

fiorenttini

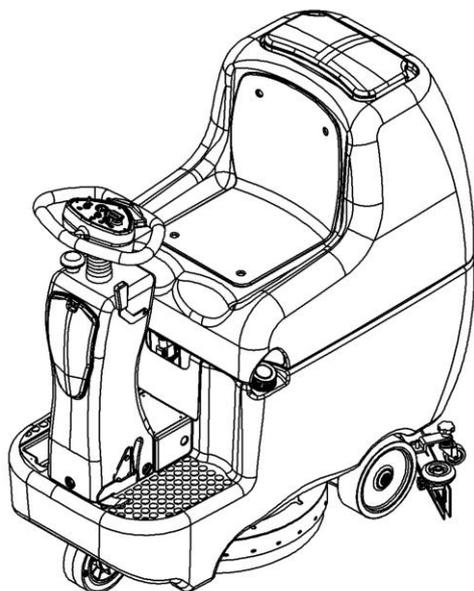
CE

rev.01



Operating
instructions

ECOSTAR



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1 Safety Guidelines

This document contains important safety information regarding the appliance, together with a guide for its proper use. This instruction manual should be read carefully and in full before starting up the appliance for the first time. Keep the instructions for further reference.

This manual is intended both for machine operators and for qualified maintenance technicians. Operators must not perform tasks reserved for qualified technicians. Ing. O. Fiorentini is not liable for any damages arising from failure to comply with this prohibition.

1.1 Symbols used to highlight the instructions

DANGER



An imminent hazard that can directly cause serious or irreversible injuries, or even death.

WARNING



A potential hazard that can lead to serious or irreversible injuries, or even death.

CAUTION



A potential hazard that can lead to minor injuries.

1.2 General instructions

If any damage caused by transport is discovered when unpacking, you should immediately inform your dealer.

Read the operating manual before using the machine and pay particular attention to the safety guidelines.

The warning labels on the machine provide important information for safe use.

In addition to the operating instructions and mandatory accident prevention regulations in the country of use, general rules for safety and correct use should also be observed.

Compliance by the operator is essential for prevention of injuries. No accident prevention programme can be effective without the cooperation of the person directly responsible for the operation of the machine. Most accidents that occur in companies, at work or during transportation are due to failure to observe the most basic rules of prudence. A careful and prudent operator is the best guarantee against accidents and is essential for a complete prevention programme.

1.3 Driving procedures

DANGER



Risk of tipping over on steep slopes.

- When driving, do not negotiate or manoeuvre on gradients steeper than 10%.

For short straight runs, gradients of over 30% may be negotiated with the tanks empty (e.g. truck ascent ramps). In any event, avoid manoeuvring on gradients steeper than 10%.

DANGER



Risk of tipping over while turning at speed.

- Take bends at reduced speed.

DANGER



Risk of tipping over on unstable ground.

Only drive the machine on stable paved surfaces.

DANGER



Risk of tipping over due to excessive lateral inclination.

- Do not drive diagonally across gradients steeper than 10%.
- Comply with the general rules, regulations and provisions applicable to motor vehicles.

WARNING



• The operator must use the machine in accordance with its intended use. When driving, you should be aware of the conditions in your surroundings and pay attention to third parties (particularly children) while using the machine.

• The machine should only be used by personnel trained in its use or with proven capability of using it and expressly assigned to do so.

WARNING



• Prior to use, the machine should be given a test run in a non-public area.

• it is prohibited for children or minors to use the machine.

• Transport of other persons is not

permitted.

- To prevent the appliance from being used by unauthorised persons, remove the ignition key.
- When left unattended, the machine must be immobilised to prevent unintended movement.
- Before using the machine, close all doors and/or covers, as indicated in the operator's manual.
- Take appropriate precautions so that hair, jewellery and loose clothing cannot be caught up in the moving parts of the machine.
- Before using the machine, close all doors and/or covers, as indicated in the operator's manual.
- Do not tilt the machine at an angle greater than that marked on the machine to avoid compromising its stability.
- If the machine is used in the presence of other persons aside from the operator, the revolving beacon (optional) and back-up alarm should be used.
- When using this machine, take care to safeguard the integrity of persons and property.
- Do not bump against shelving or scaffolding, particularly if there is a risk of falling objects.
- Do not use the machine as a means of transport.
- To move the machine manually, the electromagnetic brake must be released. After moving the machine manually, reset the electromagnetic brake. Never use the machine with the electromagnetic brake released.
- This machine is not approved for use on public roads or streets.

1.4 Battery-powered machines

DANGER



Risk of explosion.

- Charging the batteries produces highly explosive hydrogen gas. Keep the tank unit open during the entire battery charge cycle and only perform the procedure in a well-ventilated area away from naked flames.

- Do not smoke while charging the batteries.
- Keep sparks, flames and incandescent materials away from batteries. Explosive gases are released during normal use.

DANGER



Risk of burns.

- If contact is created between parts of the electrical system with different potential through a conductive object or body part, the resulting electric arc can cause serious burns.
- Before any cleaning, maintenance, replacement of parts or conversion for other functions, unplug the battery connector and remove the key from the main switch (or ignition).
- Remove all jewellery when working near electrical components.

WARNING



- Before using the battery charger, ensure that the frequency and voltage indicated on the nameplate of the charger match the mains voltage.
- Do not use the charger cable to pull or move the machine and do not use it as a handle. Do not allow the battery charger cable to become trapped in a door and do not pull it across sharp surfaces or corners. Do not drive the machine across the charger cable.
- Keep the charger cable away from hot surfaces.
- Do not charge the battery if the charger cable or plug are damaged.

WARNING



- If the machine is malfunctioning, damaged, has been left outside or has fallen into water, take it to a service centre.
- To reduce the risk of fire, electric shock or injury, do not leave the machine connected to the mains when unattended.
- Unplug the charger cable from the power supply before carrying out maintenance.
- In the event of fire, use a dry powder fire extinguisher, if possible, and do not use water extinguishers.
- Do not wash the machine by spraying with water or a pressure hose, or with

corrosive substances.

- If (wet cell) lead-acid batteries are installed, do not tilt the machine more than 30° from the horizontal plane to avoid leakage of highly corrosive liquid from the batteries.
- If the machine needs to be tilted over for maintenance work, remove the batteries first.
- The machine must not be abandoned at the end of its service life as it contains toxic/harmful materials (batteries, etc.), governed by regulations that require their disposal in special centres (see the chapter on disposal).

1.5 Proper and intended use

This scrubber-dryer is designed and built for cleaning (washing and drying) smooth, solid floors in civil or industrial spaces, in conditions of verified safety, by a qualified operator. The washer-dryer is not suitable for cleaning rugs or carpets.

This machine must be used only by persons who have received sufficient instruction.

Before use, ensure that the machine and work equipment are in perfect condition and operating safely. If this is not the case, the machine must not be used.

Before starting work, the operator must ensure that all safety devices are properly in place and functioning.

No modifications may be made to the machine.

Do not operate this machine in areas where there are harmful, dangerous, flammable and/or explosive powders, liquids or vapours: the machine is not designed for collecting dust hazardous to human health.

Never vacuum explosive liquids, flammable gases, or acids and solvents. This includes petrol, paint thinners and diesel oil, which can combine with the air intake to form explosive vapours or mixtures, as well as acetone, acids and solvents, which can corrode the machine materials.

Reactive metal powders (e.g. aluminium, magnesium and zinc) can form explosive gases if combined with strongly alkaline or acidic detergents.

Do not vacuum burning objects.

It is prohibited to stop in hazardous areas.

It is prohibited to use the machine in potentially explosive environments.

Keep the machine away from all highly inflammable substances.

Protect the machine from frost.

The temperature for use of the machine should be between 0°C and 40°C.

The temperature for storage of the machine should be between 0°C and 40°C.

Humidity must be between 30% and 95%.

Always protect the machine from sun, rain and other inclement weather, whether in operation or immobile. Park the machine indoors in a dry environment.

Only use accessories recommended by Ing.O.Fiorentini SpA.

Do not use the machine in particularly dusty environments.

Use the machine only in areas that are sufficiently illuminated.

Do not place any liquid containers on the machine.

When using detergents for cleaning floors, follow the instructions and warnings given on the labels of the containers.

Gloves and adequate protection should be used when handling floor cleaning detergents.

Do not tamper with the guards provided on the machine for any reason; carefully follow the instructions provided for routine maintenance.

Do not allow any objects to enter the openings. Do not use the machine if the openings are obstructed. Keep the openings on the machine free from dust, lint, hair and any other type of foreign body that can reduce the air flow.

Exercise caution when transporting the machine in conditions below freezing. The water in the recovery tank or hoses may freeze and seriously damage the machine.

Any other use is considered improper use. The manufacturer accepts no liability for any damage caused by such use. Any such use is exclusively at the user's own risk. Proper use also includes operation, maintenance and appropriate repairs as specified by the manufacturer.

1.6 Symbols displayed on the machine

The following symbols are displayed in the form of adhesive labels on the external surfaces of the machine. Their presence is essential to ensure its safe use.

Do not remove or alter the plates placed on the machine.

The operator is responsible for the replacement of any labels that are missing, damaged or illegible due to wear. A description of the symbols is given below, together with codes for ordering the corresponding labels.

Code ET054

Crushing hazard. Keep hands away from moving machine parts or wait until all moving parts have stopped.

Code ET064

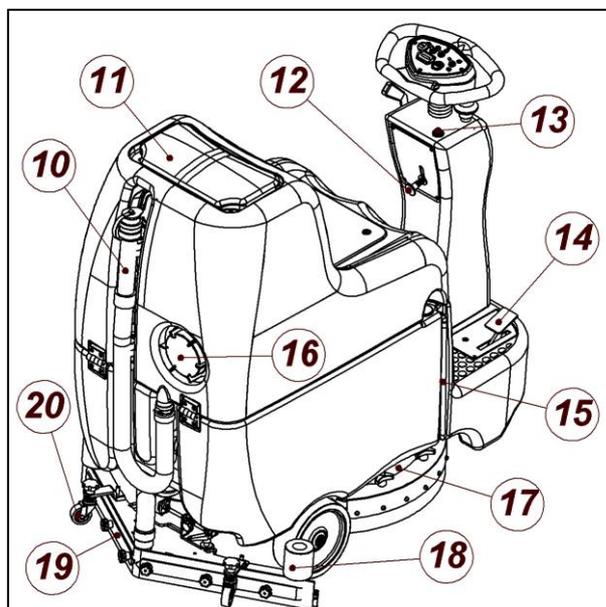
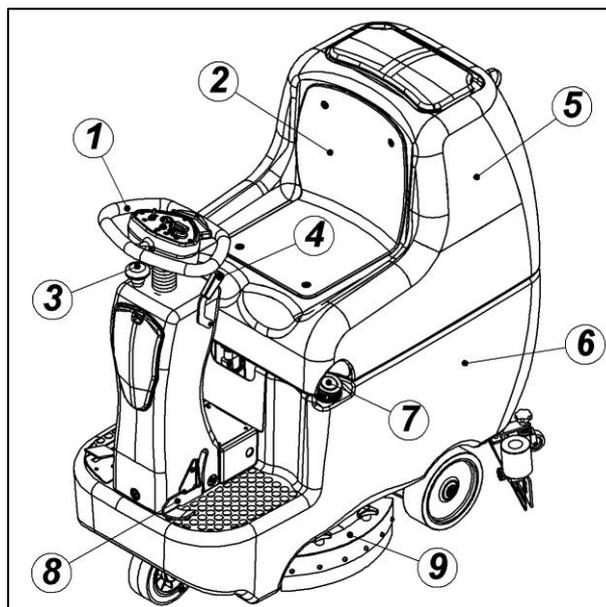
Explosion hazard. Presence of explosive gases inside the battery compartment.

Code ET058

Shearing hazard. Removal of guards and safety devices is prohibited.

Code ET065

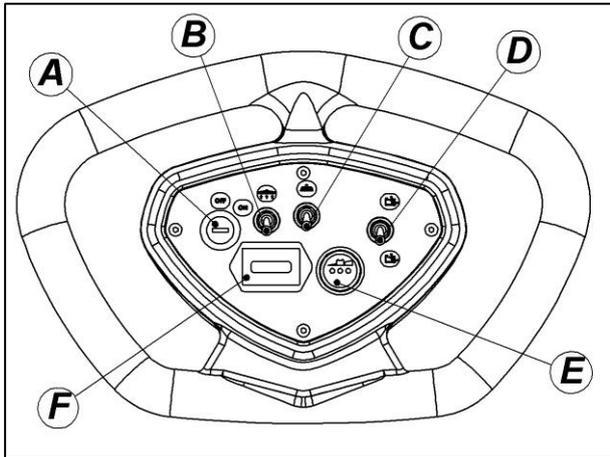
Fire hazard. Do not smoke or use naked flames near the machine. Keep all highly inflammable materials and substances away from the machine.



Description

2.1 Controls and functions

1. Steering wheel with control panel
2. Operator's seat
3. Emergency stop
4. Squeegee lifting lever
5. Recovery tank
6. Solution tank
7. Solution filling cap
8. Scrubbing head lifting pedal
9. Brush cover guard
10. Waste water drain hose
11. Recovery tank inspection cover
12. Solution flow regulator
13. Horn
14. Drive pedal
15. Solution level
16. Recovery tank inspection cap
17. Scrubbing head
18. Squeegee impact protection roller
19. Squeegee
20. Squeegee adjustment wheel



- A. Ignition key
- B. Scrubbing head switch
- C. Vacuum switch
- D. F/R gear selector
- E. Battery discharge indicator (BDI)
- F. Time meter

2.2 Nameplate

ING. O. FIORENTINI spa Loc. Rombola 50030 - Piancaldoli (FI) Tel. 0558173610 - Fax. 055817144		MADE IN ITALY CE A.E.E.n.IT12010000007391
Mod. ECOSTAR	S.N. 150600536	 2 0 1 5
V 48 	Hz -	
Unladen Mass 125 kg	A 21 W 1000	
 150600536		

The identification of the machine can be verified by means of a self-adhesive plate on its outer surface displaying indelible details related to "CE" marking.

The plate must never be removed and should always be kept legible. In case of damage, a duplicate should be ordered. The machine may not be sold without the plate.

3 Before Putting into Service

3.1 Unloading the machine

DANGER



Risk of injury and damage.

Do not use a forklift truck to unload the machine. Proceed as follows:

- Open the cardboard packaging.
- The machine is fixed to a wooden platform with straps and chocks to immobilise the wheels.

- Cut the straps and remove the chocks. Release the electric brake (see below). The machine can then be moved and pushed down from the platform.

3.2 Releasing the electromagnetic brake

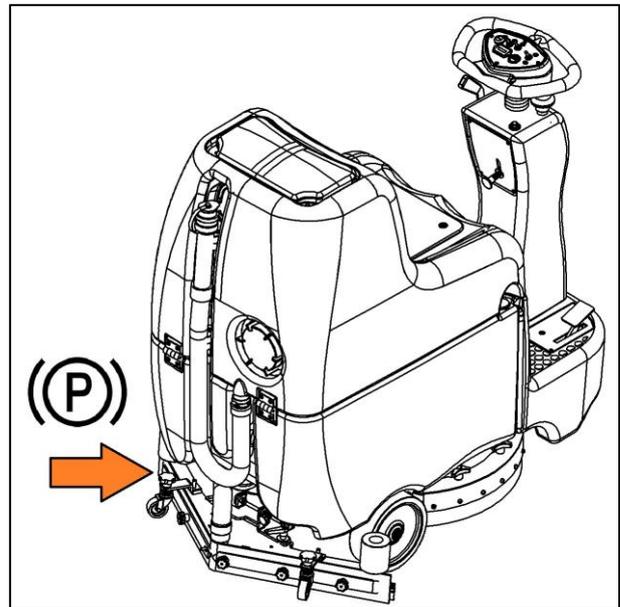
DANGER



Risk of injury and damage.

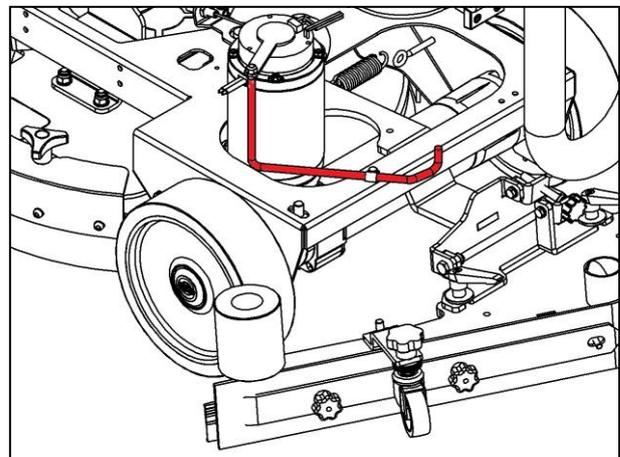
Before disengaging the drive mechanism, hold the appliance firmly so that it cannot move accidentally.

The electromagnetic brake release lever is located at the rear of the machine below the solution tank.



Pull the red lever to disengage the drive. This allows the machine to move freely.

The lever also activates a safety micro switch. If the brake is released, the drive is disabled.



DANGER



Risk of injury and damage.

Do not disconnect the safety micro switch for any reason. The drive system should never function without the electromagnetic brake engaged.

The electromagnetic brake should be released when the drive system cannot be used, e.g.: no batteries, excessive battery discharge, failure, etc.

It is advisable to release the electromagnetic brake only for the time strictly necessary for manual movement of the machine.

4 Putting into Service

WARNING

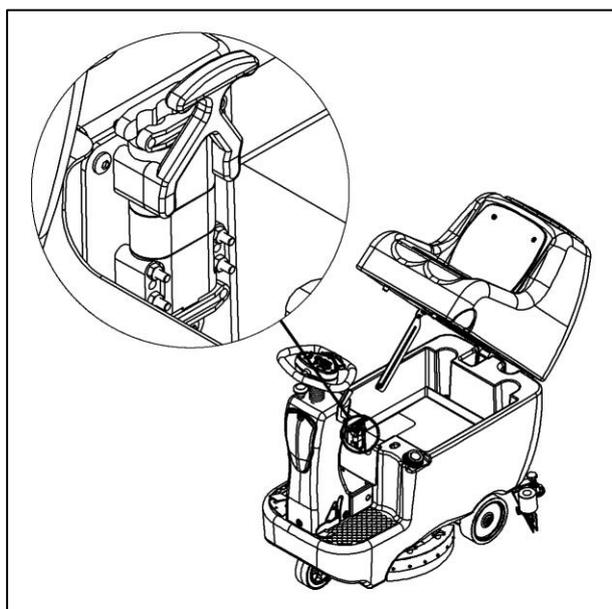


Place the machine on a level surface.

4.1 Installing the batteries

If the batteries are already installed:

1. Raise the recovery tank (5). Ensure that the safety catch holds the tank up.
2. The compartment housing the batteries is located inside the solution tank. The general system connector is located beside it, as shown in the figure. Check that it is connected.
3. A full battery charge cycle should be performed the first time the machine is used with new batteries (see the procedure in the "Maintenance" chapter).



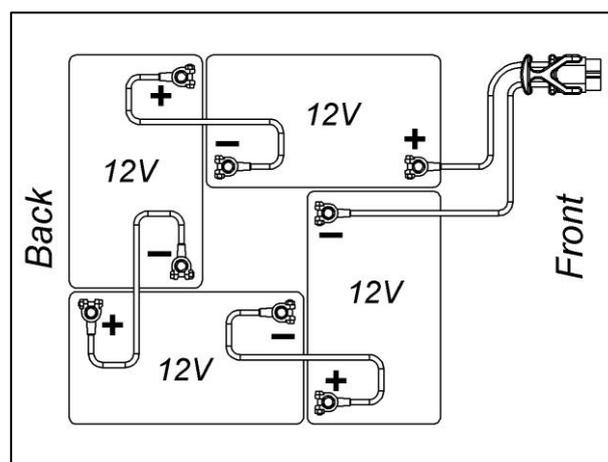
CAUTION



The machine's electrical components can be seriously damaged if the batteries are not installed and connected properly.

If the machine has no batteries, batteries should be installed.

1. Purchase suitable batteries (see the "Technical Specifications" section). Consult a qualified dealer for selection and installation.
2. Set the machine up as follows, based on the type of batteries selected:
 - a. Open the front panel to access the machine circuit board.
 - b. Pins 5 and 8 on the J14 connector are connected with a Faston cylindrical connector (see the "Electrical System" section).
 - c. If the connector is connected, the machine is set up for lead-acid batteries with liquid electrolyte (flooded), if disconnected, it is set up for gel batteries.
3. Remove the ignition key.
4. In the factory, the machine is fitted with sufficient cables to install four 12V batteries.
5. Position and install the batteries and cables as shown in the diagram.
6. Carefully tighten the clamps on the battery terminals.
7. Place the protection cover on each clamp, then connect the general system connector.
8. Release the safety latch and close the battery compartment.
9. Perform a full charge cycle.



DANGER



Risk of injury and damage.

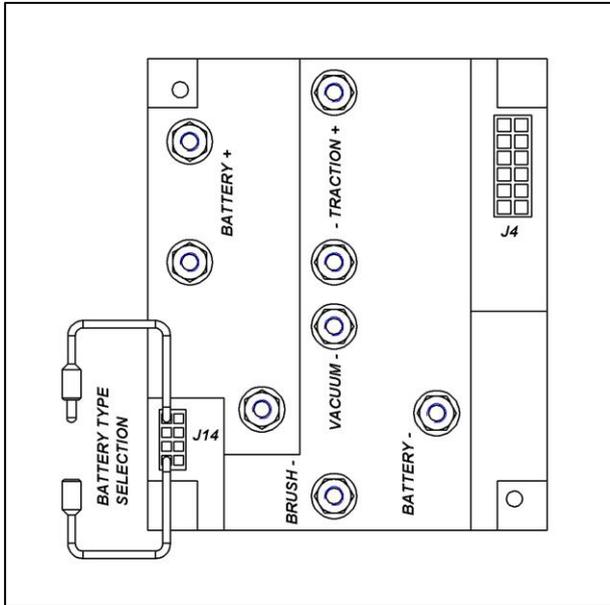
The batteries must only be installed by qualified personnel.

Before installing the batteries, check that

they are not damaged.

Take great care not to short the battery terminals with a conductive object. This could lead to very strong electrical currents with risk of severe burns.

Handle the batteries with great care.



4.2 Brush & pad

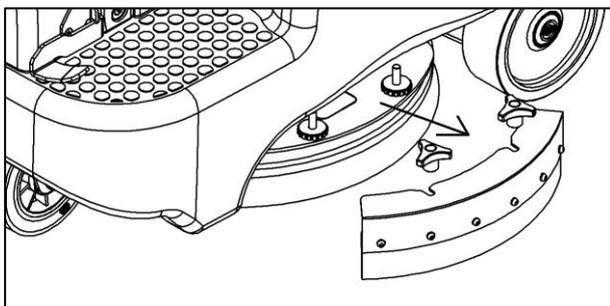
DANGER



Make sure the machine is switched off and that the brush motor cannot be started. Remove the key from the control panel.

To install or remove the brush or the pad, one of the two lateral brush cover guards (9) must first be removed, if in position.

Completely loosen the three-lobed knobs and pull out the guard from the side. The knobs for adjusting the height of the guard remain on the brush plate.

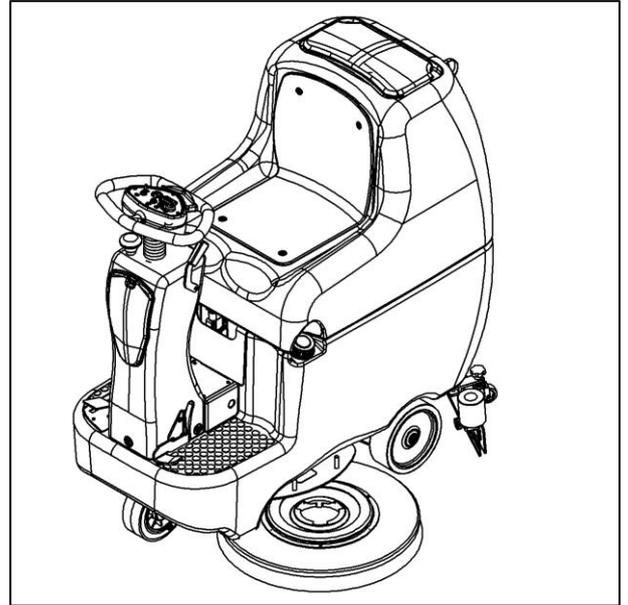


Proceed as follows:

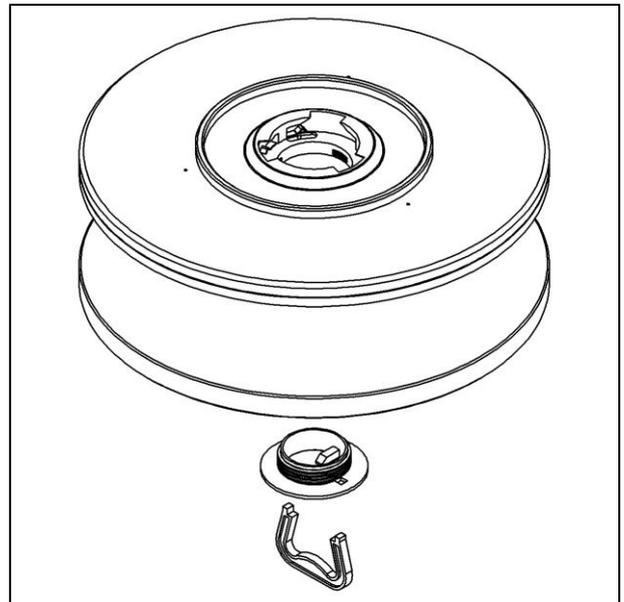
1. Raise the scrubbing head using the pedal (8).
2. Grip the brush or pad holder on either side with both hands. Give it a short, sharp turn

in both directions to release the spring that keeps the brush or pad holder fixed to the motor coupling.

3. The brush or pad holder should then drop to the ground. They can then be pulled out from the side of the machine by dragging them on the floor.



4. If the pad needs to be replaced, loosen the central retaining disc using the special U-shaped wrench. Remove the pad from the surface of the pad holder and replace it. Re-tighten the central retainer.



5. To install the brush or pad holder disc, position them once more beneath the machine, aligning the central hole with the coupling on the motor.
6. Lower the scrubbing head using the pedal (8).

7. Gently move and rotate the brush so that the coupling on the motor engages with the central hole on the brush.
8. Start the brush motor rotation with the switch (B) and the drive pedal (14). This engages the spring that fastens the brush to the coupling.

4.3 Squeegee

The squeegee (19) is removed for normal cleaning operations and when the rubber blades need to be replaced.

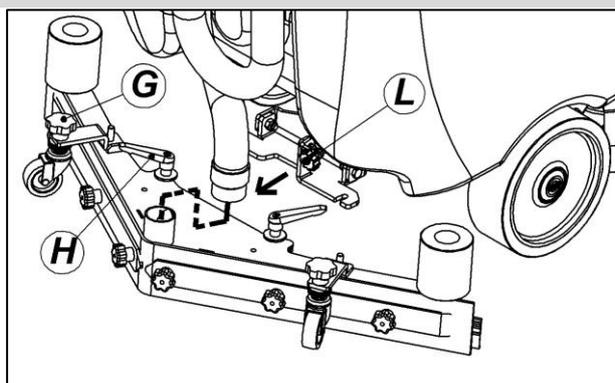
The machine is normally packaged with the squeegee removed, therefore it must be installed on the machine before use.

The squeegee is fixed to the machine with clamping handles (H).

WARNING



When turning knobs & handles, be careful not to catch fingers or skin in moving mechanical parts.



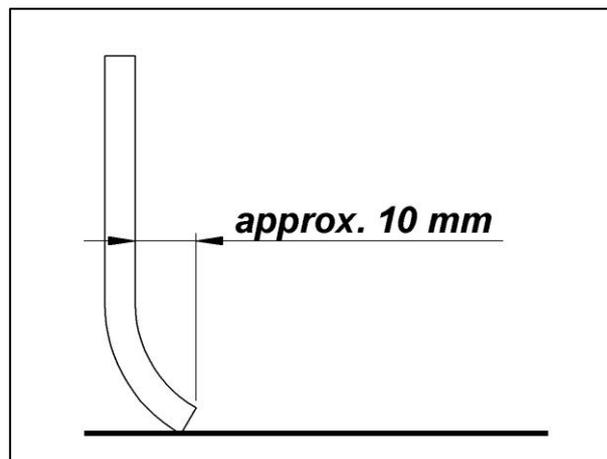
These must therefore be loosened in order to remove the squeegee or insert it in the support arm.

In any case, the waste detergent solution vacuum hose must be detached from its coupling.

The height and angle of the squeegee in relation to the floor can be adjusted by means of knobs (G) and (L).

With a properly adjusted squeegee, the front blade lightly touches the floor and is almost perpendicular to it.

The rear blade, however, must press against the floor, forming a bend along its entire edge, as shown in the figure.



4.4 Loading the detergent solution

WARNING



Use only low-foaming and non-flammable liquid detergents that are suitable for the equipment.

CAUTION



When using detergents for cleaning floors, follow the instructions and warnings given on the labels of the containers.

CAUTION



Gloves and adequate protection should be used when handling floor cleaning detergents.

Before each cleaning operation, fill the tank (6) with a suitable solution of water and detergent.

1. Close the solution valve with the control knob (12).
2. Open the cap (7).
3. Fill to the maximum level indicated by the transparent tube (15) on the side of the tank.
4. Always follow the dilution instructions provided on the packaging of the chemical product used for making the solution.
5. The temperature of the solution should not exceed 40°C.

5 Operation

5.1 Starting the machine

Prepare the machine as indicated in the previous section.

Insert the ignition key and turn clockwise to switch on the machine.

When the machine starts up, the three battery charge indicator LEDs (red, yellow and green) remain on for about 3 seconds. The circuit board performs a control routine.

If no errors are found, the correct battery charge status is displayed after the three LEDs have switched off:

- **Solid green LED.** The battery is fully charged
- **Solid yellow LED.** The battery is at about half its maximum charge.
- **Yellow and red LEDs permanently lit.** The battery is in its first critical charge state. Use of the brush motor is prevented in order to avoid an excessively rapid discharge. The vacuum motor continues to operate, allowing drying operations to be completed.
- **Solid red LED.** The battery is in its second critical charge state. Use of the vacuum motor is also prevented. The machine must be brought to the nearest charging station and the battery must be fully recharged.
- **Flashing red LED.** The battery is in its third critical charge state. Any further use would damage the battery, therefore use of the entire machine is prevented. After releasing the electromagnetic brake, the machine must be pushed to the nearest charging station.

CAUTION



Do not continue using the machine when the batteries are low in order not to damage the batteries and shorten their service life.

5.2 Driving

Drive to the work area by starting the machine with both hands on the steering wheel (1) and pressing the drive pedal (14). The drive speed can be regulated from zero to maximum based on the pressure placed on the drive pedal (14).

CAUTION



The machine has an electric braking system. This intervenes automatically when the drive pedal is released. If you need to stop the machine immediately (e.g. an emergency situation) you must press the emergency stop button (3).

The forward/reverse direction is selected by the gear selector (D) on the control panel.

Stop the forward movement of the machine by completely releasing the drive pedal (14). There is no need to immobilise the machine when

stationary or parking, as the electromagnetic brake on the wheels automatically engages when there is no pressure on the drive pedal.

Switch off the machine by turning the ignition key anticlockwise.

DANGER



The seat is fitted with a safety sensor that prevents the machine from moving when the drive pedal is pressed unless the operator is seated in position. This is an important safety measure that should not be evaded in any way, such as by modifying the electrical system or placing a weight on the seat to simulate the presence of the operator.

CAUTION



The machine has an anti-skid safety system that reduces the speed while turning, when necessary, regardless of the pressure on the pedal.

This reduction in speed is not a malfunction but a feature that increases the safety and stability of the machine in all conditions.

CAUTION



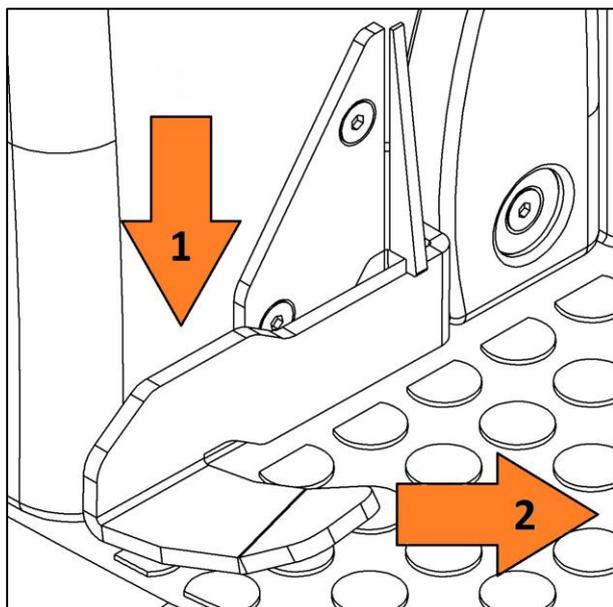
When reverse mode is selected, an intermittent acoustic warning signal is started.

Reverse driving is deemed a condition of greater accident risk due to reduced operator visibility, and is therefore appropriately signalled.

5.3 Washing and drying

Start the machine as described in the previous section.

Lower the scrubbing head to the floor using the pedal (8). To unlock the pedal, you must first push it downwards and then slightly to the left to disengage it from the mechanical locking device. Once it is free, control its upward movement with your foot (as the cleaning head descends to the floor) until the brush is in contact with the ground.



Use the lever (4) to lower the squeegee to the floor.

Turn on the brush motor and vacuum motor with switches (B) and (C).

The vacuum motor starts immediately, whereas the brush motor only starts when you press the drive pedal, i.e. when the machine is in motion.

When the brush motor starts, the time meter begins to display the the operating time. The fractional part represents tenths of an hour (6 minutes).

For example: the number 11.7 indicates an operating time of 11 hours and $7 \times 6 = 42$ minutes.

Regulate the quantity of detergent flow by sliding the cursor (12) upwards. The adjustment is gradual and the maximum aperture corresponds to a flow of about 2.5 l/min.

Start the cleaning operation, manoeuvring with both hands on the steering wheel and moving the machine forward by pressing on the drive pedal as needed.

For effective washing/drying of floor edges next to walls, we recommend approaching with the right side of the machine until the squeegee touches the bottom edge of the wall.

If you need to make a reverse manoeuvre, you must raise the squeegee off the ground. Dragging the squeegee in reverse leads to rapid wear of the rubber blade, therefore the squeegee lever is fitted with a sensor that prevents the machine from reversing until the squeegee is raised.

If you need to temporarily interrupt the cleaning operation, you should remember to shut off the solution valve, otherwise, depending on the solution flow setting, the area where the machine has stopped could soon be flooded.

An electromagnetic control valve that stops the flow of solution as soon as the brush stops rotating is available as an optional feature.

WARNING



In the event of overload of the brush motor, drive motor or vacuum motor, a safety system automatically stops the overloaded motor.

To reactivate the stopped motor, you must eliminate the cause of the overload (e.g. a foreign body that has accidentally entered between the moving parts of the machine), if possible, and restart the machine with the ignition key.

To finally conclude the cleaning operations, raise the scrubbing head and the squeegee and switch off the brush motor and vacuum motor. The vacuum will shut down with a delay of about 5 seconds, to prevent dripping from the vacuum hose on the newly dried floor.

WARNING



A stoppage due to overload of one of the machine's motors is signalled by the BDI (battery discharge indicator) with an specific combination of flashes on the LEDs. See the "Troubleshooting" chapter for the error codes displayed by the machine's electronic control system.

5.4 Emptying the tanks

An automatic closure device with a float shuts off the vacuum system when the recovery water tank (5) is full.

This condition is signalled by the BDI (battery discharge indicator) with a continuous red LED and a flashing green LED.

The tank must then be emptied.

Bring the machine to a waste water drain or a designated disposal area.

Turn the machine off and remove the ignition key.

Empty the tank using the hose (10).

The end of the hose is pliable and can be pinched to control or completely halt the flow of dirty water.

5.5 Stopping

When work is finished, before leaving the machine:

1. Remove the brush or pad holder in the manner indicated in the relevant section.
2. Remove the ignition key.
3. Empty the tanks and clean the recovery tank.

4. Remove the squeegee and rinse it with hot water. Refit it and leave it raised off the ground.
5. If the squeegee is left resting on the ground for a long period, the rubber blades can warp.
6. Store the machine in a clean, dry place.

If the machine is not expected to be used for more than 30 days, the following steps should be taken:

1. Follow all the steps described above before leaving the machine.
2. Press the emergency button and unplug the battery connector.
3. Periodically check the charge state of the batteries and run a charge cycle, if necessary, as described in the "Maintenance" section.

5.6 Transport

DANGER



Make allowance for the weight of the machine during transport.

DANGER



For transport on vehicles, secure the machine in accordance with current regulations so that it cannot slide or overturn.

Ensure that the machine is immobilised by securing it with belts and ropes.

The ropes must pass through the tubes on the machine chassis, which protrude from beneath it.

Block the wheels with wedges.

The machine must not be lifted by means of belts. For loading and unloading, provide a ramp and use the machine's own drive.

6 Care and Maintenance

6.1 General instructions

A lengthy machine service life and maximum operating safety are ensured by careful and regular maintenance.

DANGER



All maintenance operations must be performed with the machine switched off and immobilised and the batteries disconnected.

Carefully read all the instructions in the "Safety Guidelines" chapter before

performing maintenance.

Repairs should only be carried out by authorised service centres or by qualified personnel who are familiar with all relevant current safety regulations.

DANGER



Risk of Burns

Some parts of the machine (e.g., outer motor casings) can become very hot.

Allow sufficient time for all parts of the machine to cool down before working on it.

6.2 Cleaning

WARNING



Do not clean the machine with a high-pressure water spray (risk of short circuit or other electrical failures).

DANGER



Wear a dust mask and safety goggles.

The outside of the machine should be cleaned with a soft cloth and a mild detergent. Do not use aggressive detergents.

6.3 Maintenance intervals

WARNING



The operating time meter indicates the maintenance intervals.

The customer is responsible for the following maintenance tasks:

Daily maintenance:

- Charging the batteries.
- Cleaning the squeegee.
- Cleaning the brush or pad.
- Cleaning the tanks and checking the gasket on the recovery tank cover
- Check that all the controls are working.

Weekly maintenance:

- Checking the rubber squeegee blades.
- Checking the battery fluid level if batteries with liquid electrolyte (flooded batteries) are used.

Maintenance approximately every 100 working hours or as required by the type of floor cleaned:

- Replacement of the brush or pad.
- Replacement of the rubber squeegee blades.

WARNING



All servicing and maintenance under the customer's responsibility must be performed by a qualified technician.

After approximately 600 working hours, or one year of machine use, the following maintenance operations must be performed by an Ing. O. Fiorentini S.p.A. authorised service centre:

- Inspection of the electromagnetic brake and replacement of the friction material, if necessary.
- Inspection and replacement, if necessary, of the brushes on the drive motor.
- Inspection and replacement, if necessary, of the brushes on the vacuum motor.
- Inspection and replacement, if necessary, of the brushes on the brush motor.

For warranty purposes, all servicing and maintenance during the warranty period should be carried out by Ing. O. Fiorentini S.p.A. authorised service personnel.

6.4 Battery maintenance

DANGER



Risk of explosion.

Never place tools or other objects on the battery, the terminals or connections to the battery elements. If they are conductive, they could cause a short circuit and trigger an electric arc.

Ensure adequate ventilation during charging to expel possible explosive gases produced by the battery.

Always follow the instructions provided with the battery charger.

Charge the batteries when the red LED of the discharge indicator is lit.

Keeping the batteries charged prolongs their service life.

When the batteries are low, ensure that they do not remain in this condition for long, in order not to reduce the battery life.

If the machine is not used daily, check the batteries at least once a week.

DANGER



Risk of explosion.

When charging the batteries with an external battery charger, make sure that is suitable for the type of batteries installed.

Charging the batteries produces highly explosive hydrogen gas.

The batteries should only be charged in well-ventilated areas and away from naked flames.

Do not smoke while charging the batteries.

Leave the recovery water tank in the raised position for the entire battery charge cycle.

DANGER



Pay particular attention to any leakage of fluid from the batteries. This fluid is corrosive. In case of contact with skin or eyes, rinse immediately with plenty of water and seek medical advice.

Take the machine to the area designated for charging the batteries.

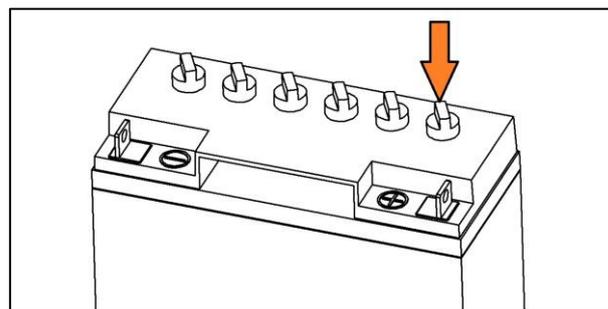
Make sure that the machine is switched off, with the ignition key removed.

Check that the recovery tank is empty, and empty it if necessary.

Grasp the recovery tank by the front opening of the battery compartment, just below the driver's seat.

Carefully raise the recovery tank until the safety latch engages, keeping the tank permanently in a raised position.

For batteries with liquid electrolyte, check the levels. If necessary, unscrew the caps and refill.



Use of an external battery charger

Check the manual of the external battery charger to ensure its suitability. The battery charger must have a nominal voltage of 48V.

Unplug the battery connector and connect it to the external battery charger.

Connect the battery charger to the power supply.

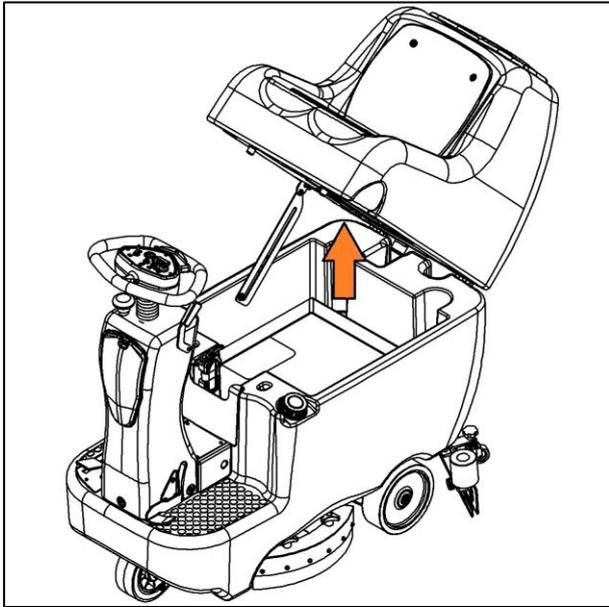
After charging, unplug the charger from the mains and disconnect it from the connector.

Plug the connector into the socket on the machine.

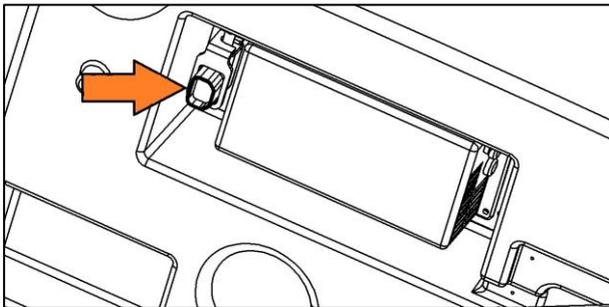
Release the safety latch and lower the recovery tank, taking care not to trap parts of the body or clothing between the two tanks.

Using the on-board battery charger

As an optional feature, the machine can be fitted with a battery charger housed in a compartment of the recovery tank facing the battery compartment.



Connect the mains cable to the IEC 60320 C13/C14 connector. This allows you to use various mains cables, depending on the type of socket available.



The mains voltage and frequency must match those of the charger, as specified on the nameplate.

WARNING



When the charger is plugged into the mains, all machine functions are automatically disconnected.

The batteries are fully charged when the green LED on the charger is permanently lit.

Unplug the charger from the mains and close the recovery tank.

For more information about use of the battery charger, see the relevant user manual.

6.5 Maintenance of the squeegee

Cleaning

For effective drying, the squeegee must be clean, with the rubber blades in good condition.

WARNING



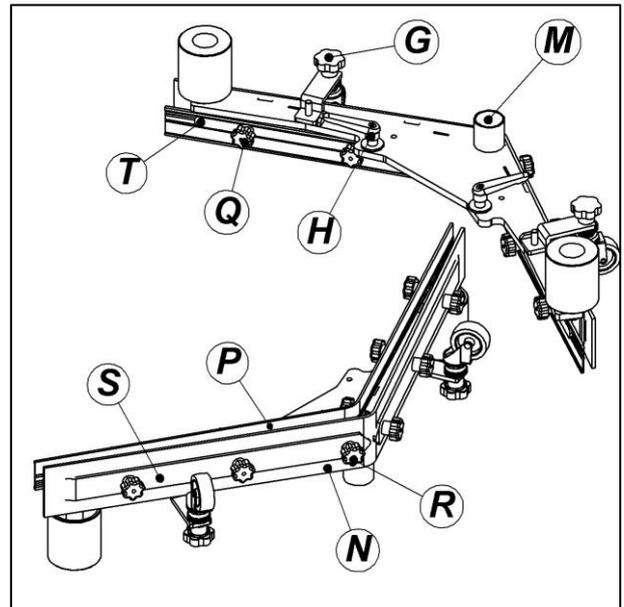
We recommend wearing gloves when cleaning the squeegee, due to the possible presence of sharp debris.

Park the machine on a level floor area.

Make sure that the machine is switched off, with the ignition key removed.

Loosen the clamping handles (H), remove the vacuum hose from its coupling (M), then remove the squeegee from the support arm.

Wash and clean the squeegee with hot water. Take particular care to clean all dirt and debris from the space between the two rubber blades and the hose connection (M).



Check that the front rubber (P) and rear rubber (N) are both intact, with no cuts and lacerations, otherwise replace them as indicated below.

To refit the squeegee, follow the reverse procedure to that for removal.

WARNING



If the connection fitting or vacuum hose are clogged, even partially, the vacuum motor can suffer damage if operated for a long time in this condition, due to impaired cooling efficiency.

Replacing the rubber blades

Remove the squeegee as indicated in the previous section.

Completely loosen all the knobs (Q) and (R) on the squeegee. First remove the mounting brackets (T) and (S) and then the front and back rubber blades (P) and (N) from the threaded pins on the body of the squeegee.

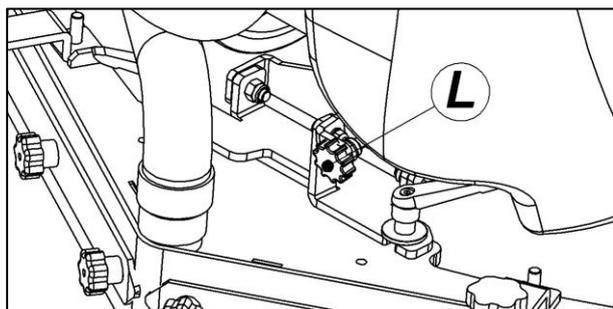
Inspect the rubber blades. With regard to the rear blade in particular, the edge in contact with the floor should not be worn. In the case of wear, turn the rubber around, so that one of the other three unworn edges replaces the worn edge.

If all the edges are worn, replace the blade.

If the blades have cuts or tears and the edge of the rear blade in contact with the floor is worn, the drying efficiency of the machine will be greatly impaired.

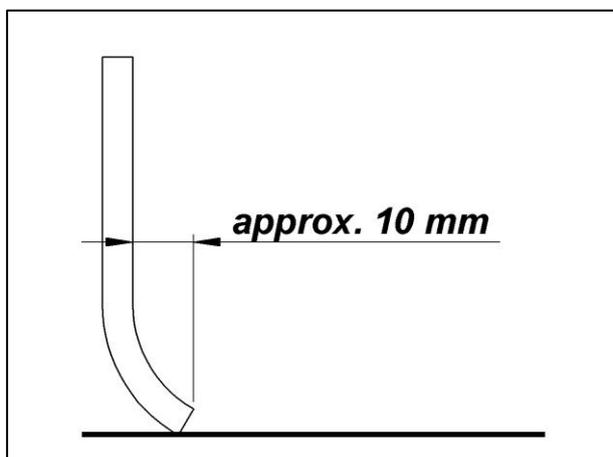
To refit the rubber blades, proceed in the reverse order to that for removal. Tighten all the knobs evenly and refit the squeegee to the support arm.

Adjust the height and tilt of the squeegee with the two wheels (G) and the knob (L).



In a properly adjusted squeegee, the front blade should lightly touch the floor and be almost perpendicular to it.

The rear blade, however, must press against the floor, forming a bend along its entire edge, as shown in the figure.



6.6 Brush maintenance

WARNING



We recommend wearing gloves when cleaning the brush, due to the possible presence of sharp debris.

Remove the brush from the scrubbing head.

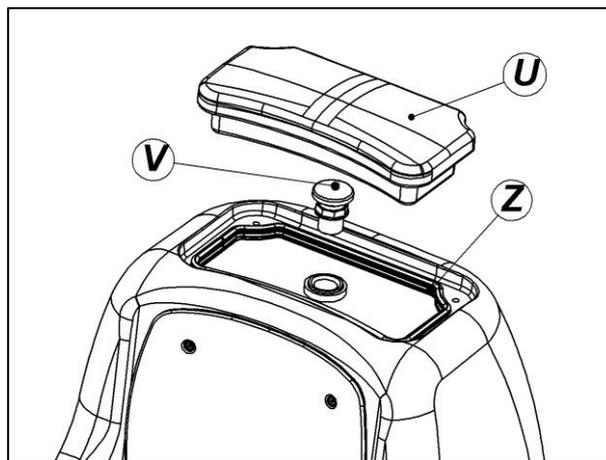
Clean and wash the brush with water and detergent.

Check that the bristles are intact and not excessively worn, otherwise replace the brush.

6.7 Cleaning the recovery tank

Bring the machine to the water disposal area.

Make sure that the machine is switched off, with the ignition key removed.



Lift the cover (U). Clean and wash the inside of the tank (5) and the cover with clean water.

Drain the water in the tank using the hose (10) or through the hose connection (16).

Unscrew and clean the labyrinth valve (V) so that it is free from any obstructions.

Check the integrity of the gasket (Z) and the cover (U).

If necessary, replace the gasket, removing it from its housing.

6.8 Checking/replacing fuses

The machine only has a single 70 Amp main fuse mounted at the entrance to the circuit board (see wiring diagram).

The fuse only intervenes in the event of a serious fault.

It is therefore advisable that replacement of the fuse should only be carried out by qualified personnel.

7 Safety features

The machine has the following safety features.

Emergency Button

The emergency button (3) is in a position easily accessible to the operator. It should be firmly pressed in case of immediate need to stop all the machine's functions.

To restore machine operation, pull the button firmly upwards until a click is clearly heard.

Anti-skid safety system

This reduces speed on turns to a safe level, where necessary, to prevent sudden skidding and enhance the stability of the machine in all conditions.

Driver's seat micro switch

This is located under the driver's seat and prevents the machine drive system from functioning unless the operator is sitting on the seat.

Electromagnetic brake

This is located on the axis of the drive motor and keeps the machine immobilised when switched off or at a standstill.

8 Disposal



All the packaging is recyclable. The packaging must not be disposed of as domestic waste but brought to a proper collection centre.

Decommissioned machines contain valuable recyclable materials and should be brought to proper collection centres. Batteries, oil, and similar substances must not be discarded in the environment. You are therefore requested to dispose of decommissioned machines through segregated collection systems.

9 Warranty

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

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

10 Accessories and Spare Parts

Only use accessories and spare parts approved by the manufacturer. Original accessories and spare parts ensure that the machine can be used safely and without malfunctions.

ING. O. FIORENTINI S.p.A.

*Via Piancaldoli 1896 Firenzuola 50033
Frazione Piancaldoli (FI) – Italy*

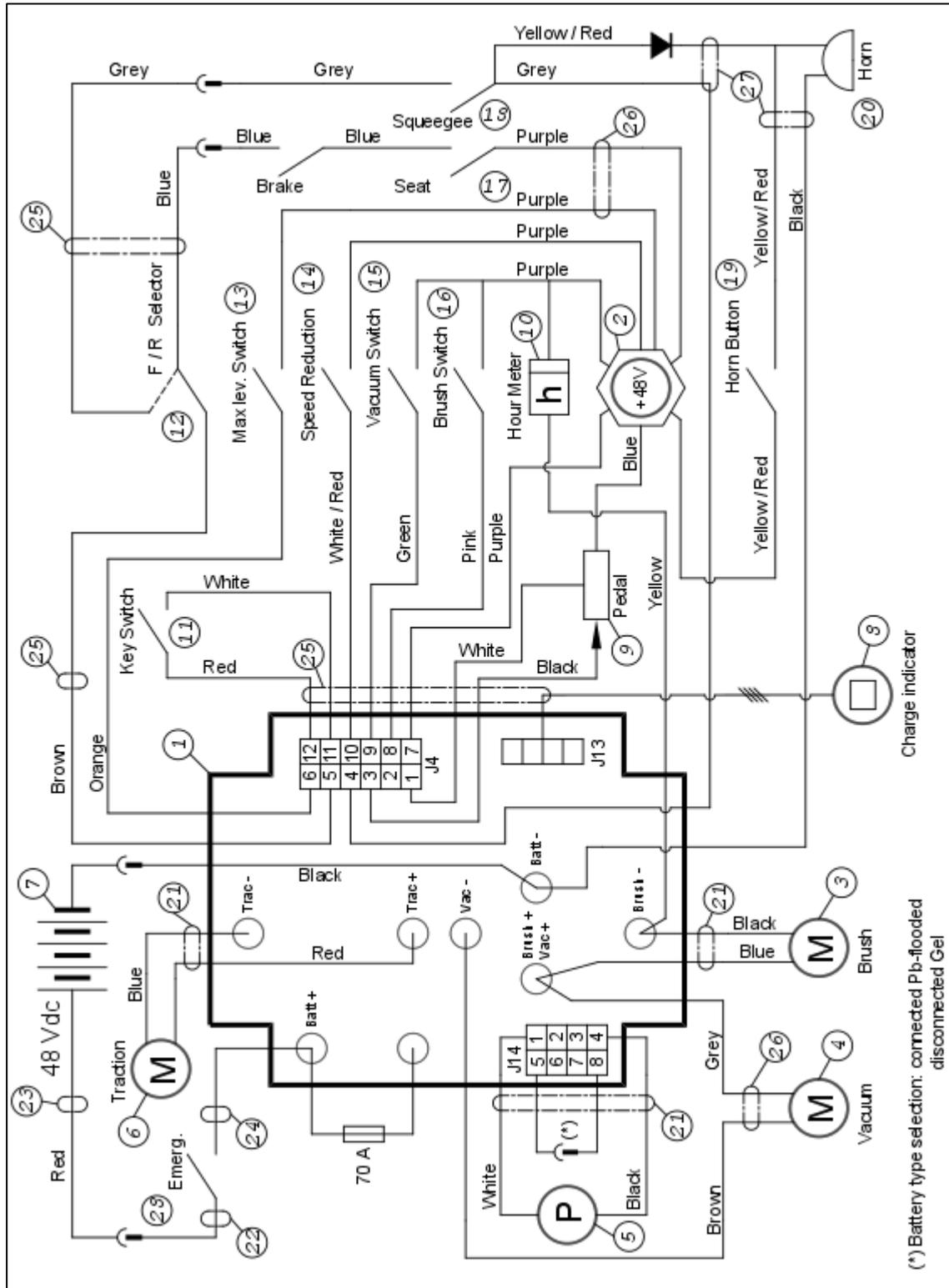
Telephone (+39) 055 81 73 610

Fax (+39) 055 81 71 44

E-mail: info@ingfiorentini.it

*Website: www.ingfiorentini.it -
www.fiorentinispa.com*

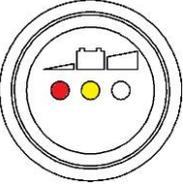
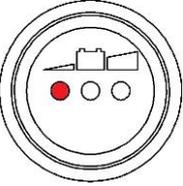
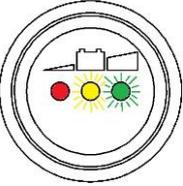
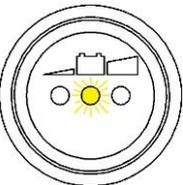
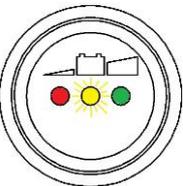
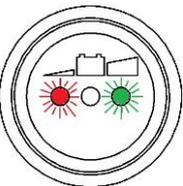
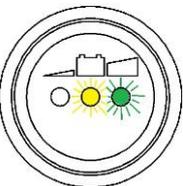
11 Wiring Diagram

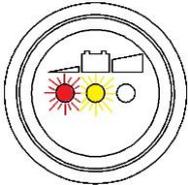
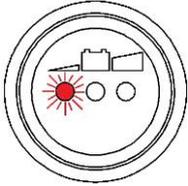
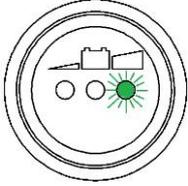
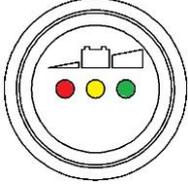
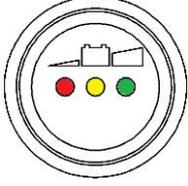
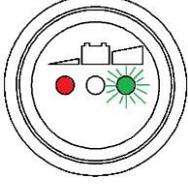


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|-------------------------|--------------------------|---------------------------------|
| 1 Control board | 6 Drive Motor | 11 Key switch |
| 2 Fuse support | 7 12V battery | 12 F/R gear selector |
| 3 Brush motor | 8 Charge state indicator | 13 Float |
| 4 Vacuum motor | 9 Drive Pedal | 14 Speed Reduction micro switch |
| 5 Electromagnetic brake | 10 Time meter | 15 Vacuum switch |

- | | | |
|--------------------------|----------------------------|---------------------|
| 16 Brush switch | 21 Drive cable | 26 Vacuum cable |
| 17 Seat micro switch | 22 Power cable | 27 Slow-down cable |
| 18 Squeegee micro switch | 23 Power cable | 28 Emergency button |
| 19 Horn button | 24 Emergency cable | |
| 20 Back-up alarm | 25 Machine functions cable | |

12 Diagnostics

<i>LED STATUS</i>		<i>ERROR</i>	<i>SOLUTION</i>
	<p>Green: off</p> <p>Yellow: on</p> <p>Red: on</p>	Brush stop threshold. The battery charge is at a critical level and brush operation is disabled.	Charge the battery.
	<p>Green: off</p> <p>Yellow: off</p> <p>Red: on</p>	Vacuum stop threshold. The battery charge is at a critical level, the vacuum function is disabled.	Charge the battery.
	<p>Green: flashing</p> <p>Yellow: flashing</p> <p>Red: on</p>	Faulty departure. Intervenes if the drive pedal is pressed and kept down while turning the machine on. Prevents an uncontrolled departure.	Start the machine without pressing the drive pedal.
	<p>Green: off</p> <p>Yellow: flashing</p> <p>Red: off</p>	Maximum Temperature. Intervenes if the board reaches a temperature of 80°C.	Try switching the machine off and letting it cool down. If the error persists, contact the service centre.
	<p>Green: on</p> <p>Yellow: flashing</p> <p>Red: on</p>	Pedal Error. The signal from the drive pedal is faulty.	Check the drive pedal.
	<p>Green: flashing</p> <p>Yellow: off</p> <p>Red: flashing</p>	Thermal Protection of the Drive Motor.	Try switching the machine off and letting it cool down. If the error persists, contact the service centre.
	<p>Green: flashing</p> <p>Yellow: flashing</p> <p>Red: off</p>	Thermal Protection of the Brush Motor.	Try switching the machine off and letting it cool down. If the error persists, contact the service centre.

LED STATUS		ERROR	SOLUTION
	Green: off Yellow: flashing Red: flashing	Thermal Protection of the Vacuum Motor.	Try switching the machine off and letting it cool down. If the error persists, contact the service centre.
	Green: off Yellow: off Red: flashing	Machine Stop. The battery is in a charge condition beyond which further use would cause damage.	Charge the battery.
	Green: flashing Yellow: off Red: off	The battery voltage is too high.	Check the battery voltage. Reduce it, if possible, by connecting to a load.
	Green: on Yellow: on Red: on	If the three LEDs remain in this state permanently after switching on, it means that the drive motor is disconnected.	Check the drive motor cables. If the error persists, contact the service centre.
	Green: on Yellow: on Red: on	If the three LEDs remain in this state permanently after a period of inactivity, it means that the machine has gone into stand-by.	Switch off the machine and restart it.
	Green: flashing Yellow: off Red: on	The recovery tank is full.	Empty the recovery tank.

13 Troubleshooting

FAULT	SOLUTION
The motors are not working, no LEDs light up on the charge state indicator.	Battery completely discharged. Charge battery
	Battery damaged. Replace it.
	Battery connector unplugged. Plug it in.
	If the problem persists, contact your support centre.

FAULT	SOLUTION
Insufficient suction of dirty water.	The recovery tank is full. Empty the tank
	The vacuum hose is disconnected from the squeegee. Connect it.
	Clogged vacuum hose or labyrinth valve. Clear the blockage.
	Dirty squeegee or damaged or worn rubbers. Ensure proper maintenance of the squeegee.
	Tank cover not properly closed or damaged gasket. Close the cover or clean/replace the gasket.
Insufficient flow of cleaning solution to the brush.	Detergent solution tank empty. Fill it.
	Solution valve clogged or damaged. Replace it.
The squeegee leaves scratches on the floor	Debris under the squeegee rubbers. Remove it.
	Squeegee rubbers worn, chipped or torn. Replace them.
	Poorly adjusted squeegee. Adjust it.

14 Technical Specifications

Length x Width x Height	mm	1160x580x1170
Unladen weight	Kg	125
Total permitted weight	Kg	400
Solution tank capacity	l	94
Recovery tank capacity	l	104
Total working width	mm	550
Maximum forward speed	Km/h	4
Maximum negotiable slope	%	8
Maximum working autonomy	h	4.7
Maximum output per hour	m ² /h	2200
Drive type	--	Rear electric
Scrubbing head pressure	Kg	25
Water lift	mbar	150
Noise	dB	50
Minimum turning radius	mm	1370

Vacuum motor	W	1x350
Brush motor	W	1x400
Drive motor	W	1x250
Power supply voltage	V	48
Batteries	--	4x12 – 110Ah
Number and diameter of brushes	mm	1 x Ø550
Squeegee width	mm	780
Battery weight	Kg	4x20
Maximum cleaning solution flow	l/min	2.5
Brush motor rotation speed	rev/min	120
IP protection rating	--	X4
Battery compartment dimensions	mm	480x480x225(h)

ING. O. FIORENTINI S.p.A.

Via Piancaldoli 1896 Firenzuola 50033 Frazione Piancaldoli (FI) – Italy

Telephone (+39) 055 81 73 610

Fax (+39) 055 81 71 44

E-mail: info@ingfiorentini.it

Website: www.ingfiorentini.it - www.fiorentinispa.com
