPONSABILITA' CHE LA MACCHINA

Marca

FIORENTINI

Tipo

UBF 28 NEW

N° serie

Anno di costruzione

2009



RISULTA IN CONFORMITA'

con quanto previsto dalle seguenti direttive e normative armonizzate comunitarie:

DIRETTIVA COMUNITARIA

DIRETTIVA MACCHINE

98/37/CEE

DIRETTIVA BASSA TENSIONE

73/23/CEE

DIRETTIVA COMPATIBILITA' ELETTROMAGNETICA

89/336/CEE

Piancaldoli

***Luogo e
data***

Ing. O. Fiorentini S.r.l.

Il titolare

Ing. O. Fiorentini

Firma

2. FEATURES AND TECHNICAL DATA OF THE MACHINE

2.1. IDENTIFYING THE MACHINE

A silver label is stuck on the metal sheet under the seat and clearly shows the data referring to the "CE" brand.

Ing. O.Fiorentini S.r.l.				MADE		
50030 Piancaldoli (FI)				IN ITALY		
Mod	UBF 28 NEW			S.N		2 0 0 9
V			Hz			
Kg		A		W		



FIGURA 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 sweeper machine cannot be sold without the label.

2.2. DESCRIPTION AND PARTS OF THE MACHINE

The machine UBF 28 NEW is designed for the treatment of flat surfaces through the process of brushing and the following process of collection of dirt in a sharp container. The system of power is supplied by a series of accumulators batteries (battery version), or a gasoli motor (endothermic motor version), which feed all the motors and the electric control.

By means of a rotating brush set in front of the machine, the dust is put in the middle of the machine. The main brush takes it into the waste tank. This machine must be used on dry or at least humid surfaces.

By means of the dashboard, the operator can control the functioning of the machine through a signalling system made of LEDs. The dashboard is equipped with a battery charger indicator, too.

Functions of the machine which can be operated from the dashboard:

- switch on /off the machine.
- Activate the side brush
- Activate the filter shaker
- Activate the central roller brush
- Activate the vacuum motor

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

Following are the main components of the machine:

- zinc-plated or stainless steel frame;
- right side brush;
- left side brush (optional)
- main brush;
- suction and collecting system;
- driving wheel;
- two idle wheels;
- seat.
- Discharge system (manual or automatic)

FIORENTINI Co., taking the new CE safety rules under 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

	UBF 28S NEW	UBF 28 NEW
MAIN SPECIFICATIONS		
SWEEPING WIDTH		
<ul style="list-style-type: none"> • WITH 1 SIDE BRUSH • WITH 2 SIDE BRUSHES 	1100 mm	1100 mm
CLEANING CAPACITY UP TO	7150 m²/h	6050 m²/h
DIRTY CONTAINER CAPACITY	70 l	70 l
FILTERING SURFACE	6 m²	6 m²
GENERAL SPECIFICATIONS		
TRACTION (ant/post)	FRONT	FRONT
KIND OF TRACTION	HYDROSTATIC	MOTOR-WHEEL W/ELECTRO-BRAKE
FORWARDING SPEED	0/6.5 km/h	0-5.5 km/h
MAX. SLOPE	10 %	10 %
SOUND LEVEL (operator ear)	68 dB	50 dB
TURNING RADIUS	1330 mm	1330 mm
ELECTRIC SYSTEM		
VOLTAGE	/	24 V
VACUUM MOTOR	/	24V/180W/3000 RPM
CENTRAL BRUSH MOTOR	/	24V/650W/1800RPM/33A
SIDE BRUSH MOTOR	/	24V/100W/90RPM/5A
TRACTION MOTOR	/	24V/700W
FEEDING	/	4 x 6V/320A/h
MOTORS (petrol version)		
FEEDING	PETROL	/
MOTOR BRAND	HONDA	/
NO. CILINDRI	1	/
POWER	6 cv	/
COLLING (AIR/WATER)	AIR	/
DIMENSIONS AND WEIGHT		
LENGTH	1450 mm	1315 mm
WIDTH	870 mm	865 mm
HEIGHT	1260 mm	1235 mm
CENTRAL BRUSH	Ø 265 x 700 mm	Ø 265 x 700 mm
SIDE BRUSH	Ø 400 mm	Ø 400 mm
WEIGHT (empty machine)	336 kg	270 kg
BATTERY WEIGHT	/	4 x 37 kg
OPTIONAL		
DISCHARGING SYSTEM	ELECTRO-HYDRAULIC	ELECTRO-HYDRAULIC
DUMPING HEIGHT	1310 mm	1310 mm



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.6.1.).

MEASUREMENT UNITS CONVERSION

Length	1 inch = 1" = 25,4 mm	Power	1 kW = 1,36 CV = 1,34 BHP
Temperature	$T (K) = t (^{\circ}C) + 273$ / $t (^{\circ}F) = 1,8 t (^{\circ}C) + 32$	Pressure	1 bar = 100 kPa = 14,5 psi

3. SAFETY

3.1. RIGHT USE OF THE MACHINE



This sweeper has been designed for an industrial use. It can sweep on flat surface or with a max. 10% slope.

3.2. WRONG USE OF THE MACHINE



- *the sweeper cannot be driven by non authorized personnel;*
- *this machine cannot work on surfaces with holes;*
- *this machine cannot sweep on sloping surfaces;*
- *The machine cannot sweep sloping surfaces whose gradient is higher than 8%;*
- *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.

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. OPERATORS' QUALIFY

The below specs shows the qualify requested from the operators depending on the kind of maintenance to be done on the machine.

OPERATION	OPERATORS' 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. 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***

Central brush protection

Fiorentini UBF 28 NEW is equipped with a central nylon brush which rotates when the machine is working. The central brush is protected on both sides by a stainless steel panel and two cases which avoid the contact with dangerous components. These protection devices can be only willingly removed from the machine.



3.6 SAFETY DEVICES

The machine is equipped with the following safety devices.

- **Socket (battery version)** (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.



PICTURE 3.1

- **Micro under seat** (picture 3.1): under the operator seat there is a micro that prevent the machine from working if the operator is not seat onboard. In the same way, if the operator lifts up without switching off the motor, the machines stops automatically. To start the machine again, set the ignition key to "off", seat on the machine, then switch it on again.

3.7. OTHER DANGERS

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 ranger can occur:

- during the brushes regulation;
- during the batteries/endothermic motor maintenance.

Whilst regulating the side brushes, the central brush and the central washing brushes, the ignition key must be kept away from the dashboard in order to avoid the casual starting of the machine.

Whilst the batteries recharge, the operator must pay attention that any parts of his/her body enter the batteries room.



Special labels stuck on the brush cover or on the recovery tank prevent dangers to the operator (see § 3.7.).

TURNOVER

This kind of ranger 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.



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.


3.8. SAFETY SIGNALS

Among safety signals there are:

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

	What is it?	This signal forbids to remove the protection of pieces in movement.
	What to do	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.




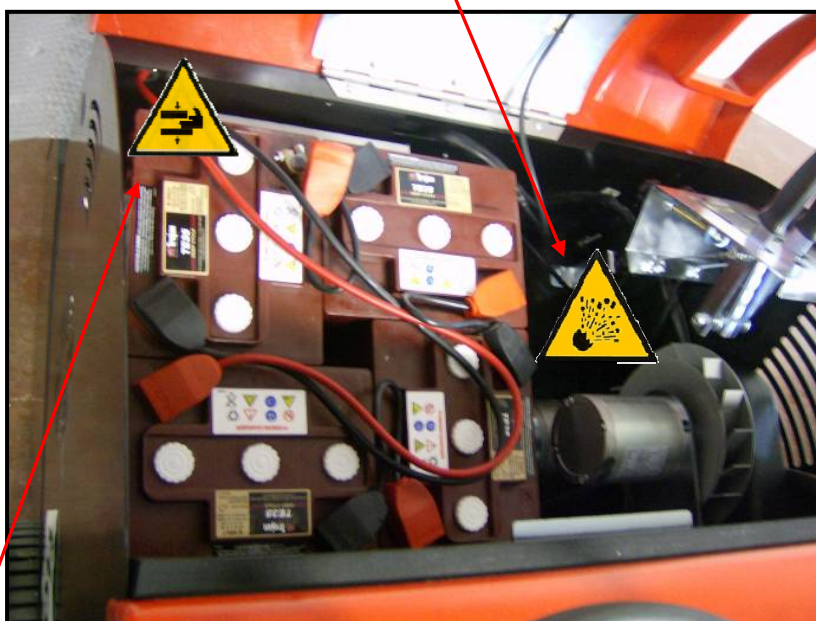
	What is it?	Crashing danger: it can be due to parts in movement of the machine.
	What to do	During the installation or the maintenance make sure that the ignition key is not in the dashboard before removing the mobile protections.




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

Battery version:

	What is it?	Explosion danger: it may occur while recharging the batteries because of hydrogen spread.
	What to do	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.



	What is it?	Risk of crashing due to overturning of the recovery tank.
	What to do	Whilst recharging the batteries, please make sure that any parts of your body got in contact with the batteries room.



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

Endothermic motor version:

	What is it ?	This signal indicates the prohibition of removing protections of hot parts when the machine is working.
	What to do ?	Make sure that the machine is switched off and the key has been disconnected from several minutes.



	What is it ?	This signal indicates the danger of crashing due to closing of motor cover or to the cooling fan when working.
	What to do ?	During maintenance or controls please make sure that the key is disconnected.

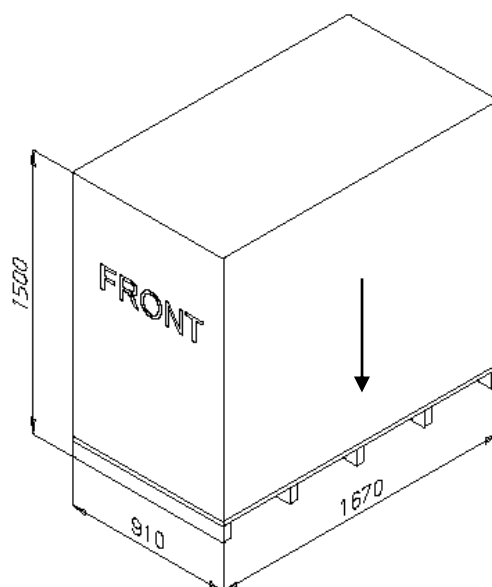
4. STARTING AND USE INSTRUCTIONS

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.

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

Ø



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

4.4.1 Battery version 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.

4.4.2 Endothermic motor version:

- Check the machine and especially the motor, paying attention to the level of oil and cooling liquid.
- Fill the machine with fuel
- For a short transport of the machine empty the fuel tank and remove the 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 (BATTERY VERSION MACHINE):

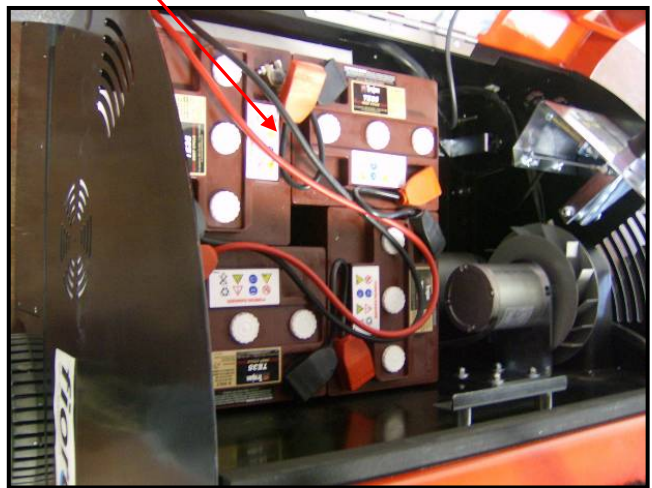
Please follow the instructions below to install the batteries:

- 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 1);
- 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.

1



2

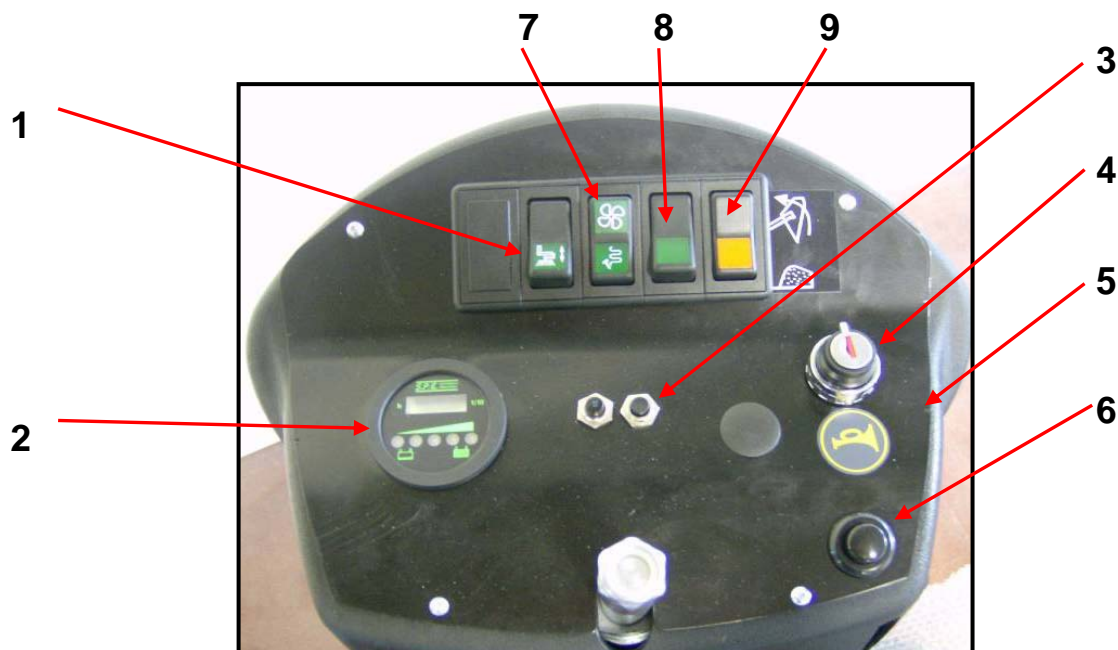


PICTURE N° 4.4

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.



PICTURE N° 4.6

POS.	PICTURE	FUNCTION
1		<u>SIDE BRUSH ACTIVATION</u>
2		<u>BATTERY CHARGE INDICATOR (BATTERY VERSION)</u>
3		<u>MOTOR PROTECTOR</u>
4		<u>KEY SWITCH (BATTERY VERSION)</u>

POS.	PICTURE	FUNCTION
5		<u>KEY SWITCH (ENDOTHERMIC MOTOR VERSION)</u>
6		<u>HORN</u>
7		<u>VACUUM ACTIVATION OF DUST COLLECTOR AND FILTER SHAKER</u>
8		<u>CENTRAL BRUSH ACTIVATION</u>
9		<u>LIFT UP/DOWN OF DUST COLLECTOR (VERSION WITH AUTOMATIC DISCHARGE)</u>

4.7. FUNCTIONING

Switch the sweeper on and start both the side brush and the central brush by means of the levers. Then start the suction engine which intake and collect the rubbish into the recovery tank. The brushes start working by means of the accelerator lever. Drive the machine with a regular speed during the sweeping process. Do always keep the suction engine clean from dust. As a consequence, the filter is always clean and can work properly.



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

4.7.1 LEVERS AND PEDALS FUNCTIONING

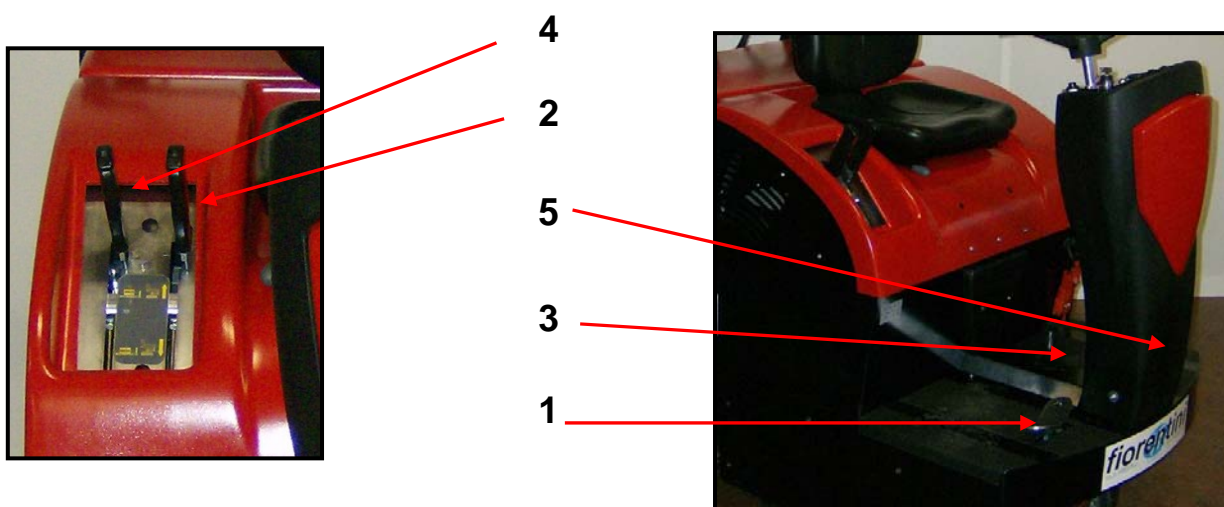
This machine is equipped with following levers:

- accelerator lever (picture 4.7 detail 1): select forward gear by means of the lever on the operator's right hand. Select reverse speed by means of the lever on the operator's left hand.



The accelerator lever start all the mobile parts of the UBF28 NEW. Therefore, brushes work only after having started the lever.

- side brush lever (picture 4.7 detail 2): push the lever down and the side brush goes down onto the floor;
- flap lifting pedal (picture 4.7 detail 3)
- central brush lever (picture 4.7 detail 4): push the lever down and the central brush goes down onto the floor; pull the lever to put the brush in its original position.
- Endothermic motor version: parking brake (detail 5). With this pedal it is possible to slow down the machine till complete stop. This pedal works also as parking/emergency brake. In the battery version machine, the electrobrake works on the front wheel stopping the machine when the forward pedal is released

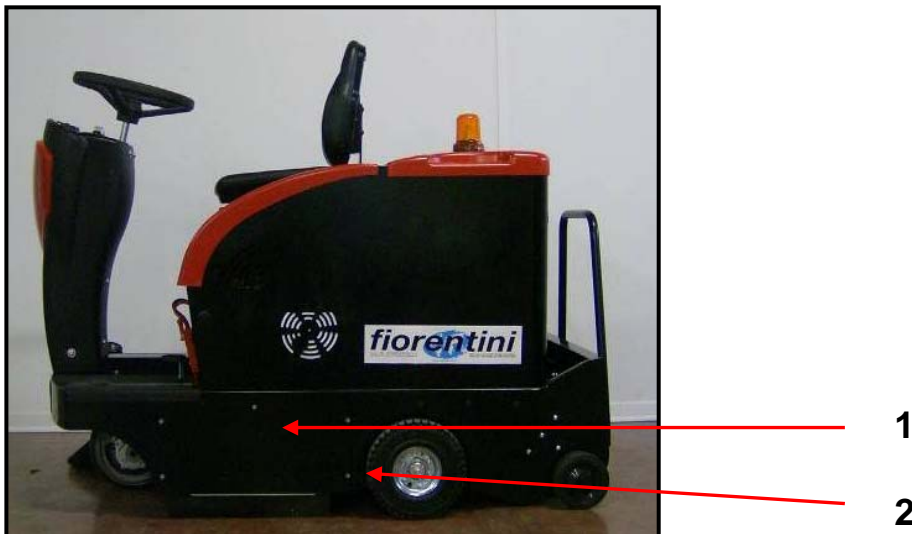


PICTURE N° 4.7

4.7.2 MAIN BRUSH REPLACEMENT

Please follow the following instructions in order to replace the main brush:

- remove the key from the dashboard in order to avoid the machine to start;
- remove the metal protection on the machine side (picture 4.8 detail 1) after having removed all fixing screws (picture 4.8 detail 2);
- remove the brush support by rotating it clockwise
- replace the brush and make sure that the new brush holders are fixed in the correct way (picture 4.9);
- re-install the brush support and metal protection following the inverse instructions.



PICTURE N° 4.8



PICTURE N° 4.9

4.7.3 SIDE BRUSH REPLACEMENT

Please follow the following instructions in order to replace the side brush:

- remove the key from the dashboard in order to avoid that the machine starts;
- stop the side brush as described in § 4.7.1;
- remove all the screws that fix the side brush (picture 4.10 detail 1);
- replace the side brush;
- do follow now the opposite instructions in order to complete the side brush replacement.

1



PICTURE N° 4.10

4.7.4 RECOVERY TANK EMPTYING (MANUAL VERSION)

Please follow the following instructions in order to empty the recovery tank:

- remove the key from the dashboard in order to avoid that the machine starts;
- remove the hook that holds the recovery tank to the machine (picture 4.11 detail 1);
- remove the recovery tank and empty it;
- the operator can easily move the recovery tank thanks to the wheels (picture 4.11 detail 2);
- follow now the opposite instructions in order to put the recovery tank in its original position.



1

2



PICTURE N° 4.11

4.7.5 RECOVERY TANK EMPTYING (AUTOMATIC VERSION)

Please follow the following instructions in order to empty the recovery tank:

- turn the key on the control board and switch the motor on, if the machine is a version with endothermic motor.
- Press the proper key on the control board in order to lift up the recovery tank (see par. 4.6.1 to check the right key to use);
- Once reached the required dumping height (particular 1 pict. 4.12) release the key;
- Move the machine to reach the right position above the discharging area (particular 2 pict. 4.12);
- When the machine is in the right position, pull the handle to discharge the rubbish (particular 3 picture 4.12)
- Follow the opposite instructions to bring the machine at the original status.



1

2

3

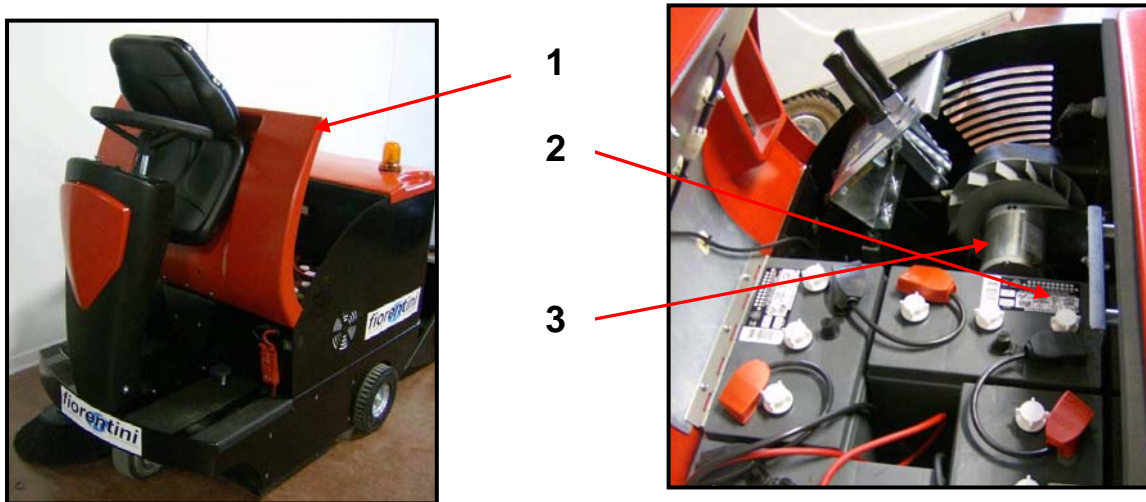


PICTURE N° 4.12

4.7.6 SUCTION ENGINE MAINTENANCE

The suction engine is an important component of the UBF28 NEW. This is why, the operator must regularly check the efficiency of the engine (see § 5.4). Please follow the following instructions in order to reach the suction engine:

- remove the key from the dashboard in order to avoid that the machine starts;
- lift the protection cover under the seat (picture 4.13 detail 1) to reach the suction engine;
- disconnect the plug (picture 4.13 detail 2) and remove the suction engine (detail 3);
- make the necessary maintenance;
- follow the opposite steps in order to take the machine at the original status.



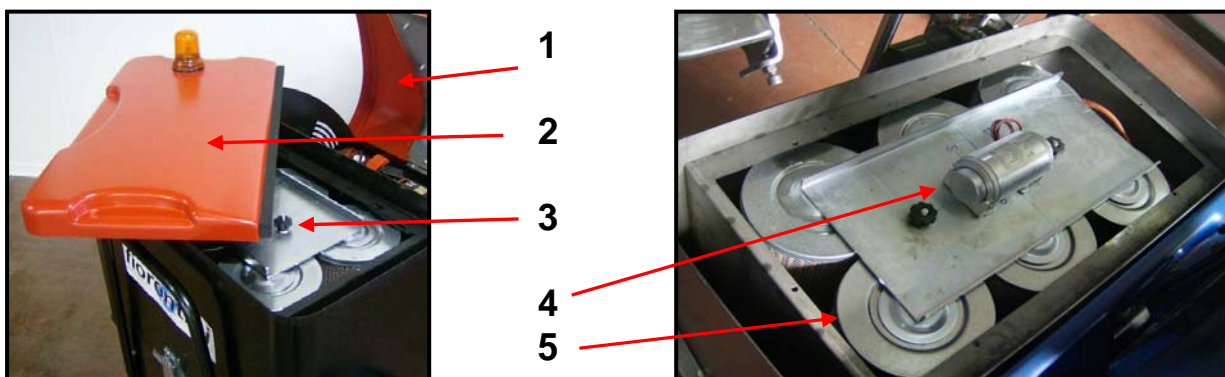
PICTURE N° 4.13

4.7.7 MAINTENANCE OF FILTER SHAKER ENGINE

The filter shaker engine remove dust from the filter in order to keep it always efficient. By means of the button on the dashboard, the operator starts the filter shaker engine (see § 4.6.1).

Please follow the below instructions for basic maintenance of the filter shaker engine:

- remove the key from the dashboard in order to avoid that the machine starts;
- lift the protection cover under the seat (picture 4.14 detail 1);
- remove the protection panel (detail 2);
- remove the two knobs (detail 3) and pull the engine out (detail 4);
- the operator can now reach the filters and make the due maintenance (detail 5);
- follow the opposite steps in order to take the machine at the original status.



4.7.8 PETROL ENGINE MAINTENANCE (MACHINE WITH ENDOTHERMIC MOTOR)

The endothermic motor requires few and simple operations to allow a long and perfect function. Apart from this manual, the customer receives also, together with the machine, the maintenance manual of the motor, given by the manufacturer company. For any kind of inconvenience it is therefore recommended to refer to the endothermic motor manual.

Here following are some necessary operations to be done on the motor:

- to fill the machine with fuel it is necessary to unscrew the plug (detail 1 picture 4.15) and fill the proper tank
- the oil tank (detail 2) contains the lubricant necessary for the motor functioning. Unscrew the plug to refill the lubricant oil;
- the air filter is protected by cover (detail 3). Unscrew the fixing wheel to reach the filter (detail 4);
- when it is necessary, replace the sparking plug (detail 5);
- the battery (detail 6) is required to start the machine.

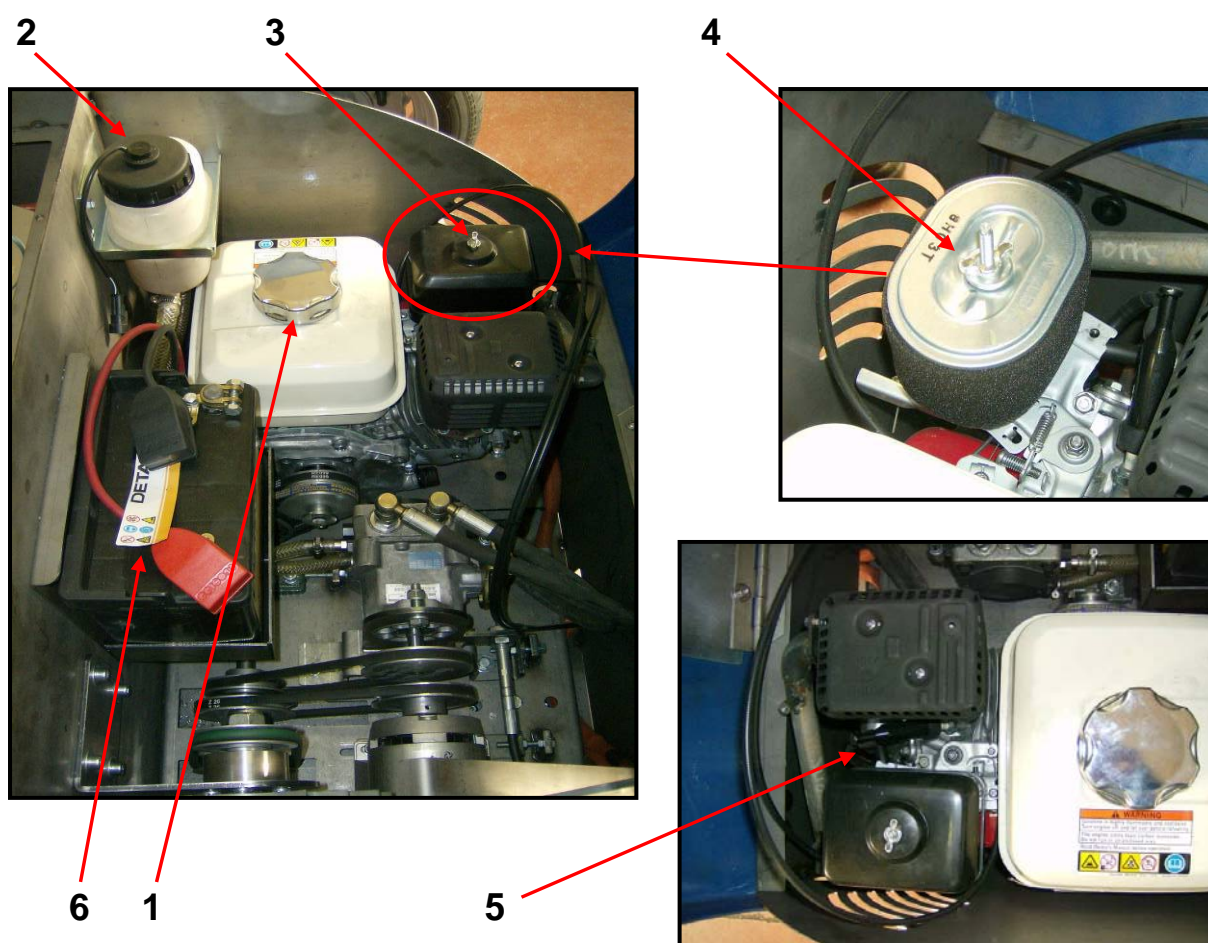


IMAGE N° 4.15

4.7.9 CONTROLS FOR THE MACHINE WITH ENDOTHERMIC MOTOR

On the machine with endothermic motor, it is important to know two simple operations that grant a better efficiency of the motor.

Before starting the motor pull the "STARTER" lever (detail 1 image 4.16). Once the motor is switched on push the lever to its original position.

Next to the STARTER lever there is the accelerator lever (detail2). The machine speed can be varied using this control.

For the other controls see paragraphs 4.6.1 e 4.7.1.



IMAGE N° 4.16

5. MAINTENANCE


5.1. MAINTENANCE PROGRAM

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.*

OPERATION	INTERVENTION		HOW OFTEN
Cleaning	Clean the recovery tank		Daily
		• Do not use corrosive substances	
	➤ Check the suction pipes		Weekly
Check up	➤ Check the rubber suction blades of the central brush room		Every 15 days
	➤ Check the battery water level		
	➤ Check the suction engine		Every month
	➤ Check and register the breaking system		Every 3 months
	➤ Check the connection of the battery cables		Every 6 months
	➤ Check the brushes of each motor		Every year
	➤ Check the safety devices		Every year
➤ Check the electric system			

5.2 BATTERIES MAINTENANCE (BATTERY VERSION MACHINE)

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 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 PETROL ENGINE MAINTENANCE (MACHINE WITH ENDOTHERMIC MOTOR)

The motor is supplied with its own user manual which must be used every time that maintenance is needed. It is recommended to respect the following periods from one operation and the other:

Check the motor oil level	every 50 hours working and replace every 150 hours
Replace the air filter	every 100 hours working
Replace the motor oil filter	every 300 hours working
Check the tension of alternator belt	every 250 hours working
Setting and cleaning of injectors	every 1000 hours working
Register the cocker lever slack	every 1000 hours working

5.3.1 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.*

5.4 TESTS TO BE CARRIED OUT

	FREQUENCY	TECHNICIAN
CONTROLS		
Safety device	2 years	Professional technician
Electric system	2 years	FIORENTINI technician
Brake system	3 years	Professional technician
Complete revision	5 years	FIORENTINI technician
MAINTENANCE		
Clean dust tank	Daily	Operator
Vacuum filter	Daily	Operator
Cleaning of vacuum hoses	Weekly	Operator
Check the water level on batteries	Weekly	Operator
Check if the battery cables are well fixed	6 months	Professional technician
Check the motors carbon brushes	Every year	Professional technician
Check the motor oil level	Weekly	Operator
Replace the motor oil filter	3 months	Operator
Replace the motor oil	Every month	Operator