



USE AND MAINTENANCE MANUAL

24V ROTARY BRUSH WITH ROLLER OF 60-80-100 cm
HSRL6 24V, HSRL8 24V and HSRL10 24V

EN

Original Instructions in Italian

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PREFACE

This manual is an integral part of the device and contains all the information necessary for its operation and maintenance.

You must read it carefully and follow its instructions.

The booklet, or a copy of it, must always be at hand for consultation by the operator.

We also recommend contacting the manufacturer for any information, spare parts or accessories.

PRESENTATION

The 24V rotating roller brush is a product designed and manufactured to clean photovoltaic panels. In particular, when used as intended and under the conditions provided by the manufacturer, it performs the functions of brushing and washing the photovoltaic panels.

It is a mobile, hand-held and hand-guided type of product, i.e. it is designed to be placed and moved manually on the surface to be cleaned.

To get the best performance, we have compiled these lines, which we ask you to read carefully, and observe them each time you use it.

In the event of a transfer of ownership, the transferor is obliged to hand over the manual to the new owner.

We congratulate you on your choice and wish you good work.

INTENDED USE

The brush is intended for professional use, i.e. for persons who have technical, regulatory and legislative experience and who are able to carry out the activities necessary for the use and maintenance of the machine.

Using the brush requires special skill and technical preparation as well as a high sense of responsibility.

The operator must meet specific psycho-physical requirements to be fit to carry out the work, so use is restricted to designated personnel only.

The brush is mainly intended for cleaning photovoltaic panels and washable surfaces in general and works by means of apparatus for pressurising the supply water to the brush.

Examples of misuse of the machine are:

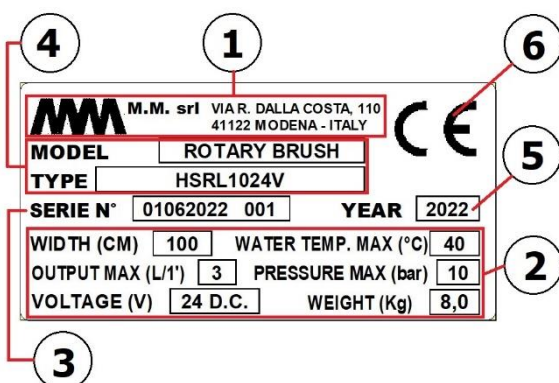
- Use the equipment in the rain, in frost or in strong wind.
- Clean surfaces not suitable for the treatment of this device.
- Use the brush for cleaning animals, people, etc.
- Replace accessories while the machine is running.
- Leave the appliance unattended while it is running.
- Use the device without protections on moving organs.
- Use in low light.

Only use original accessories that offer the highest quality and safety features. Failure to use original accessories releases the manufacturer from any liability.

BRUSH IDENTIFICATION

The brush is equipped with an identification plate applied in a visible position.

The nameplate contains the following data:



1	Manufacturer's logo
2	Brush data (weight, pressure, ...)
3	Machine serial number
4	Brush model
5	Year of construction
6	CE marking

TECHNICAL FEATURES

CODE	WIDTH	WEIGHT
HSRL624V	600 mm	6.4 kg
HSRL824V	800 mm	7.2 Kg
HSRL1024V	1000 mm	8.0 Kg

Diameter: 120 mm

WORKING WATER PRESSURE: max. 40 bar effective on the brush

POWER SUPPLY: 24V DC

WATER TEMPERATURE: MAX. 40°C

Water connection intake dims: QUICK COUPLING M22x1.5 mm - diameter 15 mm

Nylon bristles



Use appropriate clothing: eye protection, hand gloves, non-slip shoes

PROCESSED - HANDLED OR GENERATED PRODUCTS

The **products treated by the brush**, which is the subject of this manual, **must be** photovoltaic panels consisting of modules with a maximum angle of 35°. Check the operating instructions of the photovoltaic system for the type of brushes that can be used for cleaning, so as not to cause abrasions on the film of the panels.

Treated surfaces should be as flat as possible.

It is important to avoid all situations of use that may cause repeated and sudden stops to the brush rotation such as the following.

In the case of surfaces composed of panels, the distance between them must be a maximum of 3 cm to prevent the device from sinking into the void areas between one panel and another. The surfaces must be as free as possible from protruding bodies such as long screws, brackets, clamps, which could obstruct the rotation of the brush or tear the brush bristles.

The device is not designed to withstand either strong accidental shocks such as those caused by falls, or less strong but repeated shocks such as those given by operation on stepped areas.

It is also very important that the working pressure does not exceed the maximum pressure described in the 'Technical specifications' in order to prevent excessively fast speeds from causing premature wear of the device's mechanical parts.

During downtime, never put the weight of the device on the roller bristles to avoid deforming them.

Damage or breakage due to improper use of the device (as described above) cannot be repaired under warranty.



USE ONLY IN AREAS THAT HAVE BEEN PREVIOUSLY FENCED AND DEMARCATED IN SUCH A WAY AS TO PREVENT DAMAGE TO PERSONS OR PROPERTY IN THE EVENT OF THE DEVICE FALLING FROM THE ELEVATED WORK AREA AS A RESULT OF ACCIDENTAL DETACHMENT OF THE DEVICE FROM THE MANOEUVRING ROD.

The working environment must meet the requirements of Directive 89/654/EEC. There must be no foreign objects in the work area. Lighting equipment must be checked periodically and kept efficient. The employer, in compliance with Directive 89/391/EEC on the introduction of measures to encourage improvements in the safety and health of workers at work, must take steps to eliminate or reduce the residual risks indicated as set out in this manual.

ILLUMINATION

The environment in which the brush is used must be sufficiently well lit, so that a visual inspection of the brush and the pictograms on it can be carried out.



WORK AT HEIGHT

The operator who uses the brush for work at height (roofs, platforms, scaffolding, ...), must be trained and be aware of the rules of conduct and safety devices to be used, so that he can work safely in these types of work environments and avoid dangerous accidents.

PRINCIPLE OF OPERATION

Exploiting the motion generated by the installed 24V motor and thus the cleaning effect of the bristles, the system operated by hand by the operator allows significant time savings in the cleaning of photovoltaic panels compared to traditional fixed brushes.

SAFETY REQUIREMENTS



WARNING: DO NOT



Use by inexperienced persons or persons who have not read and understood the instructions in this manual is prohibited.



Do not use the brush for work indoors.



Do not use the brush for work at height if the personnel in charge are not aware of the safety and behavioural rules.



DO NOT use the brush at night or in poor lighting.



DO NOT use the machine with flammable, toxic fluids or fluids with characteristics that are not compatible with the correct operation of the machine.

DANGER OF EXPLOSION OR POISONING



It is forbidden to use the machine in a potentially flammable or explosive atmosphere

DO NOT direct the brush at people, animals and do not put your hands or other body parts in front of or under the rotating brush.



DANGER OF INJURY



DO NOT clean photovoltaic panels without first disconnect the solar system from voltage.

DANGER OF ELECTRIC SHOCK



The machine may NOT be operated by persons under 18 years of age or by incapacitated persons. DANGER OF INJURY



DO NOT use the equipment with a damaged high-pressure hose of the washer.

DANGER OF BURSTING



Check that the equipment is fitted with safety labels, if not, notify your dealer. Devices without safety labels must NOT be used, as they are anonymous and potentially dangerous.

DANGER OF INJURY



DO NOT leave the equipment unattended. DANGER OF INJURY



It is forbidden to use non-original and non-specific accessories for the model.

It is forbidden to make modifications to the machine, the making of modifications invalidates the declaration of conformity and releases the manufacturer from civil and criminal liability.



WARNING: TO DO

Operators who use the brush for work at height (roofs, platforms, scaffolding, ...) must be trained and be aware of the rules of conduct and safety devices to be used, so that they can work safely in these types of work environments and avoid dangerous accidents.



The rotating brush can cause parts to bounce off, so it is necessary to WEAR protective clothing and goggles.

DANGER OF INJURY



DISCHARGE residual pressure before disconnecting the hose from the equipment DANGER OF INJURY



CHECK before each use and periodically the tightness of the screws and the good condition of the machine's component parts, look for broken or worn parts.

DANGER OF INJURY



KEEP people or animals at a minimum distance of 15 m from the work area.

DANGER OF INJURY



Carrying out all stages of work and maintenance in accordance with current occupational health and safety regulations

DELIVERY

The brush is delivered in cardboard packaging.

DISPOSAL OF PACKAGING

The packaging materials are not polluting the environment, but must be recycled or disposed of according to the regulations in force in the country of use.

CLEANING

It is forbidden to clean, oil or grease machine parts and moving parts by hand, unless this is required by special technical requirements, in which case suitable means must be used to avoid any danger. Workers must be made aware of this by means of clearly visible notices.

The cleaning operations that can be **carried out by maintenance personnel, who are** professionally qualified as defined in this chapter are listed below. Normally, some cleaning operations **can be carried out by the operator**; this is when they are normal operations outside the machine that require the use of simple personal protective equipment.

Cleaning of internal machine parts must be carried out by the maintenance service.

In order to avoid inappropriate and dangerous unintentional operation of the machine or undue modifications of any kind, even unintentional or accidental, to it, it is advisable for cleaning to be carried out by the same personnel working on the machines, rather than by different personnel, who cannot guarantee compliance with all these recommendations.

All cleaning work must only be carried out **after the machine has been isolated and discharged from external energy sources**. Never use petrol, solvents or flammable and/or corrosive fluids to clean the machine and its components.

Use non-flammable, non-toxic, commercial and approved solvents.

Observe the instructions for use and use any personal protective equipment provided by the supplier of these substances.

At the end of use

Clean the outside of the machine with a soft, dry cloth that does not shed hair on the surface.

Avoid the use of alcohol, petrol, solvents, and any other type of detergent.

Clean only with a strictly neutral, non-foaming, water-based detergent.

Under no circumstances should abrasive products, coloured substances, metal wool pads, brushes, scrapers, etc. be used.

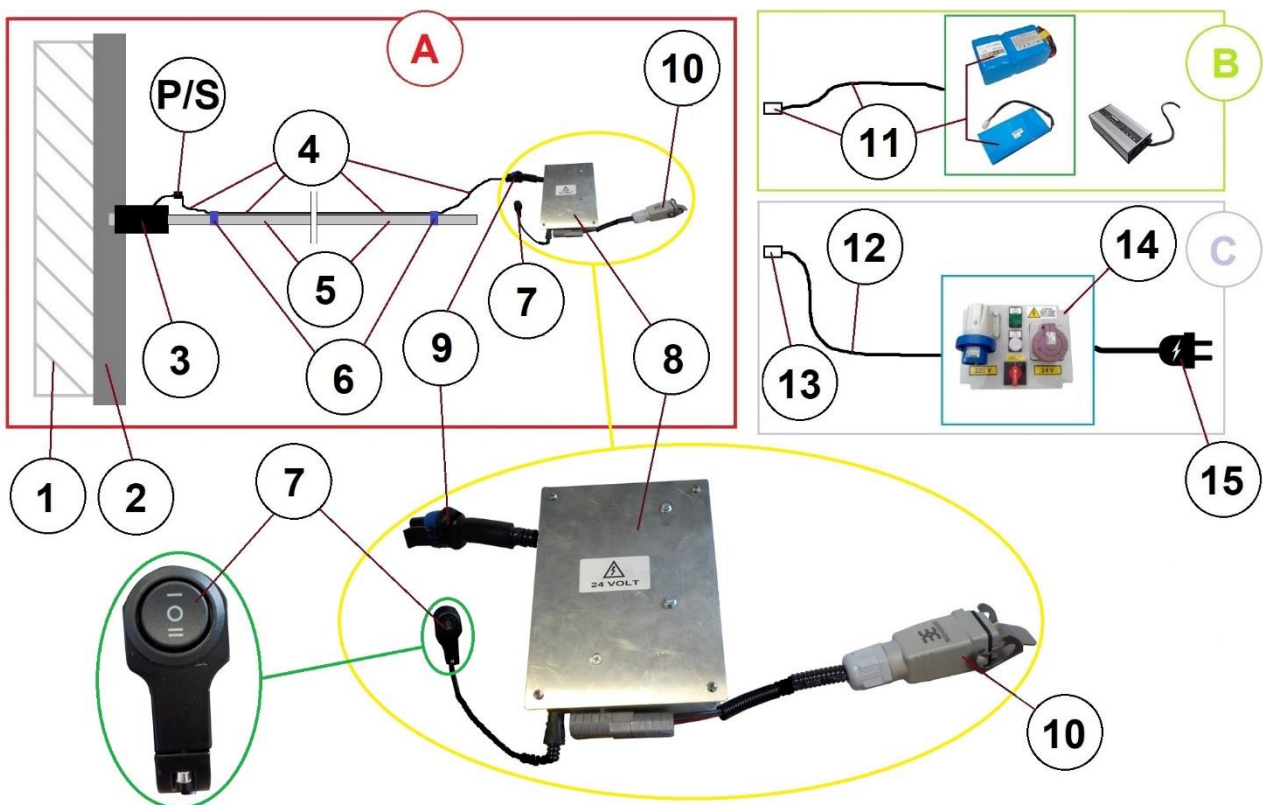
POWER SUPPLY

The 24V brush can be powered via the battery pack (optional) or directly from the power line via the transformer (optional).



The batteries and the electronic board (8) are housed in a practical backpack that can be carried on the shoulder during the cleaning operation.

WIRING DIAGRAM FOR 24V BRUSHES



SAFETY - THERMAL PROTECTION

The PWM electronic board (8) manages the operation of the brush through the switch (7), which allows for turning on, off, and reversing rotation. Furthermore, the PWM electronic board (8) performs the function of electronic clutch and automatic thermal safety (7A) in case of abnormal overheating.

Ref. No.	Description
1	Brush
2	Splash guard
3	24V brush motor
4	Power cable (10 m)
5	Telescopic pole
6	Velcro band
7	Rotation/Off/Reverse Rotation Control
8	Electronic board (PWM) - Electronic clutch and thermal safety
9	Brush side plug
10	Power supply side plug
11	Battery with cable and socket, charger
12	Power cable (24V) max 30 m
13	Socket for power plug (10)
14	230V/24V transformer for 1, 2 or 3 brushes
15	230V electric plug
A	Material supplied
B	Solution with battery
C	Solution with transformer
P/S	Brush motor socket – socket for 10m power cable supplied

RECHARGING THE BATTERY

The battery pack consists of two rechargeable batteries in series (12V-9Ah). The batteries are gel-sealed for continuous service and require no maintenance. The electronic battery charger is supplied separately from the brush. The charging time of the battery pack is approximately 2 hours.



A charged battery pack allows approximately 2 hours of continuous operation; do not exceed this usage time; risk of battery damage.

To recharge the battery pack connect it to the charger and insert the charger plug into a 230V-50Hz power outlet.



Caution. The maximum charging time of the battery pack is 12 hours; do not exceed this time.



Caution! If the brush is not used for a longer period of time, perform a discharge/charge cycle at least once every 2 months.

IT IS ABSOLUTELY FORBIDDEN TO RECHARGE THE BATTERY WHEN THE BRUSH IS IN OPERATION.

CHARGER MANUAL

Please refer to the charger manual.

PROCESSING CYCLE

1. Connect the brush to the telescopic pole.
2. Connect the brush to the battery or power supply via its transformer. Place the machine on the surface to be cleaned.
3. Open the water tap on the telescopic pole.
4. Start the brush by adjusting the direction of rotation via the switch control.
5. Start cleaning the surface

CYCLE STOP - SHUTDOWN

1. Switch off the brush via the switch control.
2. Close the tap on the telescopic pole.
3. Shut off the water supply
4. Open the tap on the telescopic pole to release the residual pressure.

CLEANING OF COATED OR PAINTED SURFACES

Using water on glued parts may cause them to come off. Do not use the appliance on wooden floors or on parquet that is not well sealed.

Take care when cleaning doors, parquet, painted or synthetically coated surfaces, aluminium panels. We recommend, before using the brush, to do a test on a part of the surface that is not in sight, to avoid damage or alteration during cleaning.

CLEANING GLASS SURFACES AND PHOTOVOLTAIC PANELS



DO NOT clean photovoltaic panels without first disconnect the system from voltage.
DANGER OF ELECTRIC SHOCK

MAINTENANCE



Carry out all work and maintenance phases in accordance with current legislation on hygiene and safety at work.



Perform all maintenance work with the device disconnected and ensure that the brush is in a stable and easily accessible position.

Only what is authorised in this instruction manual may be carried out by the user. Any other intervention is prohibited.

Switch off the device before performing any maintenance work.

Remove the protective cover when necessary only when the device is disconnected.

When maintenance has been completed, ensure that the protective cover has been fitted correctly and secured with the screws provided.

Failure to comply with these instructions releases the manufacturer from any liability.

MAINTENANCE, TROUBLESHOOTING AND CLEANING

The term '**maintenance**' is not only to be understood as the periodic checking of the machine's normal operation, but also the analysis and subsequent remedy of all those causes that for whatever reason put it out of service.

It is clear, therefore, that maintenance involves a range of significant mechanical problems that require the attendant to have a good theoretical and practical knowledge of the machine.

In particular, **the personnel in charge of maintenance, cleaning, parts replacement and troubleshooting** must set themselves the following objectives:

limit the decay of wear parts

minimise injuries

contain costs for accidental failures

limit the number and duration of interventions

act in cooperation with the line operators for the best efficiency of the machine.

It is absolutely necessary that for **maintenance, cleaning, parts replacement and troubleshooting** activities carried out by the user, **this task is entrusted to experienced, competent and employer-authorised personnel.**

Personnel must be trained in safety and informed of the residual risks. In the event that **the user does not have suitably trained and experienced or warned personnel**, a maintenance contract must be concluded with appropriate companies such as the brush supplier.

The first problem must be remedied by providing an inspection procedure to check the perfect mechanical functionality, if necessary by contacting the maintenance service.

However, all parts must be replaced at the first signs of wear or breakage.

For any type of intervention or replacement of parts, activate the maintenance service.

Check the wear condition of the brush bristles and that the quick couplings are efficient. In case of replacement contact the maintenance service, do not carry out temporary or empirical repairs.

All fixed guards must perform the function for which they are intended. Check their integrity, both internally and externally, and the absence of signs of wear or breakage.

For any type of intervention or replacement of parts, activate the maintenance service.

At least once a week

Check that all nameplates are legible. If one of them is not readable, replace it by requesting it from the manufacturer.

Any replacement must be with the manufacturer's original products or products of at least equivalent quality and safety.

Check that the hydraulic connections are intact and not deteriorated; in case of replacement, contact the maintenance service.

At least once a month

Check the tightening of bolts, nuts and connections in general of both equipment and machine parts with the appropriate tools.

All devices must perform the function for which they are intended.

Further useful indications for testing methods can be found in the manuals of the relevant components supplied with the electrical equipment.

The necessary inspections relate to:

- loss of or damage to any part of the protective casing, in particular if this causes a decrease in safety functions
- replacement of parts subject to wear and tear
- deterioration of joints or fixing points
- deterioration due to corrosion, temperature changes or chemical effects
- deterioration of acoustic behaviour, if applicable.

Replacement should be carried out when at least one of the indicated components shows abnormal wear, at the first signs of cracks, erosion or breakage.

Any replacement must be with original manufacturer's products.

Contact the manufacturer directly.

STORAGE

The possible non-use of the equipment for long periods is an important aspect. Algae and bacteria must be prevented from developing due to stagnant water. The machine must be protected against frost.

STORAGE

In case of storage, **the brush** must be stored by placing it on its splash guard in such a way that the bristles do not touch the ground, in an airy room, protected from dust. The delivered items must remain packed until final installation.

All machine parts susceptible to oxidation at the time of shipment are adequately protected with greasing and protective sprays to prevent oxidation by atmospheric agents.

In the event of **prolonged inactivity**, the machine must be stored with precautions regarding storage location and time:

1. store the machine indoors
2. protect the machine from shocks and stresses
3. protect the machine from moisture and excessive temperature fluctuations
4. prevent the machine from coming into contact with corrosive substances
5. check that the packaging has not been damaged and is perfectly dry

PROBLEMS AND REMEDIES

Crushed or bent bristles

The brush was not placed on its holder when not in use. Immerse the bristles in hot water (80/90°C) while holding it suspended and wait for the bristles to return to their correct shape.

Worn or damaged bristles

Contact the service centre for brush replacement.

The brush does not rotate during cleaning

Check that the brush is powered correctly. Contact the service centre if the problem has not been solved after the previous checks.

Worn-out mechanisms

Contact the service centre for replacement of mechanisms.

DISPOSAL

The machine must not be disposed of as municipal waste; it may be returned to the distributor when purchasing a new machine or disposed of at an authorised waste treatment centre.

ECO-CONTRIBUTION RAEE:

The holder of a household WEEE electrical and electronic equipment, when he wants to dispose of it, may:

- deliver it free of charge at the Public Collection Centre of your municipality (the 'ecological platform')
- hand it over to the distributor in exchange for the purchase of a new piece of equipment, equivalent in function

Although the law foresees the financial responsibility of the producer for the management of WEEE, the user will in fact also be involved by passing on a modest part of the costs of this management to the sales price.

This price increase may be incorporated in the final sale price, or it may be manifested by the producer (via the distributor), who must separately indicate the 'eco-contribution' share in the final sales price of the good.

The symbol (Fig. 1) on the equipment indicates that the waste must be subject to "separate collection". Therefore, the user must deliver (or have delivered) the waste to the separate collection centres set up by the local authorities, or hand it over to the retailer against purchase of a new appliance of an equivalent type.



Fig. 1

Separate waste collection and subsequent treatment, recovery and disposal operations promote the production of equipment from recycled materials and limit the negative environmental and health effects that may be caused by improper waste management.

Unauthorised disposal of the product by the user will result in the application of the administrative sanctions provided for by the regulations in force.

WARRANTY CERTIFICATE

Provided it is used correctly and in accordance with the requirements of this manual, the equipment is guaranteed against manufacturing and material defects for 12 months after delivery for professional use, 6 months for rental or contract use with the exception of

- normal wear parts such as nozzles, bristles, seals, quick couplings, pipes, filters, gears, etc.

WARRANTY CONDITIONS

1. the warranty is recognised from the date of purchase. The manufacturer, through its sales and service network, shall replace free of charge any defective parts in materials, workmanship or production. The guarantee does not cover the replacement of the machine. The contractual warranty does not deprive the purchaser of his legal rights under the civil code against the consequences of defects or faults caused by the thing sold.
2. The technical personnel will intervene within the time limits granted by organisational requirements and in any case as soon as possible, and any delay will not lead to claims for damages or to an extension of the guarantee period.
3. To apply for warranty service, the following warranty certificate stamped by the dealer, completed in its entirety and accompanied by the purchase invoice or sales receipt or other fiscally obligatory document proving the date of purchase, must be presented to authorised personnel.
4. The guarantee lapses in the event of:
 - obvious absence of maintenance
 - incorrect use of the product or tampering
 - use of unsuitable fluids
 - use of non-original spare parts or accessories
 - use outside the permitted working parameters
 - interventions by unauthorised personnel
5. The manufacturer excludes parts subject to normal wear and tear from the guarantee.
6. Shipping, transport and labour costs are the responsibility of the customer.
7. Any damage caused during transport must be reported to the carrier immediately, otherwise the guarantee will be voided.
8. Should faults or breakages occur during or after the guarantee period, the customer has no right to suspend payment or to any price reduction.
9. The manufacturer shall not be liable for any damage, direct or indirect, caused to persons or property by machine breakdowns or as a result of prolonged suspension in use.

RETURN OF DELIVERY: the goods travel at the buyer's risk even if sold free to the addressee.

COMPETENT COURT OF JURISDICTION: the court of MODENA - Italy is exclusively competent for any controversy and dispute both in Italy and abroad.

Model/serial number _____

Seller _____

Date of sale _____

Buyer's name/surname _____

Buyer's address _____

Buyer's postcode + City _____

Buyer's country _____

EC DECLARATION OF CONFORMITY



EN

It is hereby declared that:

The products:

24V ROTARY BRUSH 60 cm - HSRL624V

24V ROTARY BRUSH 80 cm - HSRL824V

24V ROTARY BRUSH 100 cm - HSRL1024V

comply with the provisions of Directive 2011/65/EU - RoHS and the general rules of good design, in compliance with Legislative Decree 81/08 and state of the art.

All versions of this product are manufactured according to internal production procedures and product specifications, meeting all quality and safety requirements.

It is forbidden to put articles covered by the declaration into service before the machine in which they will be incorporated or assembled has been declared in conformity with the standards and directives in force.


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