HILEX 8065 ATEX

EN INSTRUCTION MANUAL

HILEX 8065 ATEX

USER'S MANUAL

- **Description: Washer-dryer for commercial environments, at risk of explosion, in ATEX zone 2/22**
- **Model: HILEX 8065 ATEX**
- **ATEX classification of the washer-dryer:**
- **II 3G IIB T3 (classification for suitability in environments at risk of GAS explosion)**
- **II 3D IIIC T200°C Tamb +5°C +40°C (classification for suitability in environments at risk of DUST explosion)**
- **Manual revision : 0.0**

For the best results, it is recommended to use original consumables.

The washer-dryer uses components designed and built to be suitable for use in environments at risk of explosion: the end user is obliged to replace these components with identical ones supplied by Klinmak

SUMMARY

PRESENTATION

Dear Customer,

KlinMak Srl would like to thank you for choosing to purchase HILEX8065 ATEX, the new washer-dryer that, having the specifications described in this manual, will surely meet your needs.
HILEX8065 ATEX has been entirely designed and built completely in line with the Machinery Directive 2006/42/EC (implemented with Law Decree 17/10), Electromagnetic Compatibility 2014/30/EC, with top quality materials and a particular commitment to reduce the risk of accidents as much as possible.
It also complies with the essential safety requirements of the ATEX Directive 2014/34/EU, which allows it to be used in environments classified as ATEX 2 and 22.
We have therefore drawn up this manual in order to provide you with adequate instructions for correct use and maintenance that are essential for operator safety, for correct machine operation and its long life.
Therefore, carefully read the entire manual and strictly follow the instructions provided; for safety reasons, do not carry out any type of maintenance or operation not specifically mentioned.
Sincerely,

The following symbols are used for the purposes outlined in the following descriptions:

ATTENTION

ATTENTION - Hazardous or unsafe practices that can result in serious personal injury or even death.

CAUTION

CAUTION - Hazardous or unsafe practices that may result in minor personal injury or damage to the machine or surrounding objects.

FOR SAFETY

Used to identify actions to be taken for safe machine operation.

Before using the machine for the first time, read these original instructions, follow them and keep them for future use or in case of resale of the machine.

1. DESCRIPTION OF THE MACHINE

HILEX8065 ATEX is a battery-powered Scrubber-Drying machine, driven with an operator seated on board, for washing and drying hard floors, intended for commercial use, in environments classified ATEX Z2/22.
The main systems of the machine are as follows:

- The cleaning solution tank and its circuit,
- The washing brushes disc
- The dirty water recovery tank and its circuit
- The electrical system and its control panel, the directional and speed device.

The cleaning solution tank's job is to store the water (with solution of the detergent), supplying it to the washing system.
The relevant system includes the tank, the filter, the proportional flow control valve and the controls.

The tank contains the cleaning solution (water and detergent) supplied to the washing system when needed. The filter protects the solenoid valve from impurities in the water. The solenoid valve controls the supply of the cleaning solution to the washing system. The valve automatically prevents the flow of the cleaning solution. The solution flow control selector, by controlling the duration and opening section of the solenoid valve, adjusts the amount of cleaning solution sent to the washing system.

The disc washing device includes two counter-rotating disc brushes, the electric motor, the lifting actuator of the entire brush unit, the manual cam for lifting the wiper alone and the controls. The brushes wash the floor while the motor and the pair of gears, solidly attached to the brushes, actuate their motion. The side band, in bristles, allows the cleaning solution to remain in the work area of the brushes.
The squeegee (or wiper) is the water collection device.
The water flow is controlled by a proportional solenoid valve (from 0 to 3.5 litres/minute).
The collection device (wiper or squeegee) is designed to suction the dirty water sending it to the recovery tank.
The recovery system includes: the squeegee, the vacuum turbine, the filter, the recovery tank and the controls.
The wiper collects the dirty cleaning solution from the floor as the machine moves forward. The vacuum turbine provides the vacuum required to suck the dirty cleaning solution from the floor and send it to the recovery tank.
The filter protects the turbine against debris and foam. The recovery tank stores the dirty cleaning solution.
The maximum level of the recovery water is controlled by a level sensor connected to the control unit and acting on the suction motor; therefore, the turbine will stop suctioning as soon as the collection water reaches the maximum level.

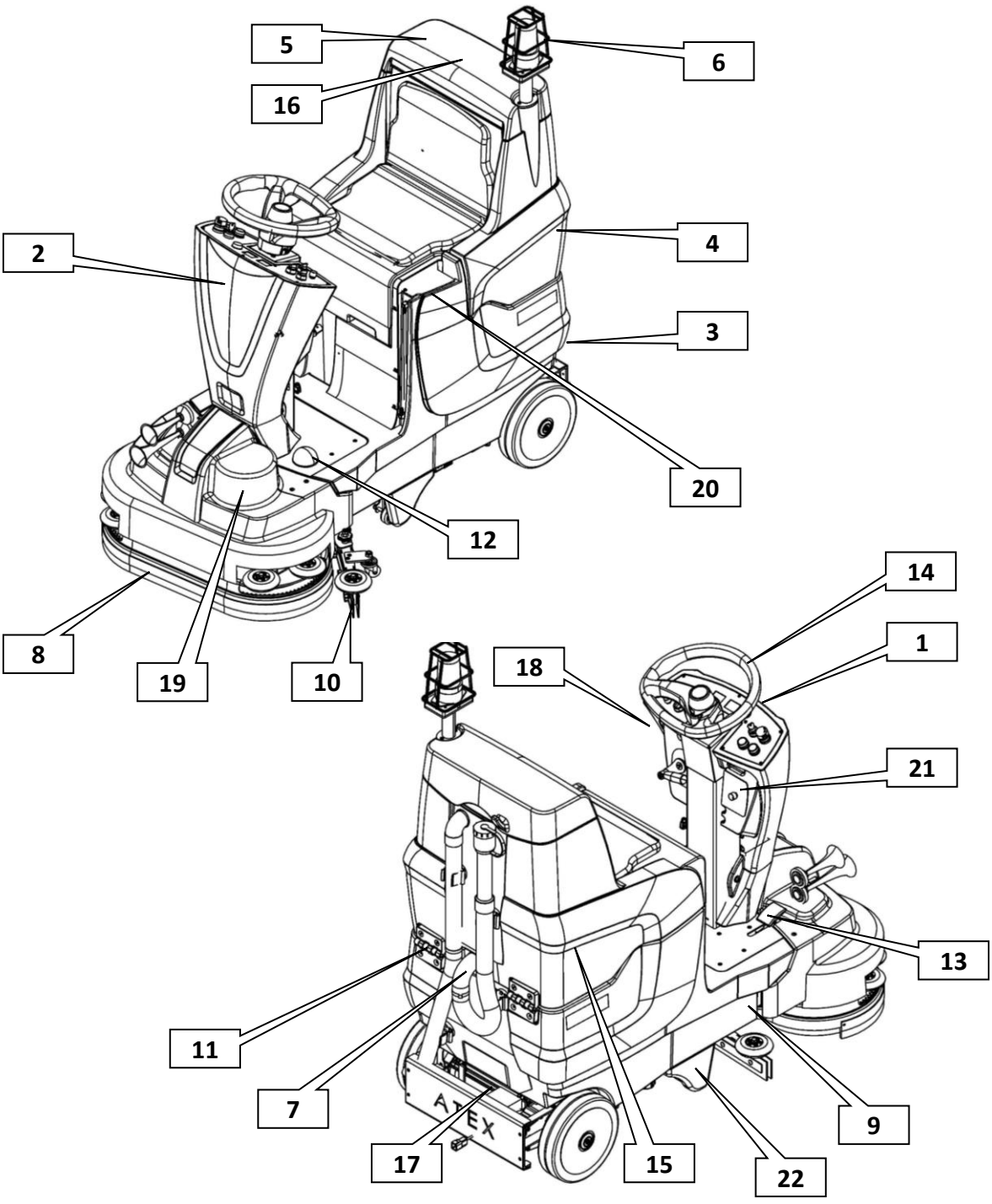
The function of the control devices and the steering wheel (directional and speed devices) is to control the direction and speed of the machinery. The directional control system includes: the speed pedal, the steering wheel. The speed pedal is unidirectional. Depending on how the running direction is set on the appropriate selector on the control panel, the machine is moved forward or backward. The steering wheel causes the drive wheel to assume the direction desired by the operator.
The machine is equipped with an motor brake that will stop the machine both in forward and reverse gear. In addition, this brake also acts as a parking brake, blocking the rotation of the rear axle wheels, whenever the machine is switched off or abandoned by the operator.

2. TECHNICAL SPECIFICATIONS

Technical characteristics Floor washer-dryer HILO8065 ATEX		
Specifications		**Technical Data**
Washing function		
Washed track width		650 mm
Solution tank		80 l
Hourly yield (Theoretical/practical)	Theoretical	3,900 - 2000 m2
ATEX brushless brush motor		0.5 kW
Brushes rotation rate		290 rev/min
Mass on brushes		0-41 Kg
Brush pressure		0-30 g/cm2
Brushes		4x203 mm
Brush water flow rate	adjustable	0-3.5 l/min
Brush unit lifting motor		0.03 kW
Recovery function		
Recovery tank:		80 l
ATEX brushless suction turbine	3-stage	0.52 kW
Suction depression		160 mbar
Power transmission		
Conveyor speed		0-6 km/h (0-4 km/h Work)
Drive motor (motor-differential) ATEX brushless		0.3 kW
Type of traction		rear with differential
Max surpassable slope in work / transfer		7% / 12%
Minimum steering corridor		1,880 mm
Power Supply		
Power supply		2x12V 24 V
Recommended gel batteries		80Ah (C5) - 96Ah (C20)
Battery compartment width (lxlxh)		380 mm X 380 mm X 325 mm
Charger (on request)		external – 12Amp
Total power and operating duration		
Installed power		1.4 Kw
Autonomy		up to 3h
Sizes / Weights and Noise level		
Machine dimensions (LxWxH)		1.400x920x1.215 mm
Machine packaging dimensions		1.450x740x1.370 mm
No-load weight (without batteries) / with packaging		130 / 160 kg
Weight with batteries / with packaging		215 / 245 Kg
Noise level		65.7 dB (A)

2.1 Functional units

1. Control panel
2. Front cover
3. Solution tank
4. Recovery tank:
5. Recovery tank cap
6. Flashing
7. Drain
8. Vibrating washing
9. Solution discharge tube
10. Floor wires
11. Vacuum motor
12. Acoustic horn puffer
13. Accelerator
14. Hand wheel
15. Battery compartment
16. Intake motor air filter
17. Drive motor with electro-brake
18. Squeegee lifting lever
19. Brush gearbox
20. Solution loading inlet
21. Work speed stabilizer (not active in the transfer phase)
22. Anti-overturning



3. SAFETY FEATURES

In view of the safety standards of the consolidated text of the Machinery Directive 2006/42/EC (implemented with Law Decree 17/10), the Low Voltage Directive 2014/35/EC, Electromagnetic Compatibility 2014/30/EC and the ATEX Directive 2014/34/EU.

ATTENTION

- To reduce the risk of explosions and fires, follow the instructions below.
- Only use the machine indoors. Do not use the machine outdoors and do not expose it to rain.
- Only use the machine following the instructions described in this manual.
- Only use the components and accessories recommended by the manufacturer.
- If the machine is not working properly, or has been dropped, damaged, left outdoors, or dropped into water, send it to an authorised service centre.
- Do not use the machine if one of the openings is obstructed. Keep the openings free of debris that may reduce air flow.
- The machine is not designed for collecting hazardous dust or powders.
- It must not be operated in the vicinity of areas other than classification 2/22.
- Do not operate the machine near flammable liquids, powders or vapours.
- The machine is designed for commercial use, for example for use in supermarkets, hotels, schools, hospitals, factories, warehouses, therefore for more complex applications than simple domestic cleaning operations.
- Only personnel trained and instructed how to use the machine correctly can operate the machine.
- Maintenance and repair operations must only be carried out by qualified personnel, contacting Klinmak directly.
- If foam or liquids leak from the machine, turn it off immediately.
- Disconnect the battery before carrying out cleaning or maintenance operations.
- Before transferring the machine to a waste collection centre, the battery must be removed and disposed of correctly.
- Check that all warning labels are legible and correctly applied to the machine.
- During operation, pay the utmost attention to other people, especially children.
- Before using the machine, make sure that all the covers/lids and doors are in the positions specified in the instructions.
- When the machine is left unattended, take all necessary measures to prevent any unintentional movement of the machine.
- The machine must only be operated by trained and authorised personnel.
- When the machine is left unattended, deactivate or block the power switch to prevent unauthorised use.
- Use only chemicals recommended by the manufacturer.
- The machine is designed to be used with the brushes specified by the manufacturer. The use of other types of brushes may compromise the safety of the machine.

ATTENTION

- Lead-acid batteries emit hydrogen. These emissions give rise to the risk of fire or explosion.
- Use the machine in areas classified 2/22. with the warnings given in the ATEX addendum below.
- Keep the solution tank raised when refilling and do not refill inside the ATEX classified areas.
- Keep batteries away from sparks or open flames and do not smoke near batteries.

ATTENTION

- Disconnect the batteries before carrying out any type of work on the machine.
- All work on the machine must be carried out exclusively by qualified personnel. Always wear protective clothing and goggles when working on or near batteries.
- Avoid contact of the acid contained in the batteries with the skin.

ATTENTION

- Never place metal objects on the top part of the batteries.
- Do not wash the scrubber dryer with pressure washers and electrical parts with water

FOR SAFETY

- Report any damage or malfunction of the machine immediately.
- Do not use the machine if it is not in perfect working condition. Please read the information carefully.
- Identify all machine safety devices.
- Ensure adequate training of the personnel in charge of operating the machine.
- DO NOT OPERATE THE MACHINE IN THE FOLLOWING CASES:
  - You have not been trained and authorised.
  - The Operating Guide has not been read.
  - You are in an area at risk of fire or explosion.
  - You are in an area where there is a risk of falling objects.
- DURING MAINTENANCE OPERATIONS:
  - Avoid moving parts. Do not wear loose clothing, such as jackets, shirts or in general, necklaces or hanging objects
  - Clothing with wide sleeves when using the machine.
- As the machine adopts components suitable for ATEX areas, it is mandatory to use KlinMak spare parts.

3.1 Declaration of absence of harmful substances

We declare that our products, used during machine assembly, are manufactured with materials that comply with the limits established by the current regulations on safeguarding health and protecting the environment and do not contain substances classified as SVHC (Substance of Very High Concern) in accordance with EC Regulation 1907/2006 (REACH, Registration, Evaluation, Authorisation and Restriction of Chemical substances).
Although the aforementioned substances are not used in the processing cycles of the raw materials and our products, their presence in the order of ppm (parts per million) cannot be excluded, due to micro-pollution of raw materials.

3.2 Safety devices for fixed closing guards

Fixed closing guards are considered to be components that protect certain areas that contain moving parts or live equipment.
The brush plate is equipped with a closing protection, formed by the protective casing in plastic material. The steering column contains moving parts (levering for flat brush lifting) and live equipment (electrical panel, motor wiring). This base is protected by a plastic nose that completely closes the head, assembled with screws. The cable glands are suitable for use in the ATEX area.

ATTENTION

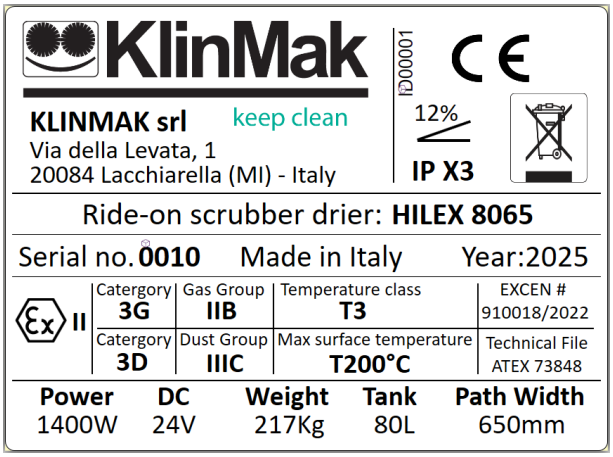
Do not remove the fixed closing guards. The maintenance of the shall be carried out in accordance with the provisions set out in the ATEX addendum below.

3.3 Safety devices for movable guards

No moveable guards are present on the machine.
The battery compartment is housed below the upper dirty water recovery tank. To access it, it is necessary to overturn this tank, hinged to the rear part.

4. CE NAMEPLATE POSITION

The technical data plate, bearing the CE marking, is affixed to the steering column; it is adhesive and must not be removed for any reason.
Sincerely,



5. MACHINE TRANSPORT and LIFTING

Lift the brush plate before transporting. Place the machine on a pallet, taking care to lock the wheels to prevent the machine from moving.
Transporting and any lifting must take place with the machine on a pallet.
It is recommended to empty the recovery and the solution tanks.
When loading the HILEX8065 ATEX washer-dryer onto a vehicle, with a ramp, or whenever it is necessary to travel along a steep ramp, it is recommended to lift the brush plate and disassemble the splash guard and brushes.

6. INTENDED USE OF THE MACHINE (washing and drying phase)

HILEX8065 ATEX is a battery-powered Scrubber-Drying machine, driven with an operator seated on board, for washing and drying hard floors, intended for commercial use, in areas classified 2/22.
The machine applies a cleaning solution to the hard floor, which is collected in the solution tank and brought by means of a special tube to the brush plate, with adjustable flow rate from the solenoid valve, scrubs the floor by means of the combined action of the counter-rotating brushes and then sucks the dirty water into the recovery tank.
It is also possible to spray the floor with water, using only the brushes for scrubbing and cleaning, but without drying. Finally, it is possible that it is necessary, when in front of an already wet floor, to permanently lift the brush plate, not to rotate it and carry out the steps with the suction only activated, in order to collect the water on the floor in the recovery tank.
The HILO8080 ATEX ATEX machine is not intended to carry out any other operations.
Any other operation or use in ATEX areas of different classification is therefore to be considered misuse.

7. INTENDED USE OF THE MACHINE (machine being moved without washing or drying)

HILEX8065 ATEX can be moved without the brush plate having to be lowered and the brushes in contact with the floor, nor with the drying turbine on. This can happen when moving from one room to another, at the end of the cleaning phase or for other reasons. Simply use the appropriate controls to raise the brush plate and drive the machine with brake and accelerator. In this phase the maximum speed regulation is not active, but the speed is regulated exclusively by the accelerator pedal.

8. REASONABLY FORESEEABLE MISUSE OF THE MACHINE

ATTENTION

The machine is not intended for outdoor use.
Do not wash and vacuum corrosive, flammable, explosive liquids even if diluted.
It is absolutely forbidden to use the machine in environments classified in areas other than 2/22.

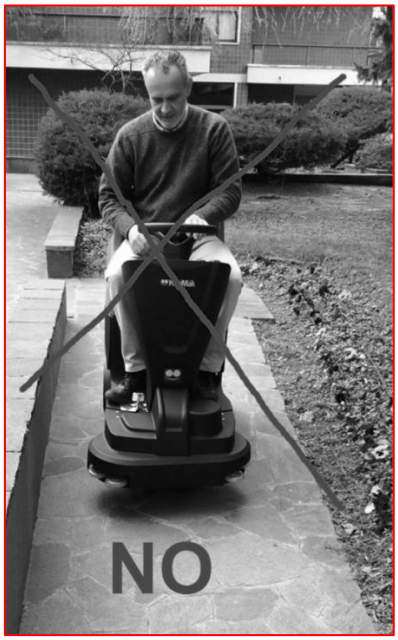
FOR SAFETY

Do not wash floors with water above 50°C;
Do not use diesel/petrol or corrosive detergents or solvents for washing floors.

ATTENTION

The machine is designed to work on flat surfaces and gentle slopes.
The maximum slope allowed, which can be driven uphill both during the work phase and during the transfer phase, is 7% (corresponding to a ramp with an inclination of about 4°).
To go down the same ramp, you must go down in reverse, as shown in the following figures, where the correct use is represented (downhill facing in reverse) and the incorrect use (downhill facing in the direction of travel).
This last incorrect behaviour, due to the possible condition of the surface (wet, uneven or material with low friction) can lead to dangerous slipping or prolonged breaking spaces, even more evident and risky when moving the machine, when the brush plate is lifted from the floor
Sincerely,

For the same reason, the parking brake must always be engaged, when you want to leave the machine stationary on a ramp, with the same positioned as in the figure shown here.



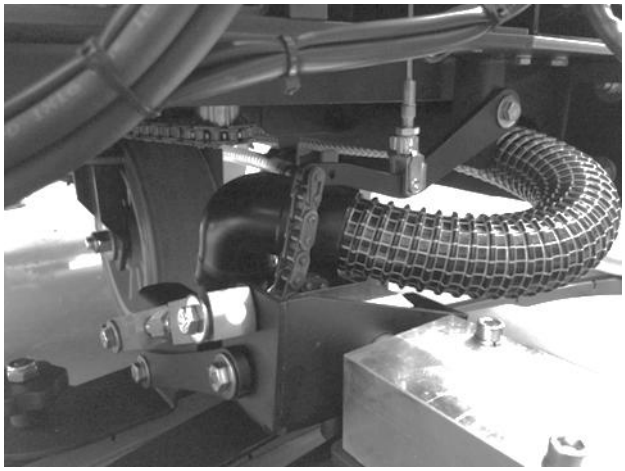
9. KIT SUPPLIED

In addition to this instruction manual, the machine is supplied with a kit containing:
1 clean water tank filler hose

10. INSTALLATION

Preliminary operations

The machine is shipped fully assembled and packed on a pallet
You must use a suitable ramp to move the machine from the pallet to the ground. Do not push the machine off the pallet without a suitable ramp, but remove the batteries (if present) and drain it by hand in 4 people (approx. 30 kg per person max).



Before use perform the following operations:

1. Carry out a preliminary inspection to identify any problems that could cause malfunctions or breakdowns. Visually check that there is no external damage, leaks and that the wheels are not damaged.
3. Check that the wiper is adjusted correctly.
4. Check that the drain hose, the relative cap, the pipe coming from the squeegee are installed correctly, taking care to insert the pipe into the elbow bend and to make the pipe take the appropriate bend as shown in the figure above.
5. Check the condition of the battery and recharge it if necessary.
6. Check that the brakes and steering are working properly.

In the event of damage, anomalies or defects, do not use the machine and contact your Dealer or KlinMak directly.

11. MACHINE PREPARATION AND COMMISSIONING 16

11.1 START-UP OF THE MACHINE

NOTE: Carry out a preliminary inspection and verify that the ATEX environment is suitable for machine start-up and use before operating the machine.

FOR SAFETY

Before starting the machine, make sure that all safety devices function correctly.
1. The operator should be in the control position and keep their left foot on the brake pedal. To avoid any unintentional movement, the accelerator pedal must not be pressed.
NOTE: To move the machine in the desired direction, the operator must be seated at the control station, as there is a safety device under the seat that reveals the presence of the seated operator.
2. Turn the starter key clockwise to the “ON” position.
3. Check the set direction of travel by selecting it on the Forward or Backward selector.
4. The parking brake, with man seated and key ON, is released automatically. Now lightly press the accelerator pedal and move the vehicle to the filling area, turning the steering wheel.

11.2 FILLING THE MACHINE

FOR SAFETY

Before leaving the machine unattended or performing any maintenance, make sure it is on a flat surface, turn off the machine and remove the key.

1. Lift the entire brush plate and turn the starter key counterclockwise to OFF, to switch off the machine.
2. Turn the lid of the solution tank.
3. The solution tank can be filled up to the maximum filling capacity (80 litres), paying attention to the level shown on the gauge located on the side of the tank, under the water loading inlet.

Leave enough space for the detergent.
The water temperature must not exceed 50°C, so as to avoid damaging the tank.
Measure the amount of chemical in the solution tank after filling with water. Before adding non-liquid chemicals to the solution tank, it is necessary to dissolve them completely.

12. USE OF THE MACHINE

12.1 FLOOR WASHING AND DRYING

Sweep the area to be cleaned well for best results. Remove large debris, ropes, straps and cables to prevent them from coming into contact with the brushes or squeegee.
If the machine is left on but not moving, with the brush plate lowered and working, the flow of the solution and the rotation of the brushes are stopped, in fact the machine is equipped with a solenoid valve mounted directly on the brush plate, so that when it is closed the descent of water is stopped, without unwanted dripping

12.2 START OF WASHING and DRYING

When using the machine with people around, pay close attention to unexpected movements. Pay extra attention with children nearby.

1. The parking brake is always engaged automatically, with the machine switched off with the selector off and the man not present in the driver's seat.
2. Make sure that the accelerator pedal is not pressed and turn the start key to "ON"; at this point the parking brake is automatically released.
3. Select the desired direction of travel (forward or backward)
4. act on the switch (progressive) to adjust the load of the brushes on the ground, adjusting (+/- load) if necessary the relative position with respect to the floor.
5. Press the brush start switch on the control panel. The brush motor is ready to start. The brushes will only start to turn when the operator starts to press the speed pedal,
6. Turn the knob on the panel to adjust the water opening of the solution.
7. Press the on/off switch of the vacuum turbine, thus starting the suction system.
8. Adjust the speed of the machine, through the accelerator pedal, after setting the maximum speed achievable, by acting on the speed control knob, located on the fuse panel.

NOTE: The rotation of the brushes and the flow of the solution automatically stops when the operator decides to stop the machine, no longer acting on the accelerator pedal. When the accelerator pedal is pressed again, the brush movement and flow resume automatically.

12.3 INTERRUPTION OF THE MOVEMENT OF THE BRUSHES AND WASHING

1. Press the switch that controls the rotation of the brushes on the control panel. The brush motor is deactivated.
2. To stop the rotation of the brushes it is also sufficient to lift the foot from the accelerator, the machine stops and the brushes stop
3. Press the switch that controls the ascent of the complete brush plate, it is lifted into the parking position. After 5 seconds, the suction motor is stopped. This delay serves to allow the complete emptying of the recovered solution still present in the suction pipe.
4. Release the accelerator pedal to brake until the machine stops
5. Turn the ignition key to “OFF” or get off and leave the machine.
6. The parking brake engages automatically when the machine stops.

12.4 DOUBLE WASHING and SINGLE DRYING

Particularly dirty floors may not be clean enough passing only once. In these cases, you will need to wipe twice with the brushes.
For double scrubbing and washing, first pass with the squeegee lifted, using the manual cam on the side of the steering column, lowering the activated solution and lowering the brushes. In this way the solution is in contact with the floor while the brushes work on removing the dirt. Allow a reasonable amount of time for the solution to remain in contact with the floor. The time to be allowed to pass between the
first and the second passing with the machine depends on the amount of dirt and the type of chemical used.
Passing a second time with the squeegee and brushes lowered and the activated solution will help to further remove the layer of dirt. Adding further solution will help remove stubborn dirt.
When performing double washing steps, it is advisable to maintain a particularly low driving speed due to the wet floor and at the end to allow the detergent to act chemically on the dirt

In the event of a double step, move the lever to UP.

12.5 EMPTYING AND CLEANING THE RECOVERY TANK

1. Press the switch on the control panel to lift the brush plate, stop the motor and the flow of the solution and deactivate the suction turbine.
2. Place the vehicle near a drainage system on the floor. The drain hose is located to the rear area of the machine.
3. Turn the starter key to "OFF", the parking brake is engaged.
4. Remove the drain hose from the hook. Open the cap and lower the drain hose in the direction of the drainage system on the floor. Stay behind the end of the tube. Block the leakage of dirty water by pressing the rubber part; remove the cap from the drain hose slowly. The recovered solution comes out with the adjustable pressure from the rubber tube indicated above.
5. Remove the tank top lid.
6. Wash the recovery tank with clean water. Wash until clean water comes out of the drain hose. Do not use water above 50°C, as it may damage the tank.
7. Reposition the cap and drain hose.
8. If the machine is to be left unused for a long period, do not close the recovery tank top lid and the drain hose cap, so as to allow air to circulate inside it.

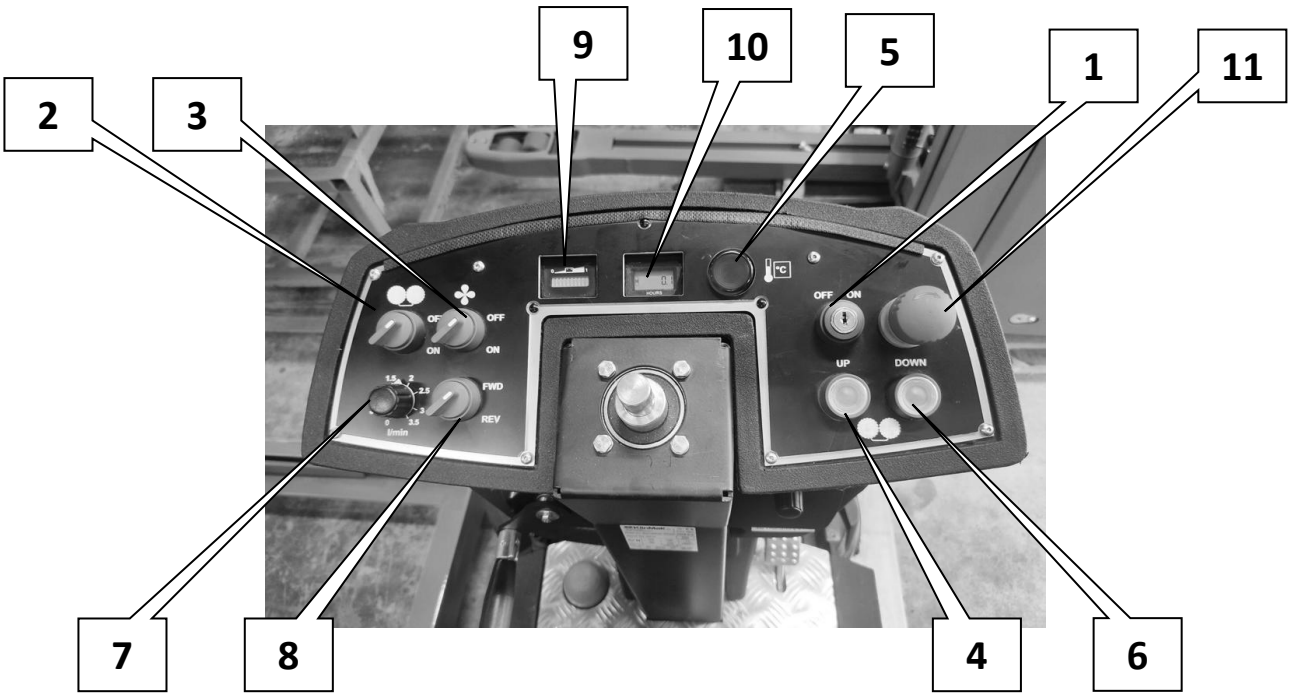
12.6 EMPTYING AND CLEANING THE SOLUTION TANK

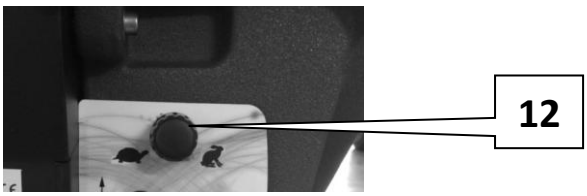
1. Place the vehicle near a drainage system on the floor. The drain hose is located on the front left corner of the machine, under the tank.
2. Turn the starter key to "OFF", the parking brake is engaged.
3. Release the small drain tube, relative to the solution tank, from the stopper.
4. The hose is located under the machine, on the left side. Lower the hose in the direction of the drainage system, open the tap.
5. Wash the tank with clean water and feed the clean water into the system, until the tank capacity is reached. Do not use water above 50°C to clean the tank as this may get damaged.
6. Reposition drain tube.

NOTE: Never leave the solution inside the tank as it could damage the tank, seals and solenoid valve.

13. CONTROL PANEL

13.1 Control panel





13.2 Description of the control panel

1. ON/OFF KEY SWITCH (1)

It controls the power supply to the machine functions. To switch the machine on, turn the key to the ON symbol. When switched on with the key, the machine comes with the electrical system live, the flashing light activated, the possibility of raising and lowering the brush plate.

2. BRUSH ROTATION ACTIVATION SWITCH (2)

This switch controls the rotation of the brushes.
Press the switch to start the rotation. The brush motor is powered and it is sufficient to press the accelerator pedal to start the rotation.
If the speed control pedal is in the idle position, the brushes and the flow of the solution are stopped

3. SUCTION ACTIVATION SWITCH (3)

This switch controls the activation of the suction turbine.
To start the suction, press the switch.
If the brush plate is lifted, or the machine is stopped, the flow of the solution is interrupted and the vacuum turbine is automatically deactivated with a delay of 5 seconds. This delay serves to allow the elimination of the water recovered from the floor, contained in the suction pipe

4. BRUSH FLAT LIFTING SWITCH (4-6)

The two switches control the lifting or lowering of the entire brush plate, including the wiper, in an infinite number of positions, thus offering the possibility of adjusting the pressure of the brushes on the floor according to their relative position with respect to the latter

5. HAZARDOUS TEMPERATURE WARNING LIGHT (5)

Indicator that signals the achievement of a dangerous temperature on the electrical components present in the junction boxes, for the purposes of ATEX safety. Stop and do not process with the indicator light on.

7. WATER-DETERGENT SOLUTION FLOW CONTROL KNOB (7)

The knob controls the flow rate in litres/minute of the solution towards the brush plate.
To increase the flow, turn the solution control knob clockwise.
To decrease the flow, turn anticlockwise.
The adjustment ranges from 0 litre/minute to 3.5 litres/minute.
If the brush motor is deactivated or if the speed control pedal is in the neutral position, the flow of the solution is automatically interrupted until the brush motor and the movement of the machine are reactivated. This function prevents unintentional discharge of the solution tank and allows the operator to adjust the flow of the solution without having to adjust it again each time.

8. DIRECTION SWITCH (8)

The selector allows you to choose the direction of travel. By placing it in FW (FORWARD), the machine, when acting on the speed pedal, will move FORWARD. When it is positioned in BW (BACKWARD), the motion will be in reverse as soon as the pedal is pressed

9. BATTERY CHARGE STATUS INDICATOR (9)

The LED display indicates battery charge level.

FOR SAFETY

Charge the batteries making sure you have used the machine for at least 60 minutes since the last charge, to avoid damaging the charging cycles. Pay attention to the battery charging operation, as explained in the relevant paragraph.

10. HOUR METER (10)

The display indicates the machine operating hours since control unit activation when the scrubber-dryer was being built. The hour meter activates at the start of the brush rotation and deactivates when the brushes stop. Therefore, only the actual working hours of the machine are counted.

11. EMERGENCY PUSH-BUTTON (11)

The emergency button interrupts the power supply to each electrical appliance of the machine, immediately stopping its movement and operation. To disengage the emergency stop and proceed again with the use of the machine, it is necessary to rotate the red mushroom until it is disengaged.

12. MAXIMUM WORKING SPEED STABILIZER (12)

The knob controls the maximum feed speed of the machine. The recommended speed is 4 km/h, which corresponds to the intermediate position of the adjustment, but can be varied by the operator by acting on the rotation of the knob (12), anti-clockwise to decrease it and clockwise to increase it. Obviously, the speed is always adjustable by the accelerator pedal itself.

13.3 CHECKS

SPEED CONTROL PEDAL

It is placed to the right of the steering column.
It is used to control the speed of the machine. By slightly pressing the pedal, the speed of the motion increases.
The direction of motion (forward or reverse) is controlled by the panel selector.
The maximum speed can in any case be set, only in the working phase and therefore with brushes in action, from the knob on the control panel next to the column

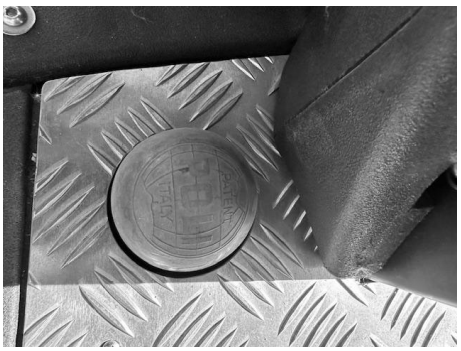
CONTROL AND PARKING BRAKE

The machine has a parking and control brake, of the electric brake type, integrated on the motor axle.
The brake is always activated whenever the machine is with the selector off and the operator is not present in the driver's seat.
The brake is automatically disengaged with the selector switched on and the operator seated (there is a safety microswitch under the seat) and the pedal is pressed to the open position.
To reduce the speed of the machine when moving, simply lift the foot from the speed control pedal.

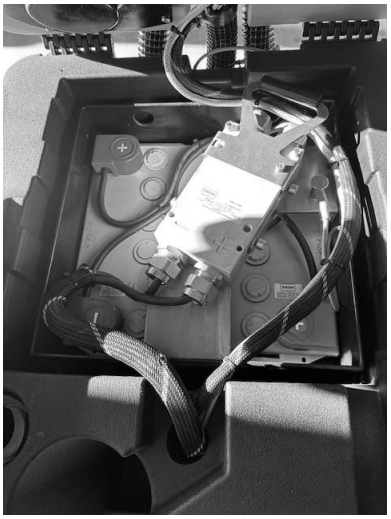
WIPER LIFT LEVER

The brush plate has integrated the wiper and this electrically lifts firmly to the brush plate.
It is possible to lift only the wiper, acting on the manual lever, located to the left of the steering column.
Turn the handwheel in a clockwise direction, in the UP direction and, by means of a cam, you get the lifting of the wiper only.
To reposition it on the ground, turn the handwheel in the reverse direction, until it reaches the DOWN symbol.
The use of this lever is indicated only in the case of double-pass cleaning processing, i.e.:
1st step: only washing and therefore the squeegee lever raised precisely manually
2nd step: washing and suction, therefore with the wiper lever lowered

BUZZER
There is an audible warning device, located on the platform of the machine and operable via the left foot.
To activate the horn, press the red pedal in succession with your foot.



BATTERY CHARGER SOCKET
It is placed under the operator's seat, located in the area where the batteries are present.
When the machine is powered by its own batteries, the socket must be plugged in.
In case of charging the batteries, the upper socket must be disconnected and the charger socket on the lower socket must be inserted.



CAUTION

The recharging of the machine, being an ATEX machine, must be done exclusively in an area not classified ATEX, or where there is no risk of explosions, since the electrical contacts of the socket, in their insertion and disconnection, could be sources of ignition.

14. MAINTENANCE

14.1 Batteries

The batteries provide the power to operate the machine. In order to ensure that the batteries always perform at their best, it is necessary to carry out some maintenance operations regularly.
To make sure that the batteries last as long as possible, recharge them every time the indicator charges the first red mark, detectable by the display on the control panel.
Do not allow the batteries to discharge completely. Never expose discharged batteries to temperatures below the freezing level, as the liquid inside, once frozen, can cause the outer plastic (acid versions) to split.
Do not start the machine if the batteries are not in good condition or if the state of charge is less than 25%.
Never rest metal objects on the top of the battery, as they may cause a short circuit. Replace damaged or worn cables or terminals.

ATTENTION

When performing maintenance operations, avoid contact with acid.
Batteries release hydrogen. Fire and explosion hazard.
Keep batteries away from sparks and naked flames.
Before charging the batteries, remove all caps.
Charge the batteries to the Pb only in dedicated areas.
Always wear protective gloves and goggles to perform battery maintenance.
Charge the batteries in a non-ATEX classified area and in a well-ventilated area.
When charging the batteries, lift the recovery tank, as in the photo.

14.2 BATTERY CHARGE

1. Place the machine in a clean ventilated **NON-ATEX RATED** area near a charger.
2. Turn over the upper tank, after making sure it does not contain water to access the battery compartment.
3. Disconnect the battery connector from the machine. Disconnect the charger from the socket.

FOR SAFETY

Before leaving the machine unattended or performing any maintenance, make sure it is on a flat surface, turn off the machine and remove the key.
4. Check the electrolyte level in each battery element. Before charging the battery, add enough water to cover the plates. Once charging is complete, add enough water to bring the water level to the indicator level. If the water level is too high before charging, normal expansion of the electrolyte may cause it to leak, which causes loss of acid balance and damage to the machine. Replace the plugs.

FOR SAFETY

When charging the batteries, connect the charger to the batteries before connecting it to the mains socket. Never connect the charger to the current socket first as sparks may be generated.
5. To charge the battery pack, use a 24V DC charger that turns off
automatically as soon as the batteries are fully charged.
6. Connect the charger to the battery connector. Connect the charger cable to the power socket. The charge indicator indicates that the batteries are charging.
7. When the batteries are fully charged, disconnect the charger from the batteries.
8. Connect the batteries to the machine connector.
9. Check the electrolyte level. The level must reach the indicator. If necessary, add distilled water.
10. Lower the upper recovery tank into position

14.3 REPLACING THE BRUSHES

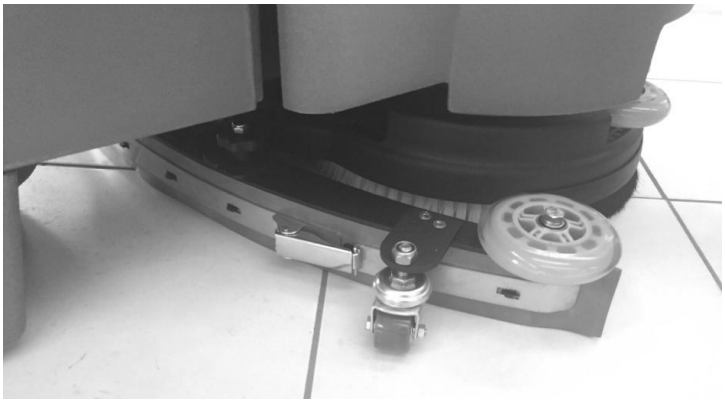
How to replace the brushes:

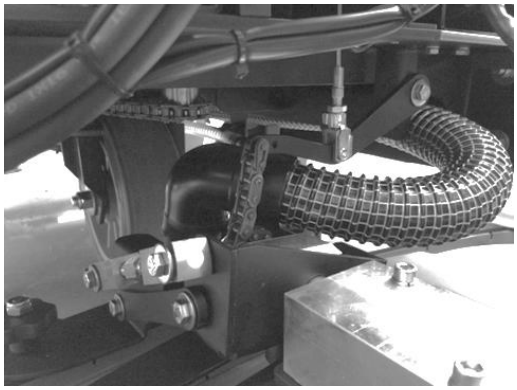
1. With the brush plate raised, turn the starter key to off, engage the parking brake.
2. To insert the new brush, place it under the brush plate, aligning it approximately with the hub, then lift it with your hands and push it against the hub, until it engages in the locking tabs (until you hear the sound of the coupling).

WARNING: replace the brushes only with equivalents of the type with an integrated electrostatic charge discharge device on the ground.

14.4 MOUNTING THE SQUEEGEE

The machine is packed, shipped and delivered with the squeegee fitted.
It is advisable to mount the wiper in the position of rotation to the right, in order to have the greatest amount of free tube that facilitates assembly.
Rotate the fixing arm to the right for this purpose, bring the wiper closer and fasten it with the screws provided.
Connect the hose to the coupling on the wiper itself.





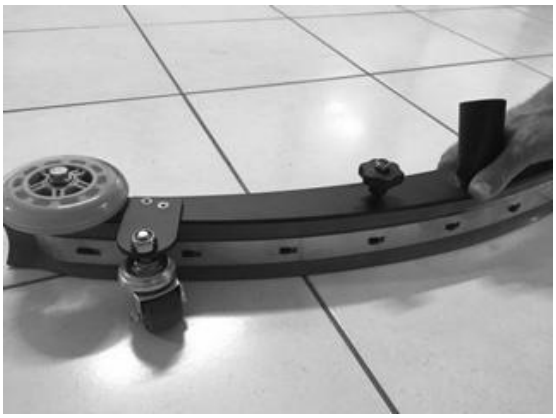
14.5 ADJUSTING THE SQUEEGEE

Two wiper settings are possible:

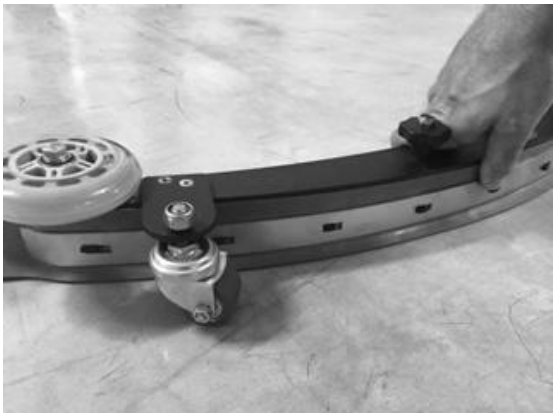
1. longitudinal inclination: by acting on the threaded register, screwing it or unscrewing it, it is possible to make the wiper assume a greater inclination forwards or backwards

2. height from the ground: acting on the clamping nut of the ground support wheel, to move the wheel vertically, screwing it or unscrewing it from its fixing plate.

Adjustment of the height from the ground and the inclination are necessary when you have different floors:
for smooth or ceramic floors: lower and tilt the wiper, until about 5mm of the drying blade lip is evenly folded on the floor.




for concrete and rough floors: lower and tilt the wiper, until you have about 10mm of the drying blade lip evenly folded on the floor.




It is recommended to lower the wiper evenly, raising or lowering both the right and left wheels by the same value.

14.6 REPLACING THE SQUEEGEE DRYING BLADES

Two blades are fitted: one front and one rear, different from each other. They are shaped in such a way as to avoid fitting errors.
The squeegee has the function of collecting water from the floor, through a vacuum chamber that is generated inside it.
To achieve maximum vacuum, there are plastic drying blades (of various types) that allow the perfect adhesion to the floor, without loss of vacuum. Therefore replacing the blades is necessary to prevent the squeegee from losing its suction capacity.
Replacing the blades:
1. Loosen the two knobs, on the right and on the left, blocking the squeegee and orient it towards the outside, so as to allow easy access.
Remove the squeegee and place it on a workbench.
2. Loosen and remove the fixing handwheels securing the blade.
3. Remove the fixing clamp and the blade, then rotate upside down or replace the blade completely.
4. The same blade can be used 4 times, making it work, each time, on a different edge (it is recommended to turn it every 20 working hours at most).
5. Fit the blade and the fixing clamp on the reference pins, then screw the hand wheels back on.
6. Refit the squeegee.
Normally the rear blade has a half-life half that of the front blade.

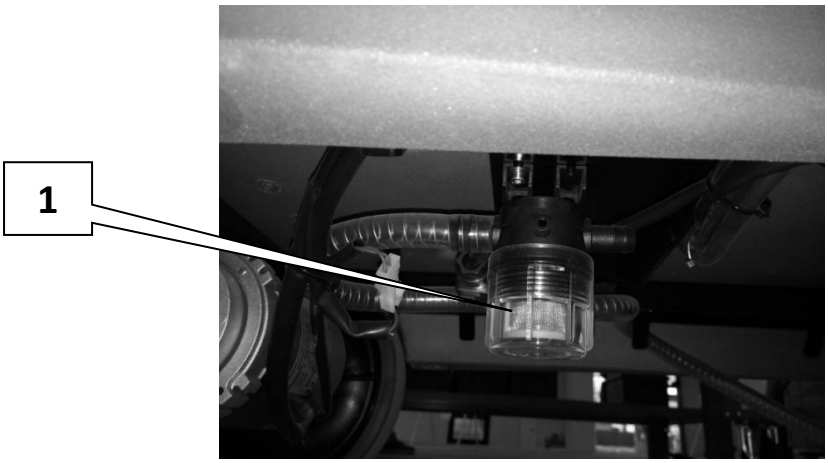
14.7 CLEANING THE CLEAN WATER FILTER

Under the machine platform, on the right side, there is a clean water filter. Its position is also indicated by the inscription on the right side of the solution tank. The purpose of the filter is to protect the solution flow control solenoid valve from any debris or sediment that may be found in the solution tank.

It is recommended to clean the filter weekly.

To clean, unscrew the cup, remove the filter inside and wash it under running water. Reassemble it and reposition the cup.

The filter used also acts as a closing tap for the solution tank, in the sense that unscrewing the glass automatically interrupts the flow.



14.8 MAINTENANCE PROGRAMME

Maintenance to be performed	daily	every 50 h	every 200 h
Check the water level of the batteries once charged; if necessary, add distilled water (only for the acid battery version). The gel and lithium batteries are maintenance-free.	x		
Check recovery tank lid gaskets.	x		
Visually check if the wheels are damaged or worn.		x	
Check that the brushes are fitted correctly.		x	
Check the connections of the vacuum hoses.	x		
Check the proper operation of the brakes and steering.		x	
Inspect the vacuum filter for debris.	x		
Clean the filter and the tank of the cleaning solution; check the flow.	x		
Clean the brushes and check for wear.		x	
Clean the squeegee rubbers and check for wear. It is recommended to turn them every 20 working hours	x		
Clean the recovery tank and the vacuum filter.	x		
Clean the outside of the tank; check it is undamaged.	x		
Charge the batteries.	x		
Clean the top of the batteries.		x	
Clean the filters of the cleaning solution.	x		
Check the effectiveness of the parking brake.		x	
Check all the motors to determine that the carbon brushes are not worn			x

Unloading from the pallet: always use a wooden platform/ramp to slide the machine to the ground
2. Loading or unloading on a vehicle: lift the head, always remove brushes, splash guards and wiper. Rest the wiper tube on the support bracket
3. End of cleaning work: always lift the head
4. End of work cleaning: it is advisable to always turn off the brush and turbine switches before turning the key
5. End of work cleaning: always wash the recovery/dirty water tank
6. End of work cleaning: check and clean the drying blades
7. Squeegee lever: it must only be operated in case of thorough washing without drying. In all other situations never use it.
Suction blades: it is recommended to turn them if necessary, taking into account that there are 4 usable positions.
9. Brushes: check for wear and replace them when they are worn, with brushes of the type recommended by Klinmak
10. Stainless steel air intake filter: check it regularly and clean it when dirty
11. Water filter: check and wash it regularly.
12. Free acid, GEL or AGM batteries: charge them for at least 8 hours; Lithium Battery, at least once a week perform a complete charging cycle.

14.9 TROUBLESHOOTING

PROBLEM	CAUSE	SOLUTION
Machine not powered electrically	Batteries disconnected	Check the connections of all the battery cable connections
	Corroded battery cables	Clean the connections.
	Main thermal switch skipped	Re-activate the thermal
	Faulty key-operated switch	Replace the switch.
No forward traction or poor.	Low battery	Charge the batteries
	Machine on with pedal not activated	Release the accelerator pedal
	Wheel slipping	Reduce brush pressure
	Motor connection slackened	Check the wires and connections that go from the board to the motor.
	Loose throttle connections or potentiometer accelerator faulty	Check the wires and connections ranging from the accelerator to the panel and the potentiometer resistance.
	Loose seat switch connection or faulty seat switch	Check the connections and continuity of the switch.
Poor water collection or no water collection	Squeegee not adjusted	Adjust the squeegee
	Squeegee clogged with debris	Remove debris
	Worn squeegee blades	Rotate or replace the blades
	Water collection hose clogged	Unblock the vacuum hose
	Water collection hose not inserted correctly in the recovery tank	Reconnect the vacuum hose.
	Damaged water collection hose	Replace the hose.
	Dirty vacuum motor inlet filter	Clean or replace the inlet filter
	Non-tight recovery tank.	Replace damaged seals
	Recovery tank full of foam	Empty the recovery tank, use less detergent or a different detergent. Use an antifoam agent.
The brush plate does not move	Faulty actuator	Repair or replace the actuator
The motor of the vacuum turbine does not work	Recovery tank full	Discharge the recovery tank.
	Motor connection slackened	Check wires and connections of motor.
	Lack of solution flow	Put water in the tank
Poor washing performance	Washing brushes clogged with debris, worn brushes	Remove debris. Replace the brushes
	Unsuitable detergent, used brush.	Contact experts in the application or the part involved.
	Insufficient washing pressure	Increase the pressure of washing.
	Batteries flat	Charge the batteries
Detergent solution flow directed to the floor poor or absent	Washing solution tank empty	Fill the tank with cleaning solution.
	Washing solution flow deactivated or set too low	Activate solution flow or increase the flow adjustment
	Washing solution filter clogged	Clean the detergent solution filter.
	Obstructed piping of the detergent solution system	Unblock the piping.
	Washing solution solenoid valve clogged or jammed	Clean or replace the solenoid valve

15. NOISE EMISSIONS

The equivalent level averaged over multiple Leq working cycles was measured with a Class1 precision sound level meter, as defined in the I.E.C. standards with a fast-slow reading constant, both from the position in which the operator is located and in positions surrounding the machine under consideration.

The measured value of the sound pressure at the operator's level is Leq(A) = 65.7 dB(A).

16. WIRING SYSTEM

Being a machine designed for use in ATEX areas, the wiring diagram is provided only to QUALIFIED TECHNICAL SERVICE CENTERS that must have obtained the diploma of training, issued by the company EXCEN.

Klinmak S.r.l.
Via della Levata 1
20084 - Lacchiarella (MI) - Italy

CE

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EN	**"CE" CONFORMITY DECLARATION** We declare on our own responsibility that the product to which this declaration refers is in accordance with the following European Community Directives :	EL	**Δήλωση συμβατότητας "CE"** Δηλώνουμε φέροντας την αποκλειστική ευθύνη ότι το προϊόν στο οποίο αναφέρεται η δήλωση αυτή είναι σύμφωνη με τις ακόλουθες οδηγίες της Ευρωπαϊκής Κοινότητας:
FR	**DECLARATION DE CONFORMITE "CE"** Nous déclarons sous notre exclusive responsabilité que le produit auquel cette déclaration se réfère est conforme aux directives européennes suivantes communautaire:	SK	**PREHLÁSENIE "EÚ" O ZHODNOSTI** Prehlasujeme na vlastnú zodpovednosť, že výrobok, na ktorý sa vzťahuje toto prehlásenie je zhodný s nasledujúcimi Európskeho spoločenstva:
DE	**"CE" KONFORMITÄTSERKLÄRUNG** Auf unserer Alleinverantwortung erklären wir, daß das Produkt, auf das sich diese Erklärung bezieht entspricht den folgenden Richtlinien der Europäischen Gemeinschaft :	HU	**"CE" MEGFELELŐSÉGI NYILATKOZAT** Saját felelősségünk alatt kijelentjük, hogy a termék, amelyre a nyilatkozat vonatkozik, megfelel az következő európai közösségi irányelvek:
ES	**DECLARACIÓN "CE" DE CONFORMIDAD** Bajo nuestra exlusiva responsabilidad, declaramos que el producto, al que esta declaraciòn se refiere, es conforme con las siguientes directivas comunitarias:	CS	**PROHLÁŠENÍ "CE" O SHODĚ** Prohlašujeme výlučně na vlastní zodpovědnost, že výrobek, na který se vztahuje toto prohlášení je ve shodě s následujícími Evropského společenství:
PT	**DECLARAÇÃO "CE" DE CONFORMIDADE** Declaramos sob a nossa exclusiva responsabilidade que o produto ao qual esta declaração se refere está em conformidade com as seguintes directivas comunitárias:	ET	**"CE" VASTAVUSDEKLARATSIOON** Deklareerime meie ainuvastutuse juures, et see toode vastab järgmistele standarditele ja Euroopa Ühenduse direktiivide:
NL	**KONFORMITEITSVERKLARING "CE"** Wij verklaren onder onze exklusive verantwoordelijkheid dat het product: waarop deze vrklaring betrekking heeft, konform is aan de volgende Europese richtlijnen van de Gemeenschap:	LT	**"CE" ATITIKTIES DEKLARACIJA** Prisiimdami visą atsakomybę, mes pareiškiame, kad produktas, kuriam taikoma ši deklaracija, atitinka šiuos Europos Bendrijos direktyvas:
DA	**OVERENSSTEMMELSESERKLÆRING "CE"** Vi forsikrer under eget ansvar at folgende produkt som omfattes af denne erklæring er i overensstemmelse med vilkårene i folgende EU direktiver:	SL	**IZJAVA O SKLADNOSTI "CE"** Izjavljamo na našo odgovornost, da je izdelek, na katerega se nanaša ta deklaracija, v skladu s sledečimi direktivami Evropske skupnosti :
SV	**FÖRSÄKRAN OM ÖVERENSSTÄMMELSE "CE"** Vi försäkrar under eget ansvar att följande produkt som omfatts av denna försäkran i överensstämmelse med villkoren i följande Europeiska gemenskapens direktiv:	PL	**DEKLARACJA ZGODNOŚCI "UE"** Oświadczamy na naszą wyłączną odpowiedzialność, że produkt, którego dotyczy niniejsza karta gwarancyjna, jest zgodny z następującymi dyrektywami Wspólnoty Europejskiej:
N	**BEKREFTELSE OM OVERENSSTEMMELSE "CE"** Vi forsikrer under eget ansvar at folgende produkt som omfattes av denne bekreftelsen er i overensstemmelse med vilkårene i folgende disse EU-direktivene:	LV	**"CE" ATITIKTIES DEKLARACIJA** Prisiimdami visą atsakomybę, mes pareiškiame, kad produktas, kuriam taikoma ši deklaracija, atitinka šiuos Eiropas Kopienas direktīvas:

2006/42/EC - 2011/65/EU – 2014/30/CE - 2014/34/UE

Applied harmonised standards:
EN 60335-1; EN 60335-2-72; EN 61000-3-3; EN61000-3-5; EN1127-1:2011; EN ISO 80079-36:2016; EN ISO 80079-37:2016

Modello – Model – Modéle – Modell – Modelo – Malli – Mudel – Modelis:

❑ **HILEX 8065 ATEX**

Matricola - Serial n° - Matricule – Maschinennummer – Matricula – Serienummer – Sarjanumero – Registratienummer – Vyrobne cislo – Sorozatszàm-Vyrobnì – Seeria nr – Serijos nr – Serijska stevilka – Nr seryjny – Serijos Nr.:

N° _____

Il fascicolo tecnico della costruzione è costituito e custodito presso:
The technical construction file is put together and kept by:

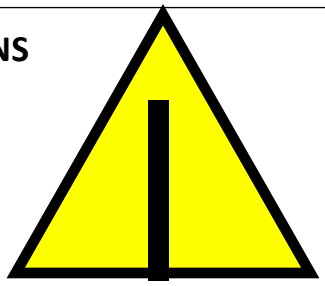
Mr. Mauro Liffredo
Klinmak S.r.l.
Via della Levata 1
20084 - Lacchiarella (MI) - Italy

POSITION: ***General Manager***

Date: _____

NAME: **Ms Eugenio Cagna**

18. ADDITIONAL INSTRUCTIONS



ADDITIONAL INSTRUCTIONS
for the use and maintenance of the washer-dryer Additional instructions for use in potentially explosive atmospheres

ATTENTION

The following information must be read carefully before starting the washer-dryer, and in particular before using it in the Dangerous Zone.
The washer-dryer could be a source of danger if used without having read these instructions.

The following instructions are an addition to the documentation supplied with the standard washer-dryer.

For anything not provided for, it is necessary to consult the use and maintenance manual of the standard version of the washer-dryer.

In the event of conflicting information, the provisions of this supplement to the instructions relating to the use in the presence of potentially explosive atmospheres apply.

ATEX

Washer dryer category:

- **II 3G IIB T3**
- **II 3D IIIC T200°C Tamb +5°C +40°C**

18.1 SAFETY RULES REGARDING THE USE OF THE WASHER-DRYER

ATTENTION

Driver rules of conduct:

The driver must be made aware of his rights and duties, must be trained in the use of the running vehicle for use in potentially explosive atmospheres and must be familiar with the content of these Operating Instructions. The essential rights must be recognised. For use in areas with potentially explosive atmospheres, you must wear safety shoes and clothing that do not generate or accumulate electrostatic charges, in compliance with the regulations in force.

Avoid the accumulation of electrostatic charges

The washer-dryer is built to dissipate electrostatic charges through the ground. The user of the washer-dryer must promote the dissipation of electrostatic charges through a dissipative soil. The use of non-dissipative soils (such as for example consisting of untreated epoxy resins) generates greater risks of triggering for the accumulation of electrostatic charges that are released when the washer-dryer meets conductive parts. Standard CLC/TR 60079-32-1 for example provides valid criteria for measurements and tests on conductive floors

Contact with flexible doors or strip curtains with non-conductive parts, such as PVC, of the washer-dryer can generate electrostatic charging of the parts themselves.

It is the responsibility of the "User" to assess the risks due to the accumulation of electrostatic charges on loads and objects with which the washer-dryer can come into contact and take all the measures provided for by the regulations in force, to avoid discharges to the ground through the washer-dryer that by its very construction is connected to it.

The use of the vehicle is forbidden to unauthorised and trained personnel:

The driver must be adequately trained and authorized to use the running industrial trucks for use in potentially explosive atmospheres and is responsible for the vehicle during the entire period of use. Unauthorised persons must be prohibited from driving or operating the vehicle. Lifting or carrying people is forbidden.

Repairs:

The driver is not authorized to make repairs or modifications to the vehicle without its qualification and authorization. However, it is absolutely not allowed to deactivate or modify the guards or the safety devices.

All maintenance and/or repairs must be carried out outside the hazardous area.

Non-compliance with these instructions for use invalidates KLINMAK's warranty and liability. The same principle applies if work is carried out on the washer-dryer or its parts without the written consent of the KLINMAK Technical Support Service.

The scrubber dryer must be driven on substantially solid, smooth, level and prepared surfaces.

If the end user cannot guarantee these operating conditions out of necessity, written authorisation must be requested from KLINMAK.

18.2 SAFETY RULES REGARDING THE USE OF THE WASHER-DRYER

ATTENTION

Accessories assembly:

It is not allowed to assemble equipment and devices or equipment, without having obtained the written permission of KLINMAK.

Towable loads:

It is not allowed to attach to the vehicle towable loads without having obtained the written permission from KLINMAK.
Use is not permitted of the washer-dryer to push loads or other vehicles or equipment.

Conform use:

With regard to the use, operation and maintenance of the vehicle, first observe the indications contained in the original instructions of the manufacturer of the standard version of the washer-dryer and, in addition, observe the indications contained in these additional instructions for use in potentially explosive atmospheres.

In the event of conflicting information, the provisions of this supplement to the instructions relating to use in the presence of potentially explosive atmospheres apply and, in any case, if in doubt, ask KLINMAK's technical support service for information.

Any other use is not considered compliant and may cause damage to people, the means of handling or the workplace.

It is forbidden to use the washer-dryer in a dangerous area in case of intervention of the safety devices, in order to preserve the safety of the personnel and the integrity of the structures.
Only after the detection and elimination of operating faults will it be possible to access the danger zone.

18.3 CHECKS FOR PRELIMINARY START-UP

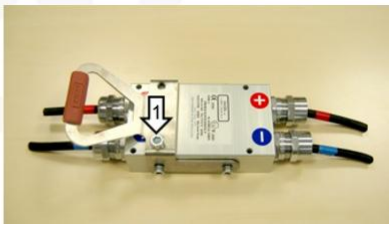
Before commissioning, check that no part has been damaged or tampered with.

It will therefore be necessary to carry out at least the following controls:

- check the condition of the cables, check that they have not been damaged;
- check that the battery does not leak acid and that it has been charged correctly;
- check the integrity of the lighting system (if present);
- check the conditions of the antistatic painting of the plastic parts (if present);
- check the condition of the antistatic fabric (or leather) upholstery of the seats or other fabric parts (where provided) and that they are not covered by other materials;
- verify that the systems that must guarantee the conductivity and dissipation of electrostatic charges, such as: wheels, chains, conductive strips, etc. do not lose their conductivity characteristics due to, for example, dirt, grease, etc., collected during use;
- the state of the equipotential connections between all the insulated metal parts and the frame;
- check the tightening torques of the screws of the explosion-proof covers and cable presses as per the attached tables;
- check that the battery case is connected with the frame of the washer-dryer through the equipotential connection cable

18.4 START-UP

- Connect the battery connector (only outside the danger zone).
- Tighten the locking screw [1] placed on the connector handle.



- Turn the red button anti-clockwise to reset the emergency mushroom switch [3].

- Turn the key switch clockwise
- Wait for the end of the system's self-diagnosis (switching on and off the lights), in particular:

Sincerely,

Spia surriscaldamento

- When the lights are switched off, the washer-dryer will be ready for use.

18.5 NORMAL MANUAL SHUTDOWN

To switch off the washer-dryer, proceed as follows:

- Turn the key switch counter-clockwise (in the case of another access system, see the manual of the standard version of the washer-dryer).
- Press the red push-button of the battery disconnect.

CAUTION!
At the end of the work shift or in the event of a prolonged stop of the washer-dryer, it is mandatory to press the red emergency stop/battery disconnect button to prevent the battery from discharging. This operation is used to disconnect some electronic circuits and/or contactor coils that, even if with a low absorption, can also be powered with the washer-dryer off (key switch in the off position).

18.6 SWITCHING ON THE RED ALARM LIGHTS

When the red indicator light comes on, it signals the following anomaly:

- "**Overheating**" light on:

High surface and/or internal temperature in the case
(note for trained maintenance technicians: "HE2" ref. wiring diagram)
.

18.7 AUTOMATIC SAFETY STOP

If the "Overheating" alarm light (HE2) comes on, the washer-dryer remains operational for 30 seconds before automatically stopping safely.
During this time carry out the following operations:

- immediately take the washer-dryer out of the danger zone;

or

- bring/leave the washer-dryer in safe conditions.

During the 30 seconds the alarm lights relating to the activated function flash, when the washer-dryer automatically switches off the lights remain on.

When the washer-dryer turns off automatically turn the ignition key to the off position, operate the battery disconnect switch and/or the emergency stop button in order to disconnect the power to all circuits.
Immediately after stopping, notify the responsible person to proceed with the necessary checks and eliminate the anomaly.

18.8 MANUAL SAFETY STOP

If the "Overheating" alarm light (HE2) switches on, for manual switching off of the washer-dryer before 30 seconds:

- Press the red battery disconnect push-button.
- Turn the key switch counter-clockwise.

CAUTION!
The man scrubber dryer can only be switched on again after making sure that it does not create any further hazards.
During the 30 seconds and after switching off the washer-dryer, safety must not be compromised by improper operations. Immediately interview the person responsible for safety.

18.9 RESTART IN THE EVENT OF A SAFETY STOP DUE TO OVERHEATING

The operator can restart the vehicle after an automatic or manual stop for overheating only when the temperature goes below the reset threshold of the thermostat (s).

If the temperature remains above the reset threshold of the thermostat (s), after an automatic or manual stop, when restarting, the washer-dryer remains in the stop state and the alarm light remains on.

18.10 MAINTENANCE

Maintenance staff
The personnel involved in the assistance and maintenance of the washer-dryer running ATEX must have specific training and technical experience on the maintenance of industrial trolleys and undergo further training at KLINMAK in order to obtain instructions on the various modes of protection, on the installation methods and on the general principles of the classification of dangerous places. The training will include an understanding of the requirements relating to the use of the machine in areas with potentially explosive atmospheres and of the IEC/EN 60079-14, IEC/EN 60079-17 and IEC/EN 60079-19 standards, in relation to the installation, replacement and restoration of equipment.
The documents relating to the experience and training declared must be available.

If requested, the support service can also be carried out directly by KLINMAK expert staff.

CAUTION!
According to the European Directive 1999/92/EC, it is the responsibility of the"User" to draw up a risk assessment document and in particular protection against explosion risks, which must take into account the training of personnel, the working environment, the level and frequency of necessary maintenance, also considering the manufacturer's indications together with the operating and environmental conditions.

In this regard, the importance of periodic checks for which it is recommended to enter into a contract with the Technical Assistance Service of .

18.11 LIST OF ROUTINE CONTROL AND MAINTENANCE OPERATIONS

During maintenance operations, follow the instructions in the manual of the washer-dryer in standard operation, also following the following guidelines.
In the event of conflicting information, the provisions of these Supplementary Instructions relating to use in potentially explosive atmospheres apply.

- All maintenance operations must be carried out in accordance with the requirements of the IEC/EN 60079-17 standards in force.
- Maintenance is a combination of operations performed in order to maintain or restore a safe electrical construction in conditions in which it is able to meet the requirements of the relevant specifications and perform the required functions.
- The maintenance over time of the initial characteristics of safe electrical constructions must be ensured by a precise maintenance program, developed and managed by qualified technicians, which considers the type of electrical constructions concerned, the service requested and the environmental conditions in which they operate.
- Maintenance is called upon to guarantee the functionality of electrical constructions in terms of safety and, since safety is a legal obligation, so is the preservation of all the conditions on which it depends.
- Safe electrical constructions, in all their constituent parts, must be installed and maintained in such a way as to prevent the dangers deriving from accidental contact with live elements and the risks of fire and explosion deriving from any abnormalities that occur in their operation.
- Routine maintenance interventions must be limited to replacement of parts with original spare parts provided by KLINMAK.
- The safety electrical construction installed on industrial trolleys is subject to vibrations, carefully check that the joining means and the cable inlets are well tightened.
- The battery cables must be protected against the risk of damage, due to mechanical stresses, depending on the conditions of use of the battery.
- Do not carry out maintenance activities in a dangerous area: ask the safety manager to check whether the area in which you will have to work can be considered a safe area, following appropriate operating safety conditions that allow you to ascertain the absence of an explosive atmosphere.
- Keep the washer-dryer clean and in particular the electrical and mechanical parts subject to heating.
- Avoid using water jets or in any case pressurised water for cleaning the equipment.
- Clean the plastic surfaces only with a damp cloth.
- Avoid covering antistatic fabric surfaces with other materials (e.g. seat, side panels, etc.).
- If required, check the intact state of the plug of the hydraulic oil filter and the ground connection cable.
- Avoid using additional plastic protections without consulting KLINMAK experts.
- Do not make changes to the system without the express written permission of KLINMAK so as not to invalidate the conformity and warranty of the system.

18.12 LEVELS OF COMPETENCE

KLINMAK considers two levels of skills: A and B.

A) Personnel in charge of using the washer-dryer and/or the ATEX equipment and carrying out its routine maintenance, trained under the responsibility of the employer, after having fully demonstrated that they have understood the contents of this manual.

B) KLINMAK technicians or qualified and professionally trained personnel for the maintenance of explosion-proof systems, in possession of a Training Certificate issued by KLINMAK.

Any other periodic checks or maintenance of ATEX equipment and components, not listed in the "Table of checks and maintenance operations", must be managed or authorised exclusively by KLINMAK.

18.13 TABLE OF CHECKS AND MAINTENANCE

Checks	Daily	50 hours or more once per week	200 hours	500 hours or more 1 time a year	Level
Charge the battery according to the manufacturer's instructions	●				N
Check there is no acid leaking from the battery	●				N
Where present, check the condition of the antistatic coatings in fabric or leather.	●				N
Check the ground contact of the braid (s) or grounding chain (s) and, where present, the condition of the conductive or dissipative wheels, also checking their cleanliness	●				N
Visual inspection OF the condition OF electrical cables.		●			N
Check the conductivity with the ground of braid (s) and/or grounding chain (s) and/or antistatic wheel (s).			●		B
Check the equipotential connection and the surface resistance of the seat and the non-metallic bonnets.			●		B
Check the intact state of the marking plates and warning plates.				●	B
Check the intact state of the cases according to the provisions of their specific mode of protection.				●	B
Check the wear, the axial clearance and the brake gaskets.				●	B
Check the screws and the gap of the covers of the explosion-proof enclosures.				●	B
Check the fastening of the Ex housings on the frame of the washer-dryer.				●	B
Check the tightening of the cable presses.				●	B
Check the equipotential connection of all the metal parts of the washer-dryer (for example metal cases, battery box, motors, seat frame, etc.).				●	B
Verification of the systems that must guarantee the conductivity and dissipation of electrostatic charges (e.g. wheels, chains, conductive rubber strips, etc.).				●	B
Verification of sufficient clearance between static and rotating parts (e.g. fan protection grilles, etc.).				●	B
Check of parts that are critical for safety or consumption (such as brake pads, parts to be greased, etc.).				●	B

During running-in, after about 100 hours of operation, or after repair, the user must check that the screws/pins of the wheels are tight and, if necessary, tighten them respecting the tightening torques provided in the original manual of the manufacturer of the washer-dryer.

Failure to comply with maintenance intervals, unauthorized work or work carried out by personnel not specifically trained, as well as improper use, can cause serious breakdowns to the vehicle and also represents a potential danger of explosion, with serious risks of damage to people and workplaces.
The conditions of use of the washer-dryer significantly affect the wear of the components subject to maintenance. The intervals of the control and maintenance operations indicated refer to the use of the washer-dryer in simple shifts and under normal working conditions. In the event of greater stresses, such as the presence of dust, strong temperature changes or work over several shifts, maintenance must be carried out at shorter intervals.
In addition to the operations indicated above, all the maintenance operations recommended by the manufacturer of the washer-dryer and indicated in the relative use and maintenance manual must be carried out.

18.14 PERIODIC CHECKS

The person in charge of the verifications will draw up a verification document based on a procedure and the documentation of the results of the verification must be kept by the user.
Once the safety check has been carried out, a clearly visible verification plate will be applied to the washer-dryer, showing the month and year of the next check.

The following table shows the control intervals recommended by KLINMAK:

PERIODIC CHECK	
CLOSE CHECK **At least once a year or after the occurrence of an exceptional event**	Check of the technical condition of the vehicle with regard to safety against explosions.
DETAILED VERIFICATION **Every three years (1)**	Thorough verification of equipment and systems that guarantee protection against explosions carried out by a KLINMAK expert.

Note 1: this interval may vary depending on the actual working hours, the conditions of use and the maintenance status of the washer-dryer.

18.14.1 CLOSE CHECKS

Washers for use in potentially explosive atmospheres are subject to continuous movement, vibration and the risk of mechanical shock, therefore they must be checked at least every 12 months (see IEC/EN 60079-17:2014 par. 4.4.3 b).
The assessment of the frequency of checks must also consider the operating conditions and the environment of use. Therefore, in cases where particularly severe operating or environmental conditions are encountered, this frequency can be reduced.
Close checks can be carried out at the user's premises by KLINMAK technicians or by personnel explicitly trained by KLINMAK for this type of check

18.14.2 DETAILED CHECKS

The detailed periodic checks must be carried out at least every 36 months (see IEC/EN 60079-17:2014 par. 4.4.2). In this case, the disassembly of various parts may be necessary and therefore these checks can only be carried out by KLINMAK Technicians.

Normally, depending on their complexity, it is required that the in-depth checks be carried out at the KLINMAK headquarters; particular cases can be evaluated from time to time, also depending on the type of washer-dryer, the type of ATEX system and the hours of work.

The assessment of the frequency of the detailed checks must also consider the operating conditions and the environment of use.

18.15 USE, RECHARGE AND HANDLING OF THE BATTERY

The ATEX II 2G Ex eb and/or 2D Ex tb and/or ATEX II 3G Ex ec and/or 3D Ex tc batteries are manufactured in accordance with the following standards EN 60079-0, EN 60079-7 and, consequently, have been subjected, among other things, to the shock tests required for use on washer-dryers.

18.16 OPERATION

CAUTION!

Unexpected use of the battery, modifications or interventions not explicitly authorised by KLINMAK, exclude any liability of KLINMAK and will cause the relevant certificate of conformity and contractual warranty to be invalidated.
It is forbidden to open the CNB-2 battery connector in the danger zone.

In particular cases, for the opening of the special connector CNB-A2/S in a dangerous area see par 10.2.1
It is forbidden to recharge the battery in the hazardous area.
In special conditions, to charge the battery in a dangerous area, ask the KLINMAK technical service for specific instructions.
Keep the components clean and remove the formation of layers of dust.

18.16.1 DISCHARGE

Make sure that the special vents are completely free and not even partially obstructed.
In order to guarantee a good battery life, it is necessary that the battery is not discharged beyond the maximum allowed percentage (full discharge) provided by the manufacturer of the elements, depending on their construction type.
Flat batteries must be recharged immediately.
Recharge the batteries immediately after use, even if only partially discharged.

18.16.2 SPECIAL CONDITIONS OF USE

For use in the presence of combustible dust, special attention must be paid to the cleaning of the container, elements, connections and connectors in order to prevent dust from depositing.

18.16.3 BM SERIES BATTERIES. / ..

The elements of the KLINMAK batteries provided for classified areas comply with EN60079-0 and EN 60079-7 standards and the category of the washer-dryer and have been tested for specific use on mobile vehicles subject to mechanical shocks and vibrations under normal conditions of use.

As an alternative to the BM ./.. series batteries, only batteries complying with the aforementioned standards can be installed, subjected to the relevant tests and marked for the corresponding ATEX category of the washer-dryer on which they must be installed

18.16.4 BATTERY CHARGING BOARD

CAUTION!

Danger of explosion due to the gases produced during recharging.

During the recharging operation, the battery releases a mix of oxygen and hydrogen. Gasification is a chemical process. This gaseous mix is highly explosive and must not catch fire.

The batteries must be recharged in a safe area following the specific instructions provided by the manufacturer of the elements and using a suitable charger.

The safety in the charging rooms must be analysed and evaluated by the user.

Charging must only be carried out with direct current.
The charging parameters to be used in individual cases are shown in the appropriate tables provided by the manufacturer of the elements.
The cyclic life of traction batteries depends mainly on the conditions of use, maintenance and the systems used for recharging. A charging system sized according to current technical regulations, assembled with quality components, and periodically checked, allows you to guarantee full charging in the time available to the user regardless of the depth of discharge of the battery. Check that the manufacturer's instructions of the battery elements are followed regarding the initial and final charging current values.

It is essential to avoid harmful overloads. In the case of absorbed acid or gel batteries, their cyclic life is affected by the charging system used, so special attention must be paid when choosing the battery charger; overcharging can not only cause a decrease in the electrolyte, but also quickly damage the battery elements.

General warnings for recharging the battery

- The connection and disconnection of the charging cable of the charging station from the battery plug is only allowed when the vehicle and the charging station are switched off.
- In the area where the washer-dryer is stopped for recharging the battery, there must be no flammable materials or equipment that could cause sparks.
- Keep appropriate fire-fighting equipment within reach.
- Absolutely observe the safety regulations provided for by the manufacturer of the battery and the recharging station.
- Charging must be carried out in a special well-ventilated room and out of the hazardous environment.
- Before charging, where possible, it is recommended to open the compartment containing the battery and/or lift the battery cover. Not applicable for AGM or GEL batteries.

In the elements of AGM or GEL batteries there are one-way safety valves that allow excess gas to escape, in particular in the event of overcharging, and the battery box is constructed in such a way as to allow gases to escape through natural ventilation, without its opening being necessary.

- Check the battery charger is compatible with the battery voltage and capacity.
- Make sure that all electrical connections (terminals, terminals, connections, connectors, etc.) are tight and in good condition.
- Do not remove the plugs from the individual elements or unscrew the upper covers. Follow the attached instructions for the different ways of topping up.
- Do not top up before and during charging. The valves of the AGM or GEL batteries must not be removed.
- Do not smoke, do not use open flames, do not cause sparks near the batteries.
- Do not rest metal tools on the battery.
- Do not perform any repairs on the battery.
- After charging, it is advisable to wait about 1 hour before closing the battery cover, if open.
- When closing the cover, make sure that the closure has taken place with the complete tightening of the screws.
- Never charge a frozen battery.
- Never recharge a damaged battery.

Operations for the connection of the battery to the rectifier in the safe area

CAUTION!

Due to missing or incorrect fault current protection devices, they can occur in the event of dangerous electric shock error or fire due to electricity. The user must carry out a risk analysis of the place of use. If necessary, use a type B or B+ RCD (fault current protection switch, FI switch) switch.

Before loading

1. Turn off the washer-dryer by operating both the key switch and the battery disconnect switch.
2. Open the battery compartment the battery and leave it open (not applicable for AGM or GEL batteries).
3. Disconnect the battery socket from the plug of the washer-dryer.
4. Open the battery cover, if present, loosening the fastening screws (not applicable for AGM or GEL batteries).
5. Make sure the battery charger is off.
6. Connect the battery socket to the rectifier plug.
7. Operate the power switch of the rectifier (ON position).

After loading

1. Operate the power switch of the rectifier (off position)
2. Disconnect the battery socket from the rectifier plug
3. Close the battery cover, if present, by tightening the fixing screws (not applicable for AGM or GEL batteries).
4. Connect the battery socket to the plug of the washer-dryer
5. Close the battery compartment (not applicable for AGM or GEL batteries).

If it is necessary to recharge in a dangerous area, refer to the additional specific instructions to be requested from the KLINMAK technical service.

18.17 MOVING THE BATTERY

Electric traction batteries are very heavy and therefore care must be taken during movement to avoid electrolyte leakage or structural damage to the elements and the box.
It is forbidden to transport batteries to or within dangerous areas while they are under charge

CAUTIONS

1. Carry out the movement operations with open-circuit batteries.
2. Check the weight of the battery on the box.
3. Check the adequacy and capacity of the lifting equipment.
4. Check that the components (hooks, chains, etc.) of the lifting equipment are electrically insulated.
5. Lift the battery using holes, eyelets, or handles provided on the battery box and indicated with the lifting symbol.
6. Refer to the instructions of the standard version of the washer-dryer for battery extraction operations and the use of the correct equipment.

In the installation phase

1. Ensure that the battery is placed on the vehicle in the correct position and that any locking devices are securely fastened.
2. Always check that the weight indicated on the plate of the battery is within the limits (MIN and MAX) provided on the plate data of the vehicle.
3. Correctly restore the connection between the battery outlet and the plug of the washer-dryer.

18.18 ADDITIONAL MARKING

ID	MARKING	EXPLANATORY NOTES
1	□□□□□□□□□□□□□□□	**Manufacturer data**
2	CE	**CE marking for conformity with European directives**
3	Ex	**Marking for equipment intended for use in explosive atmospheres**
4	II	**Surface industry device**
5	2	**Device for areas classified as zone 1 or 21**
6	3	**Device for areas classified as zone 2 or 22**
7	G	**Appliance for areas with the presence of flammable gases, vapours or mists (zone 1 or zone 2)**
8	Women	**Device for areas with the presence of combustible dust (zone 21 or zone 22)**
9	IIA / IIB / IIB+H2 / IIB+H2+C2H2	**Gas unit specific protection**
	IIIA / IIIB / IIIC	**Dust pack specific protection**
10	T6....T3	**Temperature class T6...T3 with reference to flammable gas explosion hazards**
	T85°C....T200°C	**Maximum surface temperature of the device with reference to the risks of explosion of combustible dust**
11	-20°C...+5°C ≤ Ta ≤ +40°C ... +60°C	**Environment temperature range permitted**
12	X	**The symbol X denotes special conditions of use**
13	Additional marking for 3G trolleys with gas sensor system with Ex nR cases Note: these requirements do not apply to Ex nR enclosures without gas sensor system	**For trucks equipped with a gas detection system with Ex nR cases with limited breathing, the 3G symbol must be followed by: chemical formula or name of the specific flammable gases for which the gas detection system was designed and calibrated, or with the text "Only for specific flammable gases", followed by the symbol 🕮**
14	🕮 Reference to the manual	**Safety warnings: refer to the manual**
15	KLINMAK NUMBER: □□□□□□	**Manufacturing serial number KLINMAK**
16	**20□□**	**Year of manufacture**

For this specific washer-dryer, the marking is:

ATEX II 3G IIB T3 3D IIIC T200°C @Tamb +5 °C ÷ + 40 °C

Where:

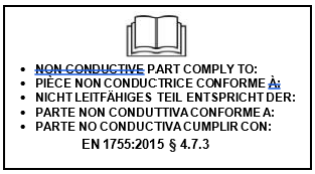
MARKING	EXPLANATORY NOTES
ATEX II	Device for surface industries intended for use in explosive atmospheres
3G	Device for areas classified as zone 2 for flammable gases and vapours
3D	Device for areas classified as zone 22 for combustible dust
IIB	Gas group IIB specific protection
IIIC	Specific protection for group IIIC combustible dust (conductive dust)
T3	Temperature class T3 (T max surface ≤200 °C) with reference to the risks of explosion of flammable gases and vapours
T200 °C	Maximum surface temperature of the apparatus with reference to the risks of explosion of combustible dust ≤200 °C

18.19 NON-CONDUCTIVE PARTS

All non-conductive parts such as seats, armrests and backrests that are in continuous or frequent contact with the operator comply with the requirement of point 4.7.3 of EN 1755:2015, in particular:

- the non-conductive part complies with the requirements for the limitation of the charge transferred in accordance with point 6.7.5 b) of EN 13463-1:2009.

Example of warning plate:



18.20 ANTISTATIC WHEELS AND GROUNDING STRIPS

The following warning plates indicate the type of wheels or grounding strips of the trolleys to avoid the generation of electrostatic discharges.

Conductive wheels or strips with surface resistance ≤ 106 Ω.

Dissipative wheels with surface resistance ≤ 109 Ω.

18.21 TIGHTENING TORQUES

18.22 SCREW TIGHTENING TORQUES

The tightening torque of the "APC" casing screws is shown in the following table

SCREWS IN STAINLESS STEEL WITH RESISTANCE CLASS 80								
	M3	M4	M5	M6	M8	M10	M12	M14
COEFF. OF FRICTION								
0.1	1	2	4.5	8	19	39	67	106

CARBON STEEL SCREWS WITH STRENGTH CLASS 8.8								
	M3	M4	M5	M6	M8	M10	M12	M14
COEFF. OF FRICTION								
0.1	1	2	4	7.5	18	36	62	99

For all other screws, refer to the torque indicated in the documentation of the standard version of the washer-dryer.

18.23 CABLE GLAND TIGHTENING TORQUES

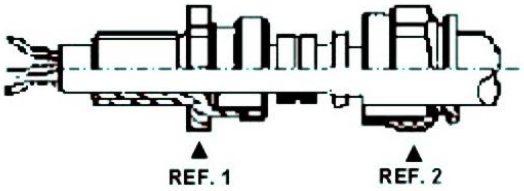
Tightening torque of cable glands “Ex e”, Ref. Block Diagram “E”:

Pressacavi / Kabeleinführungen / Cable glands Presse Etoupes / Prensaestopas					
ISO	M12	M16	M20	M25	M32
REF. 1 Nm	1	1,5	2,5	5,5	10
REF. 2 Nm	1	1	2	4,5	8

Tightening torque of cable glands "Ex d", Ref. Block Diagram "AD"and "XS", for reinforced cable

Pressacavi / Kabeleinführungen / Cable glands Presse Etoupes / Prensaestopas					
ISO	**M12**	**M16**	**M20**	**M25**	**M32**
REF. 1 Nm	7	11,5	18	34	45
REF. 2 Nm	12,5	17,5	25	35	45
REF. 3 Nm	12,5	17,5	25	35	45

Tightening torque of cable glands "Ex d", Ref. Block Diagram "AN" and "XN", for non-reinforced cable:



Pressacavi / Kabeleinführungen / Cable glands Presse Etoupes / Prensaestopas					
ISO	**M12**	**M16**	**M20**	**M25**	**M32**
REF. 1 Nm	7	11,5	18	34	45
REF. 2 Nm	12,5	17,5	25	35	45

For the tightening torques of all other types of cable presses, see the manufacturer's instructions, if any, attached

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