

Battery Powered Remote Control Mower



Operator's Manual





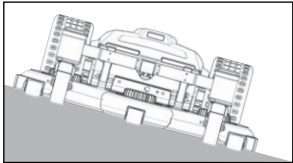
Before proceeding with the installation and use of the equipment, make sure to read and fully understand all parts of this manual.



This equipment is intended for use only by trained professional personnel who are properly instructed in the operation of this product and its related components. The machine must be used exclusively in areas compatible with its technical specifications. The product must not be used in the presence of materials or substances containing flammable and/or corrosive liquids, or any materials unsuitable for use with this equipment. Always verify compatibility in advance by contacting the manufacturer.

1. THANK YOU FOR CHOSING OUR PRODUCT

With this product you have chosen unique features, the value of which you can immediately appreciate and evaluate over time:



The lightness of the machine allows it to work even on slopes.



With the COMPASS Servo Drive you can work more efficiently and safely with an immediate increase of your productivity.



The vibration of the radio control warns the operator of dangerous situations and alarms on the machine.



The BeaConNet is a beacon on the machine that changes colour to inform you of all dangerous situations and the status of the vehicle.

2. INTRODUCTION

Before using your new machine, please take the time to read this entire manual carefully. The information it contains is essential for the correct operation and maintenance of your equipment. It will help you protect your investment and ensure optimal performance.



WARNING: PERSONAL SAFETY. Some sections of this manual contain information that is crucial for your safety. You must read and understand these sections to prevent injury to yourself or others.

If any part of this manual seems unclear or difficult to understand, please contact your authorized dealer or our service department for assistance before operating or servicing the mower.

This Operator's Manual is considered an integral part of the machine and should always remain with it, readily accessible to the operator. Both new and second-hand machine suppliers are advised to keep records confirming that this manual was provided with the equipment.

Ignoring these instructions or failing to follow this Operator's Manual, as well as any arbitrary modification on this machine, may release the manufacturer from responsibility for any damage or injury that occurs.

The specifications in this manual are based on the latest information available when it was written and describe a machine with standard equipment. The machine can also be used with approved accessories designed for it. Make sure to read and follow the Operating and Safety Instructions for any accessories used.

BARBIERI SRL is always working to improve the design and performance of its products. For this reason, we may change specifications or designs without prior notice and without obligation regarding machines made earlier. This manual provides comprehensive instructions for installation, operation, maintenance, and safety, helping the operator to use the machine correctly and preserve its efficiency and reliability over time.

2.1 Pictures Used in the Handbook



DANGER:

This symbol is used to highlight an important safety information. If this information is ignored, people are in danger either of possible injuries - even serious ones - or death. In these messages are also described the normal precautions which have to be taken to avoid the danger. Ignoring these precautions can cause serious damages to the machine.



ATTENTION:

This warning is used in the handbook safety messages when the danger can cause minor or moderate damages and injuries. The message can be used also for dangers which can cause damages to the machine or its components.

Any time you see these symbols, whether on the machine or on the following of this manual you must pay attention to avoid danger to yourself and to other people.

3. TERMINOLOGY

Warnings and instructions of particular importance are highlighted in bold and underlined. To improve understanding of this manual, the following terms are defined below:

For additional terms or definitions, please refer to the relevant applicable standards.

PPE (Personal Protective Equipment): Equipment worn by the operator to minimize exposure to hazards that can cause serious injuries or illnesses. Includes items such as safety footwear, gloves, protective eyewear or face shield, hearing protection, and suitable clothing, depending on the task and residual risks identified in the manual.

Deck Tilt: Adjustment of the longitudinal cutting deck angle relative to the ground surface. Tilting the deck allows optimization of cutting performance and airflow under the deck. For the XCROSS mower, a slight rear-up inclination (0.5°-1.2°) is recommended to achieve effective mulching and even grass discharge.

PTO Power Take Off: Main drive system of the cutting blades or auxiliary attachments. The PTO is controlled via the remote control and allows the operator to engage or disengage the cutting system safely from a distance.

ZTPSTM: Barbieri's patented steering system that allows all four wheels to steer independently, enabling the mower to perform zero-radius turns. This system improves maneuverability, stability, and control, particularly on uneven terrain or when working in confined areas.

BMS - Battery Management System: Electronic system integrated into the battery pack that monitors and manages the battery's charge, voltage, temperature, and overall health. It ensures optimal performance, prevents overcharging or deep discharge, and balances individual cells to extend the battery lifespan and guarantee operational safety.

RCD: Residual Current Device - Safety device used in the electrical circuit to detect and interrupt leakage currents that may cause electric shock or fire. It disconnects the power supply automatically when a fault current to earth is detected, protecting both the operator and the equipment during battery charging or electrical maintenance.

IP PROTECTION degree: Classification indicating the level of protection provided by an electrical enclosure against the intrusion of solid objects and liquids, according to standard IEC 60529.

For example, IP44 means the unit is protected against solid objects larger than 1mm and protected against water splashing from any direction.

4. CONDITIONS AND USE RESTRICTIONS

DEFINITION OF PROPER USE

- The XCROSS is a professional, battery-powered, radio-controlled lawn mower that has been designed for grass cutting and weed control in agriculture and public green, flat and light sloped areas.
- The mower can be equipped by original side trimmer for cutting grass near to fences or row of poles.
- The mower can be equipped by sensors to perform automatic mowing operations.
- The exact observance of use conditions, maintenance and reparation are the essential element for a correct use.
- The machine should be used, maintained and repaired only by people who have knowledge of the security rules.
- The general rules about accident prevention and public road circulation rules should be respected

IMPROPER USES

- Any other use is not allowed. The manufacturer is not responsible for damages caused by any use than the intended one. The user is fully responsible for any possible risk.
- Each arbitrary modification carried out on the machine could release the manufacturer from the responsibility for any damage or accident derived by the machine.

ONLY ONE OPERATOR

The machine was designed to be used by one operator only. The presence of other people in the closeness could be dangerous for the safety of both user and people. (see danger area in paragraph 7.6).

ACCESSORIES ON THE MARKET (ONLY IF AUTHORIZED)

Any use of accessories different from the authorized ones by the manufacturer is not allowed. For further applications different from the authorized one or in case of misunderstanding of this handbook, please contact the technical department of the manufacturer.

BARBIERI s.r.l. - Technical assistance service
 36040 SOSSANO - (VI) - ITALY Tel: +39 0444 885722
 e-mail support@barbieri-fb.com

Descriptions, figures and technical features mentioned herein are non-binding for the Manufacturer. These are mentioned as mere information. The Manufacturer reserves the right to make any change at any time without notice, to improve the quality of the products without being bound to update this publication.

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20. CE DECLARATION

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Manufacturer:

Barbieri Srl; P.le D.L. Sturzo, 15 - 00144 Roma (Roma) - Italia;
 info@barbieri-group.com Tel. +39 0444 885722

Type / Designation: Radio-controlled lawn mower for professional use

Model: XCROSS**Dimensions and weight**

- Weight: 189,7 kg without accessory
- Length: 1040 mm
- Width: 1100 mm (Rear discharge - Mulching Dual cut) Kg. 60,1
- Width: 1320 mm (Mulching deck) Kg. 58,5
- Width: 1200 mm (Rear discharge deck) Kg. 50
- Nominal Voltage: 50.2 V

CE Marking - Applicable European Directives

2006/42/CE - Macchine

2014/30/UE - EMC

2014/53/UE - RED

2011/65/CE - RoHS

Manufactured in accordance with the relevant parts of the following standards and/or regulations:

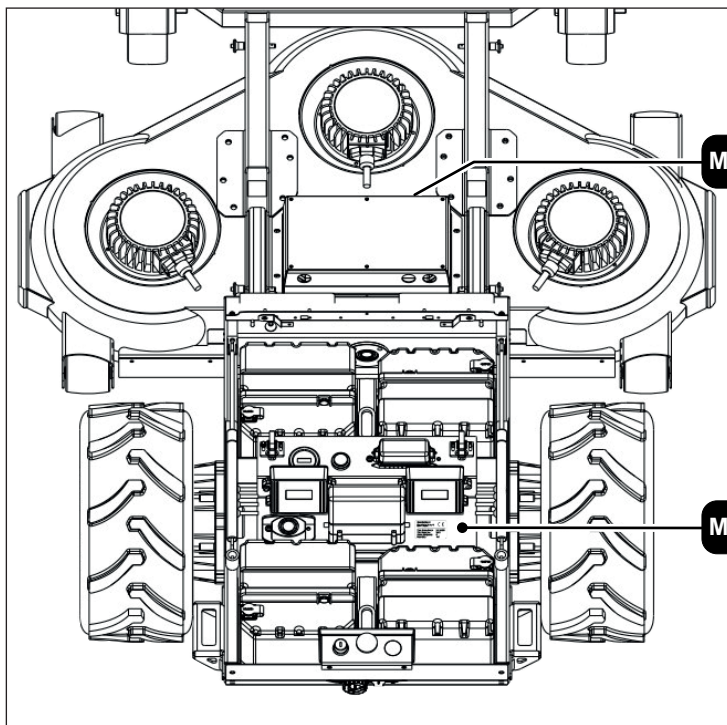
UNI EN ISO 12100
 CEI EN 62841-1
 IEC 61000-6-3:2020
 IEC 61000-6-2:2016
 EN IEC 61000-6-3:2021
 EN IEC 61000-6-2:2019
 EN 300 328 V2.1.1;
 EN 300 328 V2.2.2;
 EN 61326-3-1:2017;
 EN 301 489-1 V2.2.3;
 EN 301 489-17 V3.1.1;
 EN 301 489-17 V3.2.4

5.1 Product identification Label

If you have any issues or questions, please make sure to record the following identification details before contacting technical service or ordering spare parts:

- Model and serial number (FIG.1, FIG.2)
- Mowing deck type and serial number (FIG.2)

MACHINE SERIAL N° PLATE



BARBIERI srl Piazz.le Luigi Sturzo, 15 00144 - ROMA	
Type Rotary Mower	X-CROSS
Year/Series No:	2026 PF65L****
Power (Kw):	1,2 @ 3.60
Mass (Kg):	60,1

MOWING DECK SERIAL N°

Fig. 2

BARBIERI srl Piazz.le Luigi Sturzo, 15 00144 - ROMA	
Type Rotary Mower	X-CROSS
Year/Series No:	2026
Power (Kw):	5
Mass (Kg):	189,7

MACHINE SERIAL N° PLATE

Fig. 1

MANUFACTURERS NAME AND ADDRESS	BARBIERI srl Piazz.le Luigi Sturzo, 15 00144 - ROMA		CE MARKING
PRODUCT MODEL AND DESIGNATION	Type Rotary Mower	X-CROSS	
YEAR AND MANUFACTURE	Year/Series No:	2026	SERIAL #
	Power (Kw):	5	
	Mass (Kg):	189,7	

Fig. 3

6.1 General description of the machinery

The XCROSS is a professional, battery-powered, radio-controlled lawn mower designed and manufactured by Barbieri S.r.l. for efficient grass cutting and vegetation control on both flat and sloped terrain. It combines advanced electric traction technology, zero-turn steering (ZTPS™), and precision remote control to deliver exceptional manoeuvrability, safety, and performance.

Equipped with a high-capacity lithium battery system, the XCROSS operates with zero emissions and reduced noise levels, making it ideal for use in urban, agricultural, and environmentally sensitive areas. Its Servo Drive option enables semi-autonomous operation, improving cutting accuracy and productivity while reducing operator fatigue.

The mower's modular design allows the use of different cutting decks, such as the Mulching Deck for fine, regular maintenance and the Rear Discharge Deck for heavier vegetation or rough terrain.

The swappable battery packs and robust construction ensure continuous operation and long service life with minimal maintenance. Developed in compliance with European safety and electromagnetic compatibility standards, the mower integrates multiple safety systems as described in section 7.

6.2 Technical Data

Battery operated remote controlled mower

TECHNICAL DATA FOR BASIC UNIT

Traction	2 x 2,5 kw electric motors
Swappable batteries as standard	2 x 50 v - 4,54 kwh - 3h working autonomy
Usage time with 2 batteries	up to 3 hours, (based on working conditions)
Usage time with 4 batteries	up to 6 hours, (based on working conditions)
Working Capacity Area m2/h (*)	4000
Recharging Time	2 h with 2 batteries with standard charger (220V) 4 h with 4 batteries with standard charger (220V)
	2 h with 2 batteries with fast charger (380V) 2,5 h with 4 batteries with fast charger (380V)
Drive type	Zero turn
ZTPS™ steering	Given by 4 wheels
Radio control	Connection range up to 250 m
Electrical socket	To attach several equipments
Standard battery charger	50 A (1,5h each battery) with Schuko socket
IP protection	IP52
Dimensions without accessory	1080 x 1040 x 500 mm
Weight without accessory	189,7 Kg

TECHNICAL DATA FOR MOWING DECK

Rear discharge Dual cut deck	Rear discharge deck	Mulching Deck
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Product code:
6508009Product code:
6508002Product code:
6508003

N° of Blade	3	3	3
Cut width (cm)	110	124	132
Blade motors	3 X 1,2KW	3 X 1,2KW	3 X 1,2KW
Front / rear protections	Rubber	Rubber	Rubber Anti-Shock
Antiscalping rolls	-	-	3
Weight Kg.	50	50	53

6.3 Noise and vibration

The equipment does not generate vibrations to which the operators are exposed during normal operation.

The airborne noise produced by the lawn mower under the operating conditions specified by the applicable standard is as follows:

	Rear discharge Dual cut deck	Rear discharge deck	Mulching Deck
Maximum sound pressure level at operator position	LpAep 83,0 ± 3 dB(A)	LpAep 83,0 ± 3 dB(A)	LpAep 83,9 ± 3 dB(A)
Sound power level	LWA 95,7 ± 3 dB(A)	LWA 95,7 ± 3 dB(A)	LWA 97,2 ± 3 dB(A)
Maximum peak (impulsive) sound pressure level at operator position	LpC,peak < 120 dB(C)	LpC,peak < 120 dB(C)	LpC,peak < 120 dB(C)

The vibrations generated during operation of the equipment are not significant and remain below the limit of 2.5 m/s² as specified by current applicable standards.

7.1 General Warnings

This manual contains the instructions for proper use and maintenance of the equipment. Correct preparation for operation requires strict adherence to all the prescriptions and procedures described in this manual. For reasonably foreseeable misuse refer to the section n.12.

Any special operating conditions (such as severe environmental factors, significant shocks or vibrations, or other types of mechanical or thermal stress) require specific installation solutions appropriate to those conditions.

Such solutions **MUST** be evaluated in advance by the manufacturer.

This manual is intended exclusively for specialized and adequately trained personnel.



WARNINGS: The use of this equipment requires strict compliance with all applicable regulations for the protection of people, animals, and property, as specified in this manual.



IMPORTANT - Never use the radio-controlled lawn mower with products and/or components not previously approved by the manufacturer, or that are unsuitable for professional use or potentially hazardous.

7.2 Safety devices

The terms “FRONT” - “REAR” - “RIGHT” - “LEFT” used in this handbook and in the spare parts catalogue, are referred to the machine as shown in the figure above.

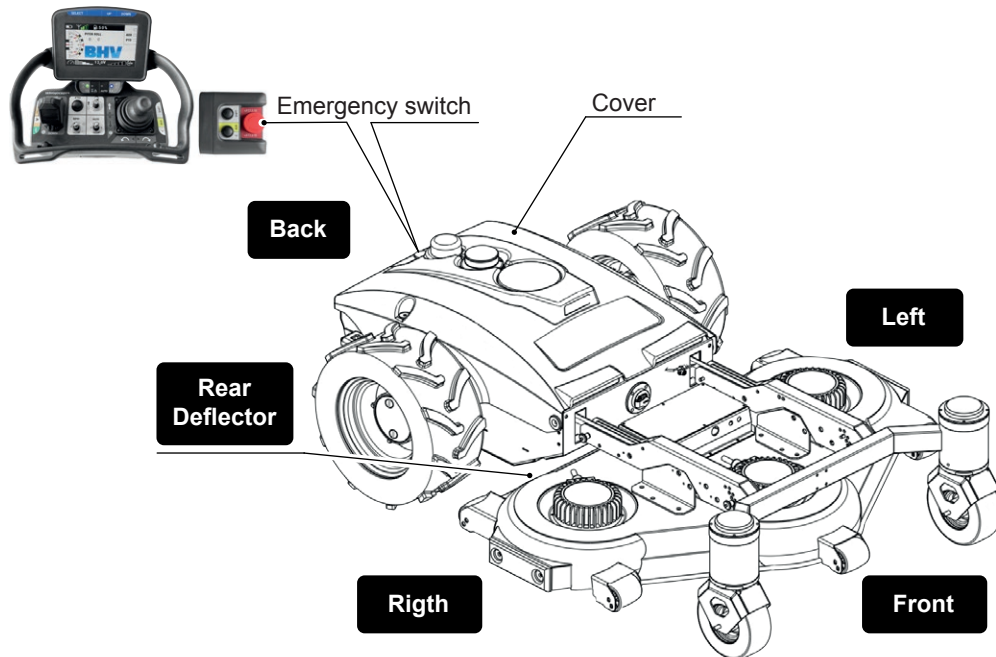


Fig. 4

REAR DIRSCHARGE DECK

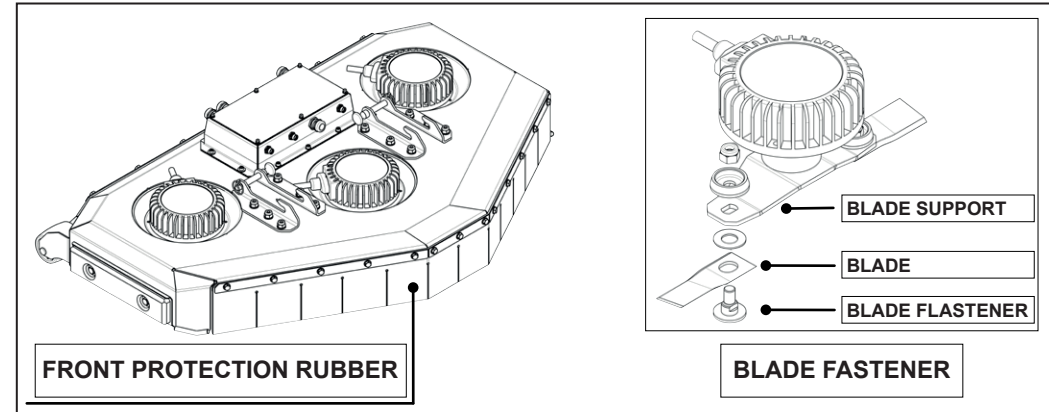


Fig. 5

The machine is equipped with a series of safety devices to comply with the Machinery Directive. All safety devices are necessary for the safe use of the machine and in case same of them are of missing, damaged or worn-out it is mandatory to replace them with genuine spare part. Do not attempt to repair a safety component. Safety labels below are considered as a safety device.

7.3 Safety labels

The safety labels applied to the machine and shown in this manual are intended to draw the operator's attention to potential risks associated with the use of the lawn mower and to provide guidance for safe and correct operation of the product. It is essential that the user reads, understands, and follows all symbols and warnings before operating the machine.

Each label (safety pictogram) show information regarding mechanical, electrical, or environmental hazards, as well as mandatory protective measures and prohibited actions. Failure to observe these warnings may result in injury to persons, animals, or property, and may also compromise the safety of the equipment itself. The labels/pictograms must always be kept legible and intact; if they become worn or damaged, they must be replaced immediately.

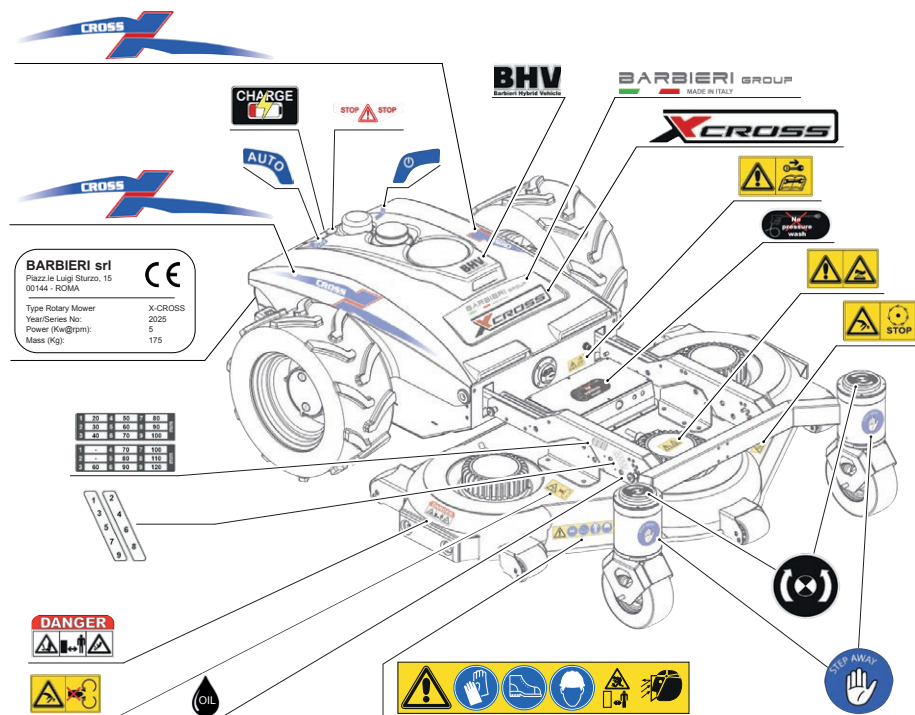


Fig. 6

The most important warning labels are placed near to the danger around the machine. Be sure to understand the meaning of the labels in order to use a proper behaviour to avoid any danger action. These labels are very important for the safe use of the machine along the time. Keep these label clean and in a good condition. In case of damage or lack of such a labels it is mandatory to replace them with original ones.

7.4 Caution Labels and Warnings

Besides CE mark, safety pictures and indications are applied on the machine and mentioned in the fig. 6.

**WARNING: BEFORE SERVICING**

Remove the start key and read the technical instructions in the operation manual before servicing the machine.

**WARNING: RISK OF INJURY**

Stay away of the discharge opening of the mower deck because stones or other hard objects ejected from the mower may hit you. Use visor to protect from flying object

**WARNING: DANGER FOR HANDS AND FEET**

Cutting blade: keep hands and feet away.
Radio controlled machine. Keep yourself at safe distance.

**WARNING: DANGER OF CRUSHING HANDS**

Keep hands away from the mowing parts.

**DANGER: RISK OF INJURY**

Keep a safe distance from the machine
Maintain a safe distance from the machine. Stay clear!



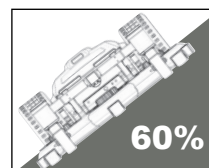
WARNING: The use of personal protective equipment (PPE) is mandatory.

**CAUTION: CUTTING HAZARD**

Wait until the blades are completely stopped.



WARNING: HOT SURFACE - risk of scalding.



WARNING: Do not work in slopes over the limits. Danger of sliding

7.5 Safety Rules



WARNING! The following instructions are general safety rules that must be observed during all operations involving manual or powered equipment. They must be strictly followed to avoid injuries, accidents, and damage to equipment or property.

- **PPE and Work Preparation**

- o Always wear safety glasses, gloves, safety footwear, hearing protection, and a dust mask when required.
- o Wear close-fitting and avoid working with short sleeves, shorts, or exposed body parts.
- o Long hair, jewellery, and necklaces must be secured to prevent entanglement in moving parts.
- o Before starting any operation, plan the work carefully to prevent issues, interruptions, or hazardous situations. Proper planning improves both safety and productivity.

- **Read Before Use**

Before starting the engine, read this manual carefully to become familiar with all operating controls, safety features, and maintenance requirements.

- **Authorized Use Only**

This machine is designed for use by a single trained operator holding the radio control. Any other use is strictly prohibited. The machine must not transport people or objects.

- **Safety Devices**

Ensure that all safety devices are correctly installed, functional, and in good condition before starting work. Never operate the machine if any protection, cover, or safety label is missing or damaged.

- **Modifications and Spare Parts**

Do not modify the machine or install non-original parts without the manufacturer's approval. Unauthorized changes may create serious hazards, void the warranty, and release the manufacturer from any liability. Always use genuine spare parts and accessories, especially safety components.

- **Operator Condition**

Only trained and responsible persons should operate the machine. Never use the machine when tired or under the influence of alcohol, drugs, or medication that impairs concentration.

- **Work Area Safety**

- o Inspect and clear the area of debris, obstacles, and bystanders before operation.
- o Maintain a safe distance between yourself and the machine while working (see chap. 7.6).
- o Stop work immediately if people or animals enter the operating zone.
- o When near public roads, ensure your presence is clearly visible and use warning signs or barriers.

- **Environmental Awareness**

Be alert to potential hazards such as electrical cables (overhead or underground), gas or water pipes, ducts, and drains. Avoid unstable, sloped, or slippery surfaces. Never exceed a 30° (60%) slope; when possible, travel across the slope rather than up or down.

- **Control and Operation**

- o Move controls smoothly to maintain machine stability.
- o Plan the work before starting and adjust speed to suit ground and weather conditions.
- o Use the machine only when visibility is good and the area is well lit.
- o Keep hands, feet, and clothing away from moving parts, particularly blades and belts.

- **Battery Storage and Recharge Safety**

Never store the battery in Sunlight. Keep them in a shared ventilated place

- **After Impact or Abnormal Vibration**

- o Stop the machine at once and inspect for damage.
- o Check the blades and fasteners (fig. 5) before resuming work.

- **Maintenance and Storage**

- o Perform maintenance only with Start key off.
- o Replace worn-out or damaged parts promptly with original components.
- o After cleaning, store the machine in a dry, secure place inaccessible to children or unauthorized persons. Remove the start key from the control Panel.
- o If the machine has been unused for a long period, clean and lubricate it before use.

- **Emergency Contingency Plan**

- o Keep a first-aid kit accessible at all times
- o When working in confined areas, ensure all escape routes are clear and unobstructed.
- o You must know how to quickly stop the engine and all machine movement in an emergency."

- **Documentation**

This manual and any related documentation must be stored in a safe and accessible location for easy consultation. Suppliers of both new and used machines are required to ensure the manual is provided with the equipment.

The manufacturer BARBIERI Srl declines any and all responsibility in the event of improper use, use not in conformity with the instructions, poor or lack of maintenance, or failure to observe the warnings and instructions contained in this manual.

7.6 Safe and Danger Area For Operations (workplace likely to be occupied by operators)

To ensure the operator's safety and to minimize the risk of injury caused by flying objects or loss of control, the working area around the mower is divided into two distinct zones: DANGER AREA and SAFE AREA (see figure below). The Danger Area extends up to 10 meters in front and around the mower, where there is a high risk of contact with moving blades or projection of debris. No person, animal, or object must enter this area while the mower is operating. The operator must never remain within this zone during machine operation.

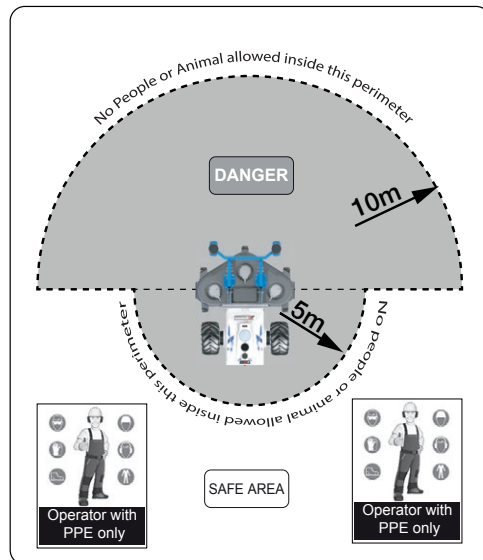
The Safe Area is located behind the mower, at a minimum distance of 5 meters from the machine.

The operator must always remain within this area while controlling the mower via remote control. Within this zone, the operator must wear the mandatory Personal Protective Equipment (PPE) as illustrated, including:

- o Protective helmet
- o Safety glasses or visor
- o Hearing protection
- o Safety footwear
- o Protective gloves
- o Long-sleeved clothing or overalls

Operators must ensure that the entire 10-meter (or 5 meter behind the mower) perimeter is clear of bystanders and obstacles before starting the mower. If visibility of the working area is obstructed or the operator cannot maintain visual control over the mower, the operation must be stopped immediately.

This safety zoning must always be respected to guarantee correct operation and to comply with the Machinery Directive 2006/42/EC and EN ISO 12100 requirements on residual risk reduction.

**Fig. 7****8.1 Endowment**

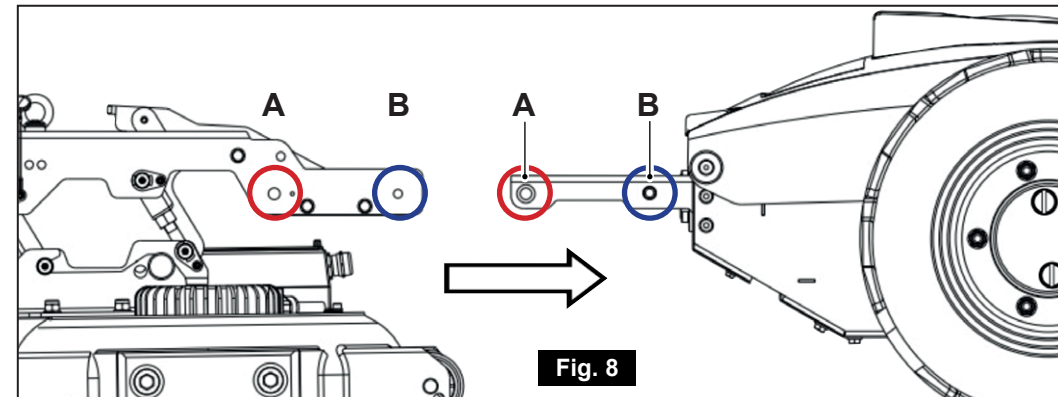
The machine is delivered with:

- 1 x Basic Unit with wheels
- 2 x Unit batteries)- charge $\geq 70\%$
- 1 x Battery charger (50A)
- 1 x Radio Control
- 2 x Lithium battery for Radio control
- 1 x RC Battery charger
- 1 x RC's hip belt + extension
- 1 x User Manual

8.2 Unpacking and Installation

Strictly follow all installation instructions.

- a) Remove the machine body and the plate from the packaging and place them on a flat and solid surface. Avoid slippery, inclined, unstable, or hard-to-reach areas for the operator.
- b) Make sure the power supply (batteries) is disconnected when performing the installation and other maintenance operations.
- c) Remove the 2 bolts and 2 locking pins from the cutting plate and place it in front of the machine body.
- d) Two of these pins are threaded and secured with a nut. Use a 17 mm wrench for the nuts and a 4 mm Allen key for the flange.
- e) Push the cutting plate towards the machine body, aligning the, use a rubber mallet to assist with the assembly. (FIG.8)



- f) Insert the pins with grease fittings into the corresponding holes. Tighten the nuts to ensure a stable and secure connection.
- g) Insert the remaining locking pins into the frame, pressing the safety button to properly secure them in their housing.

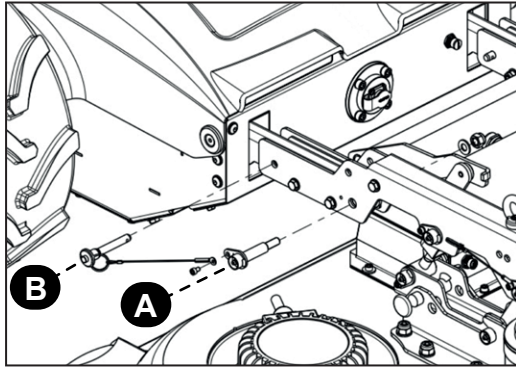


Fig. 9

- h) finally, connect the power cable of the deck to the machine body

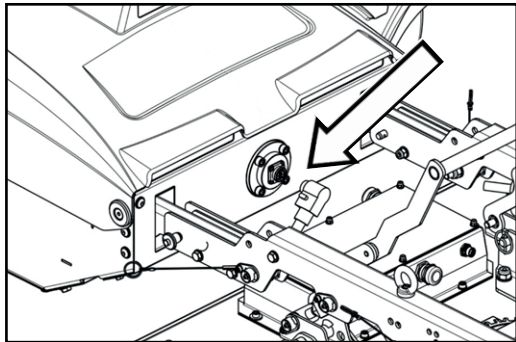


Fig. 10

8.3 Battery installation

To install the batteries, lift the hood from the rear by lifting one side at a time (first the left, then the right). Insert the batteries, making sure the orientation of the bevelled corner matches the slot in the machine. Connect the cables to the batteries, ensuring that they click into place.

Close the hood and press down alternately on the rear sides to secure them in their locking seats.

8.4 Battery Charging instructions

The Battery are delivered with 50% of the charge nevertheless in case of long period of storage, the battery charge level (SOC) could be low and it is necessary to charge the batteries before the first use.

For the first charge, connect the charger plug to the net and connect the round plug in the back of the mower.

The charger will start to communicate with the mower and the charging will start automatically.

The first charge may take about 4 hours to be completed. Once completed you can see the "Battery charged" control lamp on the display of the charger. For more details see Chapter14.

ELECTRICAL REQUIREMENTS - BATTERY CHARGES

230/400 V AC - 50 Hz - Single-phase or Three-phase



The electrical system to which the battery charger is connected must be designed and installed in compliance with good engineering practice and applicable standards.

It must be equipped with a proper earthing (grounding) system coordinated with residual current protection devices (RCDs) to ensure the safety of operators.

8.5 Commissioning and Preliminary tests (Ref. to FIG.14)

Before operating the mower for the first time read and become familiar with the safety rules and with the operating instructions for start, stop and control the machine.

Before using the machine for the first time, make sure to check the following:

Battery Level Check

- The main battery charge is above 70%.
- Both radio control batteries are fully charged

Verify the battery connections

- After ensuring that the batteries are correctly connected, turn the ignition key to the "ON" position and wait 10 seconds for the machine's warning light to turn red.

Pairing with the Remote Control

- Press the green "A" button on the left side of the remote control once.
- The green flashing light on the machine will immediately start blinking, indicating that it is ready for detection.
- The remote control will automatically begin searching for the receiver: after a few seconds, the blue LED on the remote will start blinking.
- When the blue LED on the remote is blinking, press the "A" button again to complete the pairing. Both LEDs on the remote will turn solid.
- The machine's light will turn green, indicating successful pairing.

Starting the Machine

- Press buttons A + B on the remote control simultaneously. The machine's LED will start flashing orange.
- Wait a few seconds for the small wheels to reset; once they stop, the machine is ready for use.

Machine drive

- Use the right joystick (G) to move the machine.
- Adjust the movement speed range using the speed selector lever (E) on the left hand side of the remote control (5 speed ranges are available).

Blades Activation (PTO)

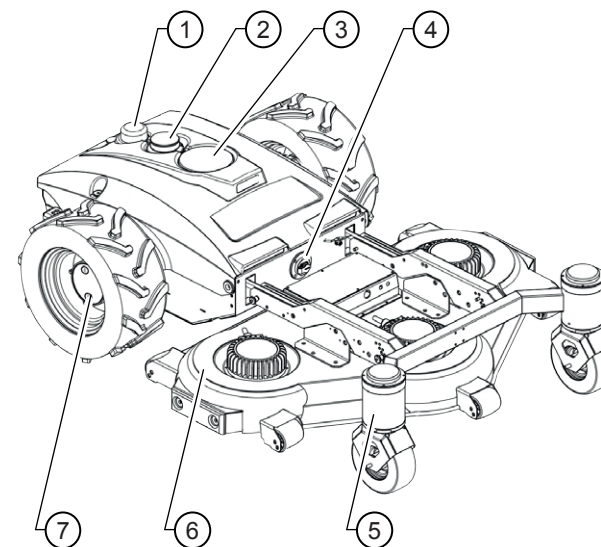
- Stand at a safe distance from the machine and press the PTO button (P) on the remote to activate it.
- Use the RPM lever on the remote control (Q) to adjust the blade speed. On the display, the green PTO indicator light will turn on when the function is active.

Blade Stop

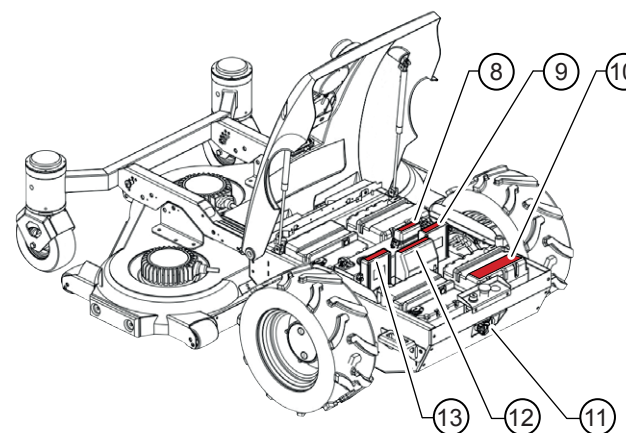
- Press the PTO button (P) again to deactivate the PTO. The indicator light on the display will turn white.

Machine Shut Down

- ❑ Turn the ignition key to the "OFF" position to switch off the machine.
- ❑ The remote control will automatically turn off after 30 seconds of inactivity.



1. Radio Antenna
2. Beaconnect
3. GPS antenna
4. Implements power socket
5. Steering wheel
6. Mowing Deck
7. Planetary drive motor

Fig. 11

8. Fuse box
9. Vehicle control unit
10. Battery unit (swappable)
11. Charging socket
12. Radiocontrol receiver
13. GPS guidance system

Fig. 12

9.2 Control components - Radio transmitter

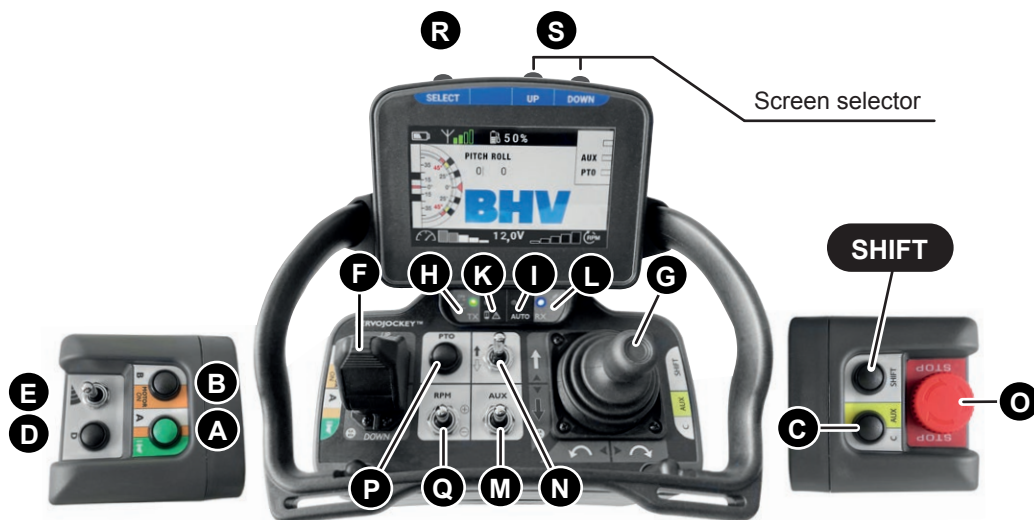


Fig. 13

- | | |
|----------------------------------|--|
| A Radio connect button | L RC link control light |
| B Enable start button (with (A)) | M Lever for the auxiliary action |
| C Auxiliary socket switch | N Reference switch for the drive direction |
| D D Button (for GPS function) | O Alarm switch (power shut down) |
| E Max Speed limiter | P PTO switch |
| F Not in use | Q Mowing blade throttle |
| G Drive control F./R. – L/R | R 5s: menu, select, 5s: exit |
| H Radio connection control light | S Window change; by menu: value change |
| K Low RC battery warning light | SHIFT 2° Function (GPS) |
| I “Autopilot” ready | |

Operators and maintenance personnel of this equipment must carefully read and fully understand all the instructions and recommendations contained in this manual before starting any operation and/or maintenance activity.

10.1 Safety Requirements Before Operating

- Ensure that the equipment is in perfect condition and that all accessories and protective systems are properly installed and fully operational.
- Ensure that the Fastening pin of the Mower deck are properly inserted.

When correctly installed, the cutting deck must have the connector properly and fully inserted, and the unit must be stable, without any undesired vibrations or movements of the deck itself.

Refer to the specific procedures for preparing the cutting deck, including height adjustment instructions.

- Keep the equipment clean and dry at all times: Obstacle detection sensors, Gps Antenna, Warn-ing labels should be clean to grant the safe operation. Avoid the accumulation of debris and cut-ting residues inside and outside the hood to prevent corrosion and allow better heat dispersion
- Always wear appropriate personal protective equipment (PPE) suitable for the specific tasks and associated residual risks, such as: face shield, hearing protection, protective gloves, and safety footwear.
- Check the condition of the working area. Keep unauthorized persons at a safe distance from the working area.
- Charge the main battery (see chapter 14) and ensure you have two charged batteries for the radio control and two for the RTK unit (if applicable) before starting any operation. An energy shortage during operations could create a dangerous situation that can be avoided.
- Check that the battery plugs under the bonnet are securely fastened.

10.2 Starting Procedure

To start the Mower follow these steps:

- Turn the ignition key on the dashboard on the top cover of the mower, and wait (10s) for the RED light to illuminate.
- Press once the green button “A” on the left-hand side of the radio control.
- When the Blue Led in the Radio Control lights up, press the green “A” button once again. The RED Beacon light should turn to Green (Safe Status).
- Press the Green “A” and the “B” button together on the left-hand side of the Radio Control to switch the machine to ENABLE Status and the Yellow light starts flashing.
- Move the Joystick or start the PTO with the PTO button to operate with the machine.

NOTE: Whenever the mower's status changes from "ENABLED" to "WORK," a fixed yellow light and an audible alarm will activate to warn that the machine is potentially dangerous.

NOTE: If the machine is inactive, it will automatically switch to 'Enable' status after 10 seconds. After 50 additional seconds of inactivity, it will enter 'Safe' status. To resume operation in this case, press the 'A' and 'B' buttons.

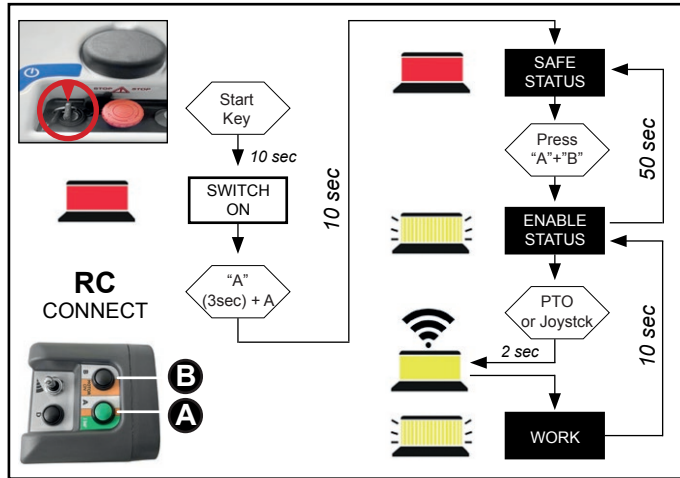


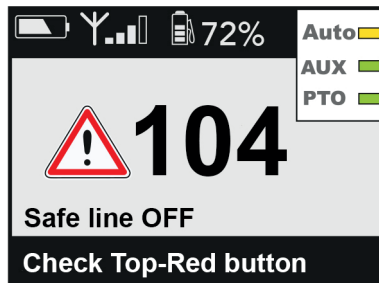
Fig. 14

10.3 Stopping Procedure and Emergency Stop (Ref. FIG. 4)

To suddenly stop the mower, press any of the emergency red button either in the Radio-Control or in the Mower dashboard. The energy cut-off will automatically enable the passive brake system and the mower will rest even in slope.

In case of normal stop it is recommend to move the machine in a solid flat ground before to stop turning the Start key to "OFF" position.

After pressed the Emergency Switch or turn the Key in "OFF" position wait at least 10 second before to approach to the mower. This time is necessary to the braking system and to the Blades to stop.
Before to approach to the Mower be sure that the Key is in "OFF" position.



ATTENTION: When an emergency button is pressed, the safety circuit is opened and a warning message is shown on the remote control. To resume operation, first reset the circuit by manually unlocking the emergency buttons.

Fig. 15

11.1 Safety in the work area

It is mandatory to follow these rules to not create danger for the operator and for people, pets or things around the operation area.

- Operate only if you have a perfect control at your sight of the area of 20m radius around the machine, only. If this area is not visible, change your position.
- Do not allow any people or animal to approach the machine. A mis control of the drive can cause severe injury to the people or some object can be thrown out from the mower blade and hit somebody. The danger area is shown in FIG.7. Only the operator is allowed to stay inside the perimeter of 10 m Radius behind the mower only if he wears the Personal Protective Equipment prescribed



Do not allow for any reason the people to enter into the DANGER AREA (Grey Zone). This recommendation includes also the operator. Launched objects can cause severe injury.

- Check the working area to remove any object that can be danger for the machine.
- Place some warning tape or sign to alert people not to enter into the working area.
- Check the slopes and the soil conformation to identify some danger areas. Select the position to operate in order to have the best visibility and safer place.
- Avoid to perform maintenance in the work field because it is a dusty place. Moreover you get the risk to do excessive efforts and you don't have the necessary tools.

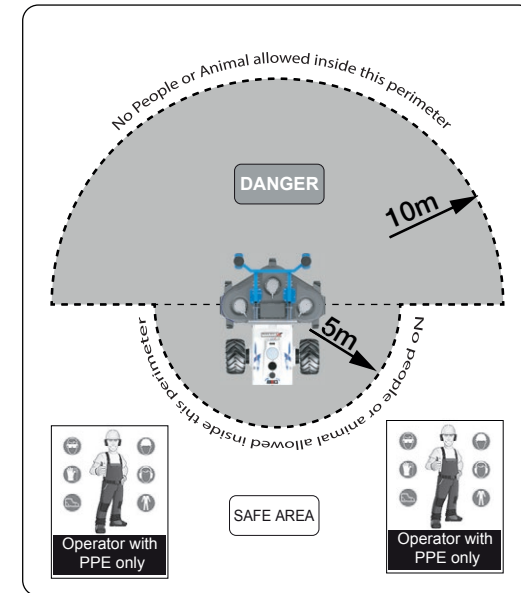


Fig. 7

11.2 Access To and From a Working Field

Particular attention should be paid to transport and access to the work area. Every loading, transporting, unloading, crossing of streets, steps, stairs and bridges carries a risk of its own, to which special attention must be paid. For the transport to the work field please refer to Paragraph 11.8.

11.3 Working on Slopes

It is advisable to work in the longitudinal way on slopes. We recommend the route shown in the left side of Fig.16.

If it is necessary to work with the path shown on the right side of Fig.16, the transmission components will overheat and the working speed will be significantly lower.

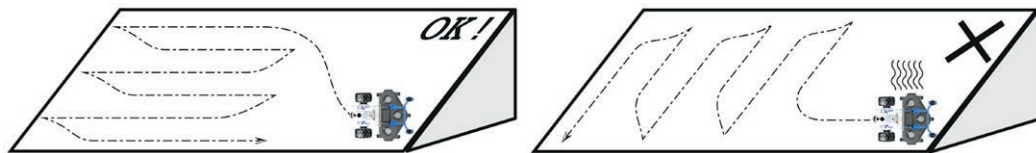


Fig. 16



IMPORTANT! The auto-steering front wheels provide stable and safe driving, even on slopes, by helping to correct the vehicle's trajectory. However, to ensure optimal GPS guidance, it is recommended not to exceed a 60% grade.

11.4 Reversing the Drive Direction

Check that the lever (FIG. 17) is in the upper position. This lever reverses the motion. To move the machine forward, move the joystick (G in Fig 13) gradually and continuously forward. The machine will advance. The joystick controls both speed and direction, allowing for easy, one-finger control.



Fig. 17

When the mower is moving **toward you**, the steering directions on the joystick feel inverted:

- Pushing the joystick **right** will make the mower turn **left**.
- Pushing the joystick **left** will make the mower turn **right**.

To simplify control in this situation, you can **reverse the joystick steering function**. This adjusts the controls so that the mower turns in the same direction you move the joystick, even when it is approaching you.

Refer to Fig. 18 for instructions on how to activate this setting.

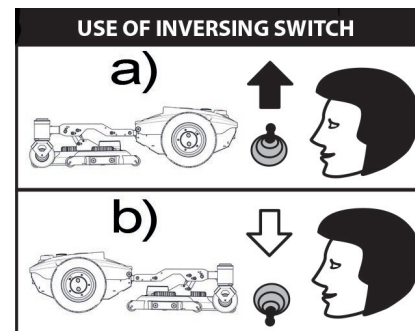


Fig. 18

11.5 Cutting Height Adjustment



WARNING: Before performing any adjustment, turn off the mower and wait for the blades to come to a complete stop. Push the emergency button before approaching the mowing deck.



IMPORTANT: Always verify that the selected height is identical on both sides to prevent unbalanced loads or potential damage to the pins or frame.



IMPORTANT: When cutting thick, tall grass, set the cutting deck to 100mm from the ground. This helps prevent clogging and improves cutting performance. If the grass is still too high after the first cut, perform a second pass at a lower setting.

Adjustment steps

- a. push the lever downward to lift the deck and release pressure from the pin.

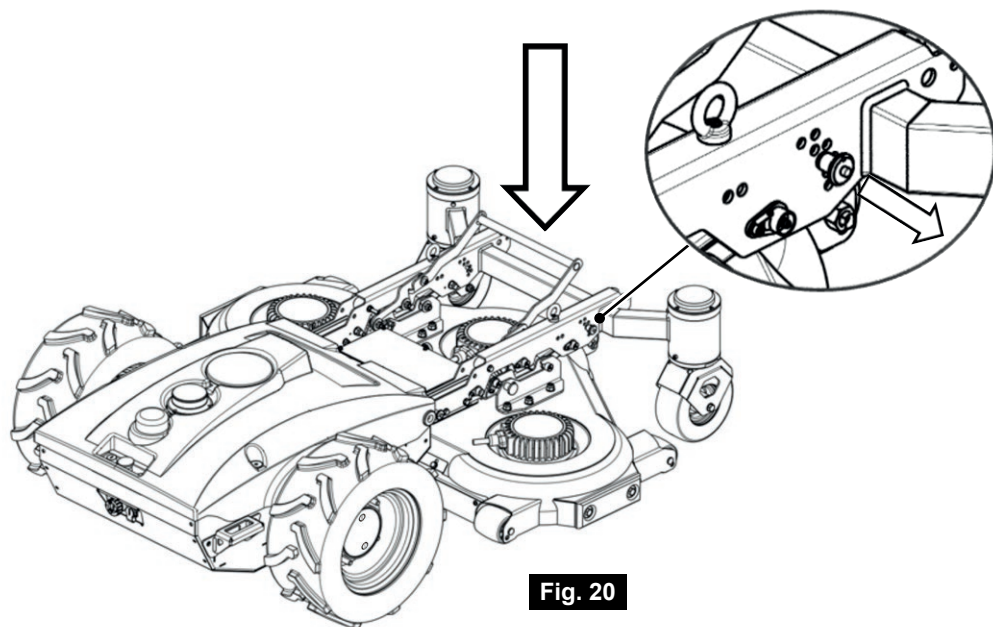


Fig. 20

- b. To remove or insert the pins, press the button on the pin head (Figure 20), which unlocks a safety mechanism that prevents accidental extraction during machine operation.

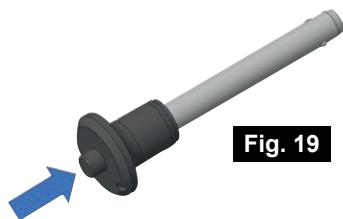


Fig. 19

- c. The cutting height of the mower is adjusted manually using two adjustment pins, inserted into a series of holes located on the front part of the deck support frame (Figure 21). The holes system allows for height adjustment in 10 mm increments. The total cutting height range depends on the type of deck installed:

- **Mulching version: from 20 mm to 100 mm**
- **Rear discharge version from 70mm to 120mm**

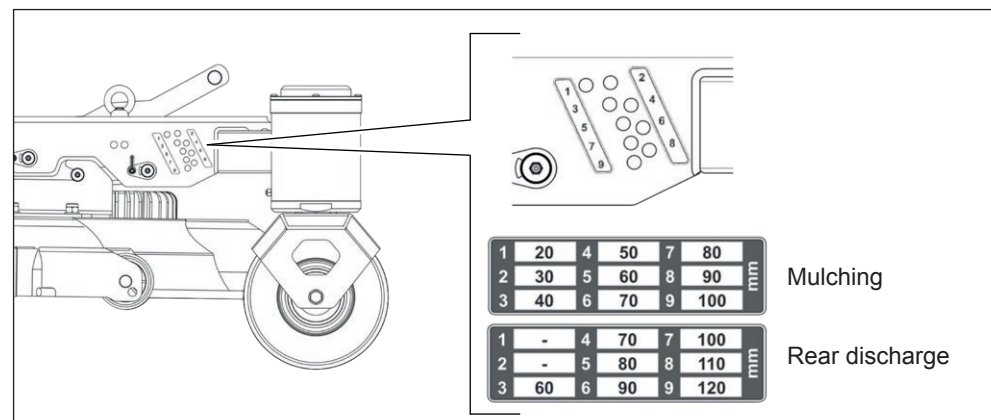


Fig. 21

- d. At this point, the pin can be **easily removed and reinserted** into the hole correspond-ing to the desired cutting height.
- e. After repositioning the pin, **gradually release the lever** and remove it from the slots.

11.6 Use of Compass Servo Drive (Optional in PRIMA version)

The machine is equipped with a driver-assist system that significantly simplifies operation. It greatly enhances **operator safety** by reducing the need to remain close to the machine while still ensuring precise control. The system allows for minimal overlap between passes, maximizes the effective cutting width, and consequently improves overall machine **productivity**. It also ensures **high-precision** work over long distances.

The basic functions are described below. For detailed and advanced features, please refer to the Compass Servo Drive manual.

- **How to start the servo drive**

To be able to work with the Servo Drive please follows these steps:

- Define a valid path (see next section). When the route is defined, the yellow light on the radio control lights up and the message "AUTO" appears on the display
- Move the machine inside the defined path.
- Press the "SHIFT" button (Fig.13) for 2 seconds. The machine begins to follow the defined path
- If the remote-control joystick is touched, the ServoDrive disengages automatically and the operator regains control of the machine.
- By moving the machine back in the defined path (the LED and the word "AUTO" reappear) and pressing the SHIFT key for 2 seconds, the machine resumes the work it had previously interrupted.

- **How to define a valid path (Fig. 22)**

It is necessary to determine the appropriate mode for the work to be performed and to press the buttons in the order shown. The Shift, A, B and C keys are those shown in Figure 13.

- **For a rectangular field use mode 1.**

Place the mower in the first left corner of the field. Press SHIFT + A. The yellow LED flashes to indicate that learning has started. Move the machine to the end left corner of the field and press SHIFT + B. The LED stops flashing and shows that we have defined a VALID ROUTE.

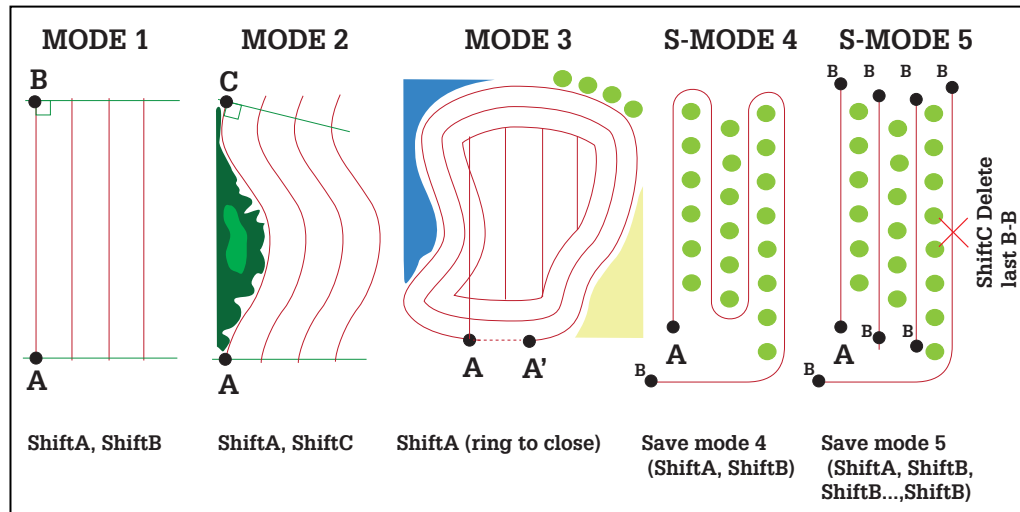


Fig. 22

11.7 End of Operations

- After each use, clean the mowing deck to prevent debris buildup and inspect the condition of the cutting elements. (Ref to paragraph.12.5)
- If any element is damaged or broken, replace or repair it immediately to prevent accidental reuse.
- Recharge the battery (Ref to paragraph.14)

Store the equipment in a safe location, protected from impacts and exposure to weather conditions.



When connecting the equipment to the battery charger, ensure it is placed in a suitable, clean, and dry location, protected from weather conditions and from possible impacts or in-terference caused by other activities.

11.8 Transport and Storage Conditions

Environmental conditions for transport: -20°C to +65°C

Environmental conditions for storage: Store in a dry and cool place (ideal temperature 10-20°C, humidity <75%).

Loading onto or unloading from a truck

When loading the front mower onto a truck, turn off the truck's engine, apply the truck's parking brakes, and chock the wheels to avoid unexpected moving of the truck or trailer. To load the machine onto a truck, fully lift up the mower deck and move straight forward at low speed. Drive on reverse when unloading it from the truck or trailer. Use ramps with the same or better specifications mentioned below.

Specifications of the ramps

- Length: more than 4 times the height of the platform of the truck
- Width: more than 30 cm
- Required quantity: 2 ramps
- Capacity (one ramp): < 200Kg each
- Ramps should have: anti-skid surface

Park the truck on solid and flat terrain. Bind the machine to the truck or trailer using the hitch points shown in the picture below. If the working area is difficult to access, equip the truck with a lifting hook which can position the Mower on the working zone. The machine is provided by hanging hook to be placed on the working ground by a truck crane. The machine weight is more than 200 Kg. Be sure to use belts and hook with a proper loading capacity.

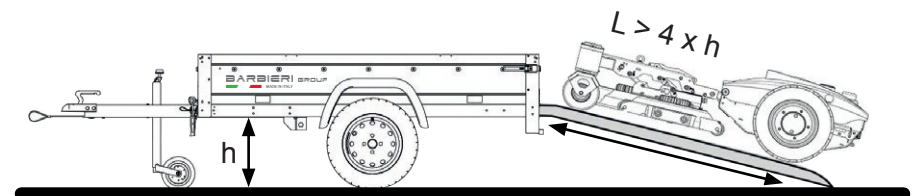


Fig. 23

WARNING!

The use of the machine must never be left unattended.
The operator must remain present and alert during operation, after delimiting the working area and setting up adequate safety measures to prevent unauthorized persons from entering the operating zone.

WARNING!

EVER USE COMPONENTS, ACCESSORIES, PRODUCTS, OR SUBSTANCES THAT HAVE NOT BEEN AUTHORIZED BY THE MANUFACTURER.

Do NOT use flammable or hazardous substances for operating, maintaining, or cleaning the device.

WARNING!

ALWAYS CHECK THE CONDITIONS OF THE AREA where operations are carried out and verify the presence of any installations, conductors, or structures that may pose potential hazards.

CONTACT WITH LIVE ELECTRICAL LINES CAN CAUSE SERIOUS INJURY OR DEATH.

11.9 Specialised Mowing Decks - Applications

The lawn mower is a radio-controlled and self-propelled machine (equipped with a rechargeable battery pack) designed for the semi-automated mowing of lawns and collective green areas.

Depending on the cutting deck installed on the mower, the mower can be used in various operational contexts, optimizing performance according to ground conditions and vegetation type.

MULCHING DECK

Designed for private and public green areas requiring frequent and high-quality maintenance. The mulching system finely chops the grass and evenly distributes it on the ground, promoting natural fertilization and eliminating the need for collection.

Typical applications:

- Sports fields and football pitches
- Public parks and recreational areas
- Resorts, hotels, and tourist complexes
- Golf courses and premium residential lawns

REAR DISCHARGE DECK

Intended for low-maintenance areas with taller, thicker grass or mixed vegetation. When equipped with the forestry cutting deck, the XCROSS can operate safely and efficiently on rough terrain and in dense vegetation.

Typical applications:

- Embankments, ditches, and slopes
- Uncultivated or border agricultural areas
- Hilly or wooded terrain
- Hard-to-reach areas for conventional mowers

12 IMPROPER USE / REASONABLY FORESEEABLE MISUSE



Reasonably Foreseeable Misuse of the Product The following rules are provided to describe and help prevent the most common improper and hazardous uses of the equipment. Since it is impossible to predict every potential danger, these rules are not sufficient to guarantee total safety. It is therefore strongly recommended to exercise maximum caution in all circumstances.

- Do not operate the equipment unless you are certain that the work area is free from energized electrical cables or pressurized pipes.
- Do not operate the equipment in confined or poorly ventilated areas. Exercise extreme caution if, even outdoors, unusual odors are detected, as they may indicate the presence of gas or harmful vapors.
- Do not operate the equipment if it is damaged, defective, or missing any parts.
- Do not allow untrained personnel or individuals who have not read this manual to operate the equipment.
- Do not operate the equipment unless you are in good physical and mental condition.
- Whenever possible, avoid working alone. Ensure that someone is always aware of your location and the work being performed.
- Do not point or direct the equipment toward coworkers or other persons.
- Do not place your face or body close to the cutting deck, from which debris or foreign objects may be projected.
- Do not connect or operate the equipment using power sources of unknown characteristics or parameters.
- Do not operate the equipment without protective devices and guards in perfect working condition - serious injury may result.
- Do not operate the equipment while wearing loose clothing, jewellery, necklaces, or with long hair untied, as these may become entangled in moving parts and cause severe injury.

Use Not in Compliance with the Instructions

The installation and use of the XCROSS radio-controlled lawn mower in a manner that conflicts with the prescriptions and instructions contained in this manual shall be considered improper use.



In particular, it is **STRICTLY FORBIDDEN** to use products or components other than those approved by the manufacturer, and it is **ABSOLUTELY FORBIDDEN** to use flammable and/or potentially hazardous substances during operation and/or cleaning.



During operation, it is **NEVER** permitted to remove protective enclosures and/or carry out interventions on internal parts.

The equipment must never be immersed in or used within hazardous liquids for any reason. For cleaning, use a water jet on the cutting deck and a damp cloth with non-corrosive and non-aggressive cleaning products suitable for the machine's surfaces and internal parts.

Incorrect Replacement of Overcurrent Protection Components

Always replace components according to the maintenance instructions.

This manual and the identification plate provide detailed information on the product characteristics and on the correct replacement procedures.

Tampering with Protective Devices

It is strictly forbidden to tamper with or disable protective devices, or to remove guards, filters, or any other parts that are an integral component of the XCROSS lawn mower.

Use in Unapproved Environmental or Operating Conditions

Environmental or operating conditions other than those specified in section 6.2 of this manual require additional or alternative installation solutions not covered by this document.

Such conditions **MUST** be evaluated and approved in advance by the manufacturer, who is not obliged to accept non-compliant configurations.

Failure to Replace Damaged or Worn Parts / Improper Maintenance

Immediately replace damaged or worn parts in accordance with the maintenance instructions.

The power cable of the battery charger and/or the cutting deck must be replaced immediately if any signs of wear or damage are detected.

Perform maintenance operations strictly according to the manufacturer's instructions, and whenever necessary to ensure proper and safe operation of the equipment.

13.1 Introduction

Extraordinary maintenance **MUST** be carried out exclusively by specialized operators. Ordinary maintenance includes the **cleaning and care of the device**.

Always ensure, before removing protective covers or intervening on electrical components, that the equipment is disconnected (isolated) from the power supply and that the supply cannot be unexpectedly restored.

For the safe and proper operation of the device, it is **MANDATORY** to perform all maintenance, cleaning, and inspection operations regularly and carefully. Proper maintenance ensures that the product operates with its designed performance and characteristics throughout the service life of the radio-controlled lawn mower.

13.2 General Maintenance

In the event of a malfunction due to overload or short circuit of the electrical equipment, once the cause of the fault has been identified and eliminated, replace the internal components with original spare parts of rated specifications as indicated in this manual.

Periodically inspect and replace, if necessary, the wearing parts of cutting system, as well as conductors, if they show signs of damage or wear.

Immediately replace any damaged or worn parts to prevent risks during operation or maintenance.

The replacement of internal parts of the equipment must only be carried out using components of the same brand and model, or alternatively of identical type (contact the manufacturer for confirmation).

WARNING:



The replacement of a faulty component with one of a different type and/or rated parameters, contrary to the specifications provided in this manual, may cause malfunctions, overheating, and/or serious hazards to persons and property.

13.3 Routine Maintenance and Cleaning - Caring for the Equipment

Clean the device periodically and/or after each use.

Wipe the equipment with a soft cloth and a mild cleaning solution.

Never immerse the device in water and/or any other liquids.

Do not use strong acids or aggressive chemicals, as these may attack and damage the parts of the device.

Gently remove dust from components and connectors using a soft brush.

If assistance is required, contact the dealer.

Cleaning the equipment is essential for proper operation.

A clean machine allows immediate detection of defects or possible causes of malfunction. A clean unit is also more comfortable for the operator and ensures better operating efficiency.

13.4 Periodic Controls

Each time the equipment is used

- Check all screws, accessories, and components to ensure they are properly installed and in good working condition.
If any defect or malfunction is found, stop operation immediately and report the fault to prevent the equipment from being inadvertently reused.
- Clean the equipment and cutting deck after each use.
- Carry out a general inspection of the equipment.

13.5 Blade Maintenance

13.5.1 Blade Inspection:

Follow the mowing deck tilting procedure to access the bottom of the cutting deck.

Wash the underside of the mowing deck using a high-pressure washer, taking maximum care to control the direction of the water jet.

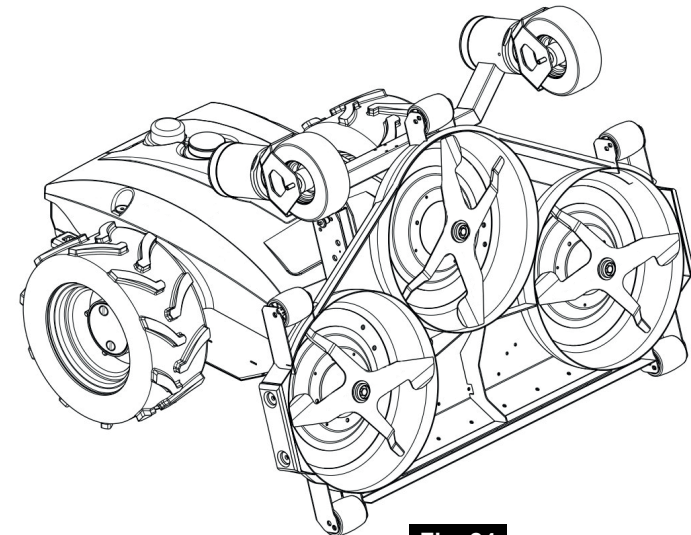


Fig. 24

13.5.2 Cutting Deck Tilting Procedure

To perform cleaning or maintenance operations on the underside of the cutting deck, the mower can be placed in "service mode", allowing the deck to be tilted forward.

Follow the operational steps below:

WARNING:

Before performing any work, switch off the mower and wait until the blades have come to a complete stop. This procedure must be carried out only with the machine **TURNED OFF**.

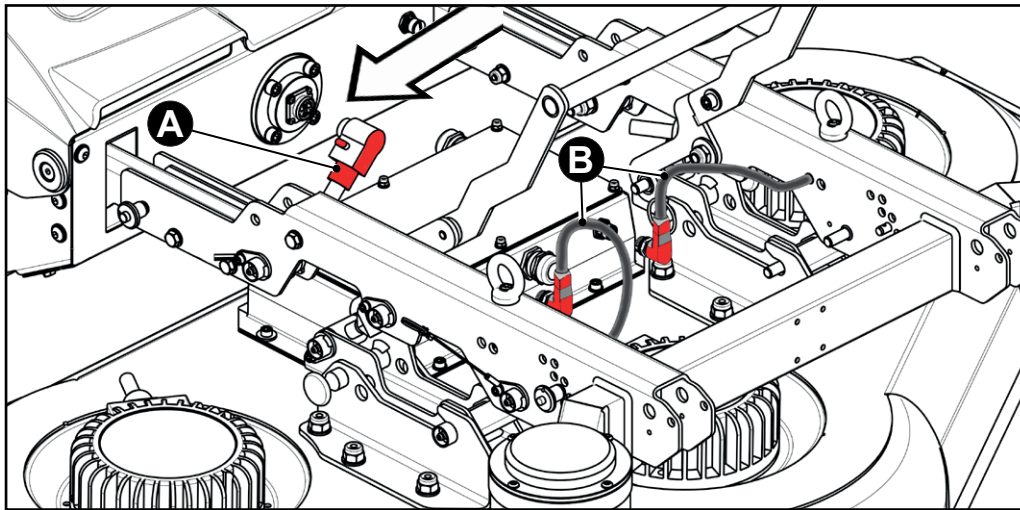
A. Disconnecting the cables from sockets (A) and (B) (Fig. 25)

Disconnect the electrical connection between the cutting deck and the main body of the mower to eliminate any electrical risk during handling.

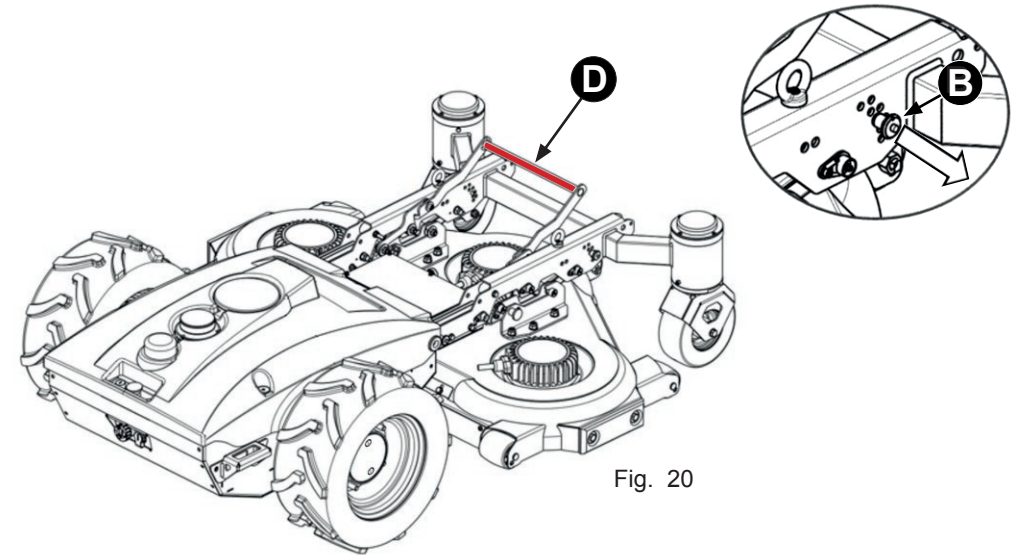


WARNING: For safety reasons, cables (A) and (B) are intentionally short; therefore, it is **MANDATORY** to disconnect them from the machine body and the cutting deck before tipping the deck over.

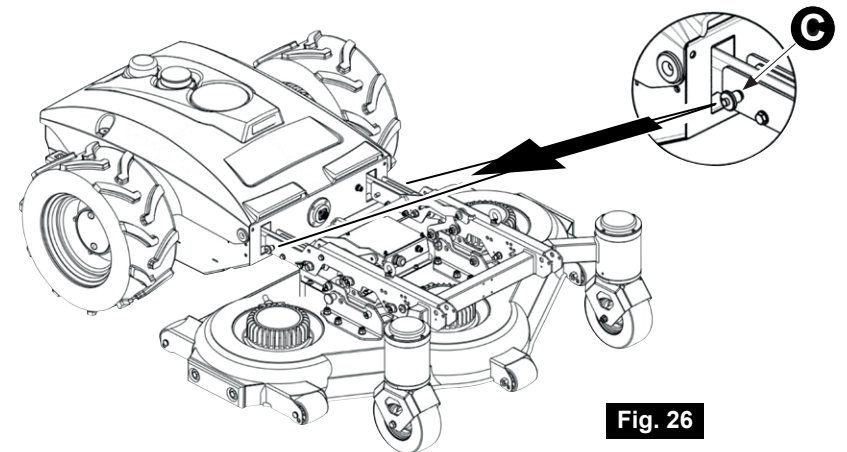
Failure to disconnect them may damage the connectors..

**Fig. 25****B. Lower the mowing deck to the ground**

To reduce the deck's weight and make handling easier, lower the mower deck fully to the ground. Push down the lever D to lift up the deck and release pressure from the pins. Remove the two pins (B) and release the lever (D) until the deck touches the ground.

**Fig. 20****C. Removal of locking pins (C)**

Once the weight of the deck is released to the ground, remove the two locking pins (C) located at the joint between the deck frame and the main body of the mower.

**Fig. 26****D. Tilting the deck**

Tilt the deck forward until it reaches the vertical position, ensuring that the support bushings inside the frame make contact with the support arms from the main body. This position ensures stability and safety during maintenance operations.



WARNING! Always remember to secure the Service Mode Position by inserting the locking pin (C) as shown in fig. 27.

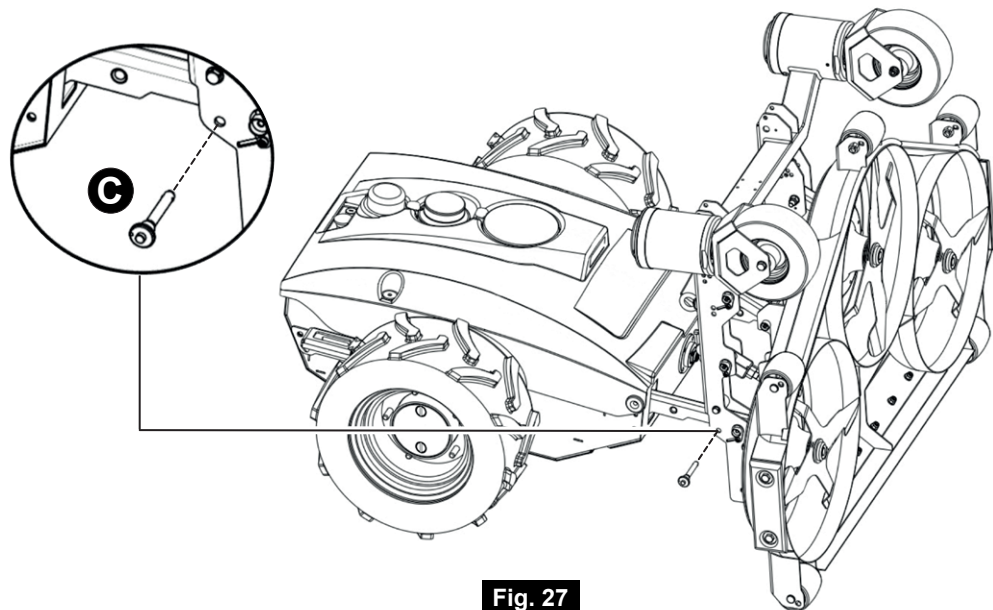


Fig. 27



WARNING: Never work under the deck unless it is securely locked in the vertical and stable position. Always work on a flat surface and in maximum safety conditions.

E. Restoring the deck to the working position

- Returning the deck to horizontal
Carefully tilt the deck back from the vertical to the horizontal position, ensuring that it is properly aligned with the mower's main body.
- Reinstallation of pivot pins
Reinsert the two pivot pins between the deck frame and the mower body. Once secured, the deck is again firmly connected to the mower's structure, ensuring stability and functional integrity.
- Height adjustment reset
Using the provided lever, restore the desired cutting height by reinserting the adjustment pins into the corresponding slots on the deck frame.
- Reconnecting the electrical connector
Reconnect the electrical connector between the deck and the mower body. Ensure the connection is secure and free of play.



IMPORTANT: Always verify that all pins are properly installed and the connector is **securely** fastened before restarting the machine.

13.6 Cutting Deck Adjustment Procedure

The cutting deck flotation system is based on an articulated parallelogram mechanism, consisting of two connecting rods, one of which has an adjustable length.

- Under standard conditions, the distance between the bushings of the two rods is 100 mm.
- Over time, any play or misalignment due to wear can be compensated by adjusting the variable-length rod.
- This adjustment also allows the tilt of the deck relative to the ground to be fine-tuned, optimizing performance according to the type of deck installed.



IMPORTANT: For the Mulching version, a tilt between 0.5° and 1.2° is recommended, with the rear of the deck slightly higher than the front.

Adjustment Steps



WARNING: All operations must be performed with the mower turned off and the blades completely stopped.



IMPORTANT: The tilt adjustment must be carried out equally on both sides of the deck to ensure correct symmetry and uniform leveling.

A. Remove the height adjustment pins

Using the provided lever, remove the two front height adjustment pins. Ensure that the anti-scalp rollers are in contact with the ground to fully offload the deck's weight.

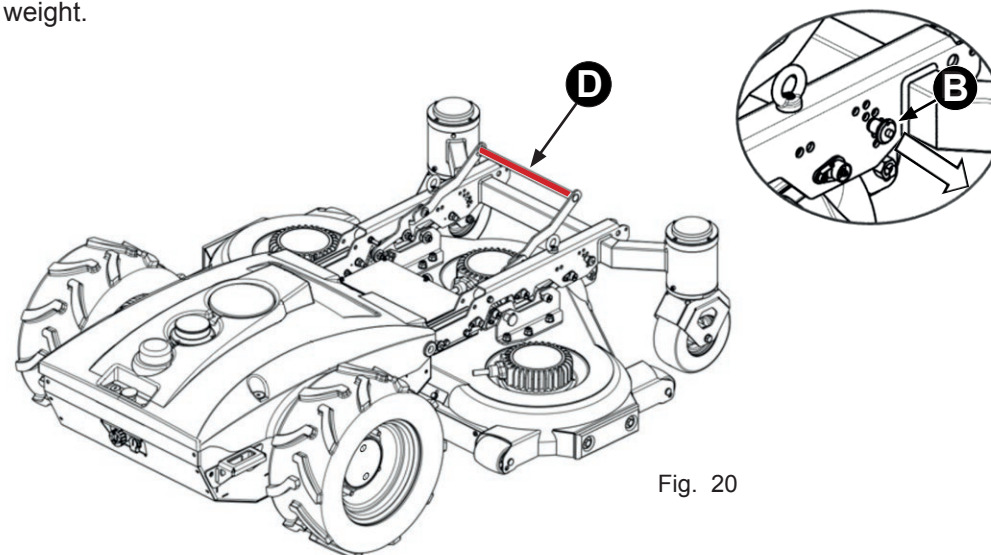
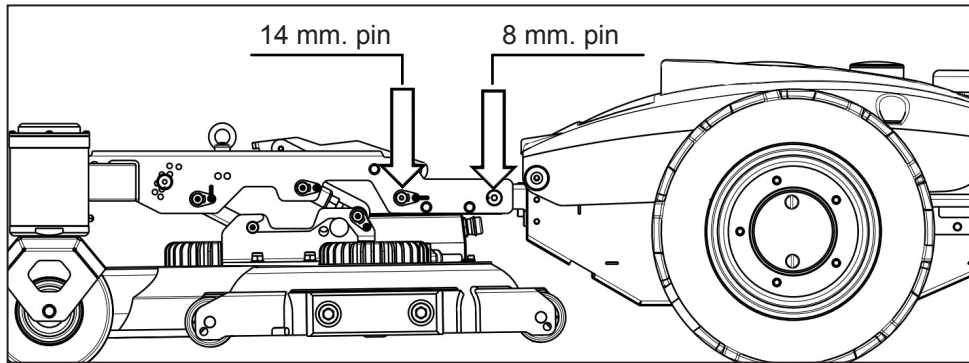


Fig. 20

B. Remove the adjustable rod locking pin

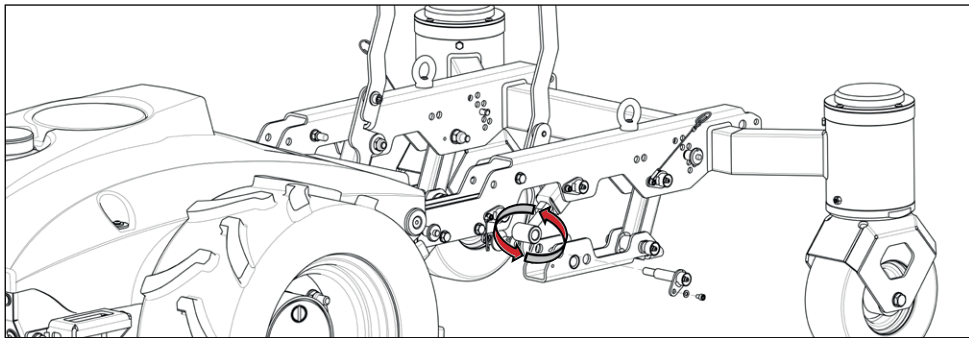
Remove the 14 mm pin located at the threaded rod section of the variable length connecting rod.

**Fig. 28****C. Adjust the length of the rod**

Rotate the threaded rod to change its length:

- Tightening (clockwise): shortens the rod
- Loosening (counterclockwise): lengthens the rod

Each half-turn of the threaded rod changes the rod length by approximately ± 0.75 mm, directly affecting the tilt angle of the deck.

**Fig. 29****D. Reinstall the rod locking pin**

Once the desired adjustment is achieved, reinstall the pin in its original position and ensure it is properly tightened.

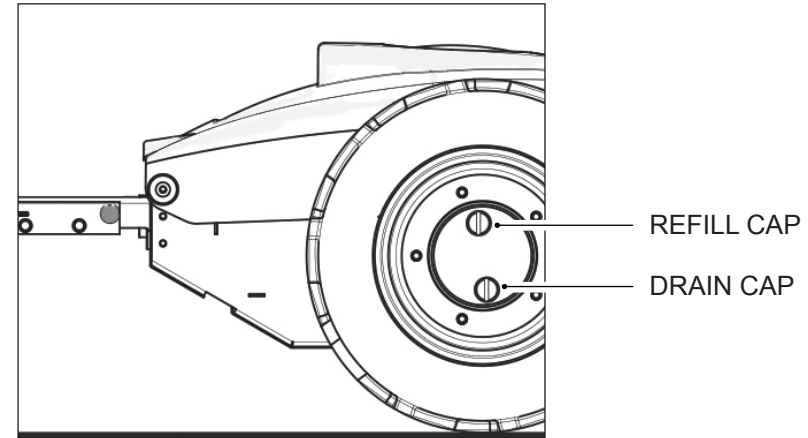
E. Restore the cutting height

Reinsert the height adjustment pins into their respective holes using the provided lever, and bring the deck back to the desired working height.

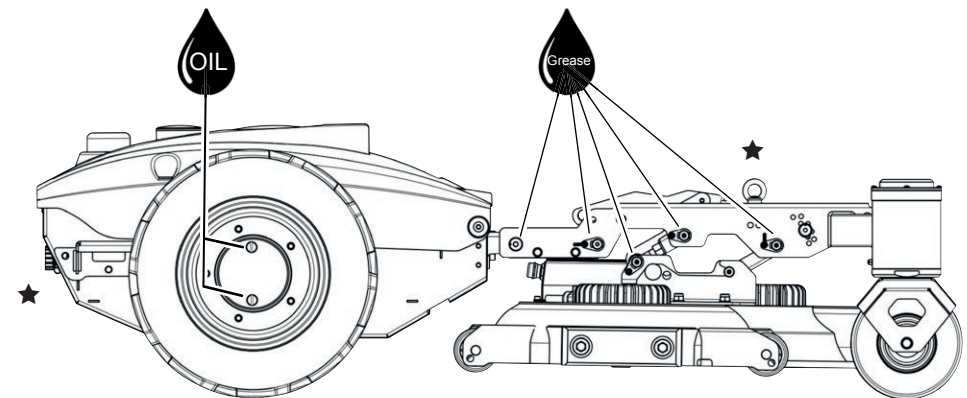
13.7 Cleaning and Lubrication Program

This electric mower is designed to be maintenance-free, but it's important to keep it clean after each use.

For cleaning, a stream of compressed air is always preferable to a water jet, which can damage electrical component.

**Fig. 30**

Grease Point. The lubrication points are in the Mower deck pivoting pins, only. Keep these pins lubricated with grease.

**Fig. 31**

Gearbox oil replacement

The wheel motors have a reductor gear in oil bath. The oil level should be checked in case of leakage, only.

In this case and every 500 working hours the oil should be replaced. To replace the oil follow these steps:

- **Position the mower:** Place the mower horizontally as illustrated in the figure. Place a suitable drain pan beneath the mower to catch the old oil.
- **Drain old oil:** Remove both screws to allow the oil to drain completely.
- **Refill with new oil:** Once the oil has finished draining, securely close the lower cap. Using a funnel or pipe, refill the oil to the specified level.

Oil type: **EP85W/140**

Oil quantity for each motor: 150 ml

13.8 Maintenance of the Electrical Components

Store the equipment and its accessories in a safe, dry location, protected from impacts and weather exposure.



Leaving the device exposed to direct sunlight may cause damage and premature wear to the electrical components and batteries, which must not exceed their specified operating and storage temperature limits.



Regularly check the condition of all cables and electrical connections related to the device to ensure proper conservation and safe operation

Please refer to the following chapter for detailed instruction on battery handling and maintenance.

14. BATTERY HANDLING AND CHARGING

WARNING: Lithium batteries may pose a risk of fire or explosion if misused. A process known as thermal runaway can be triggered by using non-approved chargers, overcharging, or exposing the battery to high temperatures or physical damage.

14.1 Charging Hazards

- **Thermal runaway:** An internal reaction that causes a battery to overheat, leading to fire, explosions, and the release of toxic gases.
- **Overcharging:** Charging a battery for too long or with excessive voltage can cause overheating and fires.
- **Incorrect chargers:** Using a charger that is not designed for the specific device can lead to over-charging or overheating.
- **Physical damage:** Dropping, crushing, or piercing a battery can cause internal damage and short-circuiting, which can lead to thermal runaway.
- **Exposure to high temperatures:** High external temperatures accelerate battery aging and increase the chance of failure.

14.2 Safety Precautions

- **Use the correct charger:** Always use the charger that came with the device or an official replacement from the manufacturer.
- **Avoid overcharging:** Don't leave a device plugged in after it's fully charged. Disconnect it once charging is complete.
- **Check for damage:** Do not charge batteries that show signs of damage such as swelling, bulging, or leaking.
- **Charge in a safe location:** Charge devices in a well-ventilated area, away from flammable materials.
- **Avoid heat and moisture:** Do not charge or store batteries in direct sunlight or humid conditions.
- **Keep batteries away from all heat sources and flammable materials.**

**WARNING:**

Do not attempt to connect or disconnect any battery during the charging process.



To prevent electrical discharges that could damage the circuits, it is recommended to disconnect the charger from the power outlet before disconnecting or connecting the battery

14.3 Battery Cable Connection

The battery is equipped with an integrated connector. Follow the instructions below when connecting the battery:

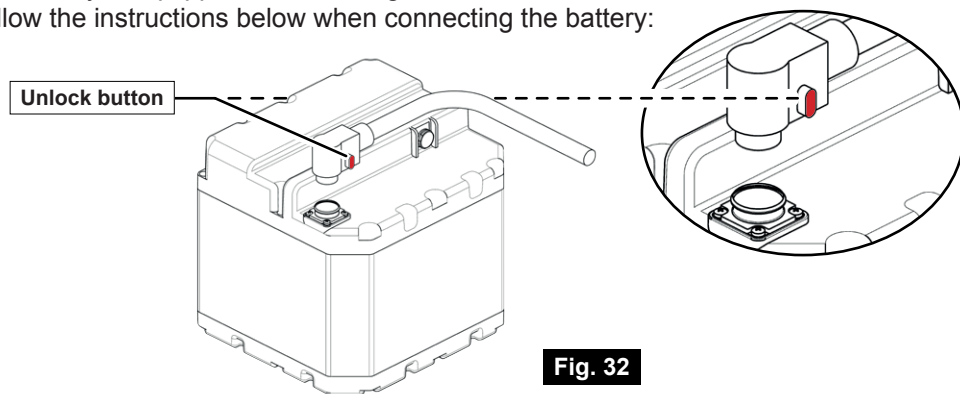


Fig. 32

- Each connector is equipped with a locking mechanism to prevent accidental disconnection (see Fig. 32).
- Before mating the connector, ensure that the power cable ends are properly insulated.
- Always verify that the connector is fully engaged and that the locking mechanism is securely latched.
- Never pull on the connector without first releasing the lock.

14.4 Essential Battery Management Guidelines

IMPORTANT. The mower is designed to operate with a maximum of four batteries.

For optimal performance, always ensure all batteries are at a similar state of charge (SOC). Using batteries that are charged to different levels can reduce cutting performance.

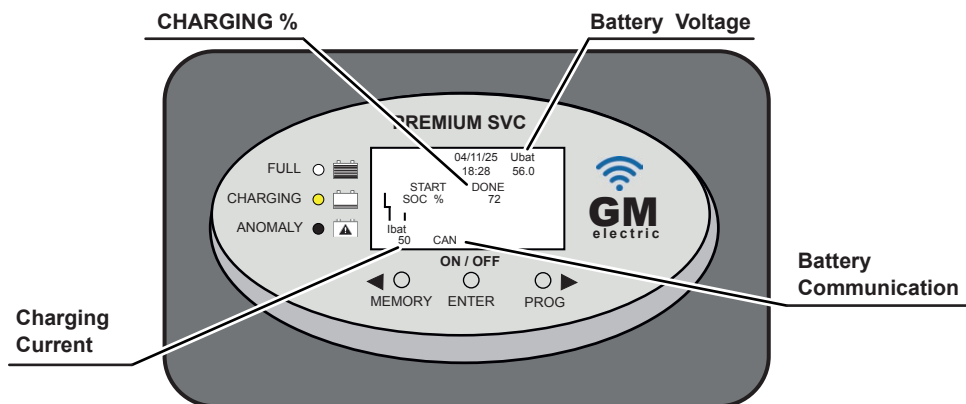


Fig. 33

Battery Management System (BMS)

- The built-in BMS automatically balances battery voltage levels.
- When a battery has a higher voltage than the others, the BMS will connect this battery as first until all batteries are balanced.

Performance and Charging

- Operating the mower with fewer than four batteries will reduce the available power.
- For the best and most consistent power, always perform a full charge after replacing one or more batteries.

14.5 Battery Recharging Procedure

To perform a correct recharge of the battery follows the instruction hereafter:

- Place the recharging station in a ventilated shaded area
- Use only the original charger with Can Bus communication
- The charging operation need a mitigate environment: $10^{\circ} < \text{temp} < 35^{\circ}\text{C}$
- Use preferably battery with the same age and charge level
- Do not recharge a damaged battery.
- Switch the key "OFF"
- Remove the sealing cap from the charging plug on the back of the mower.
- Connect the charger plug to the back of the Mowing unit.
- Connect the charger to the net and the charge will automatically start.
- Wait until the charger display shows the charge operation is completed.

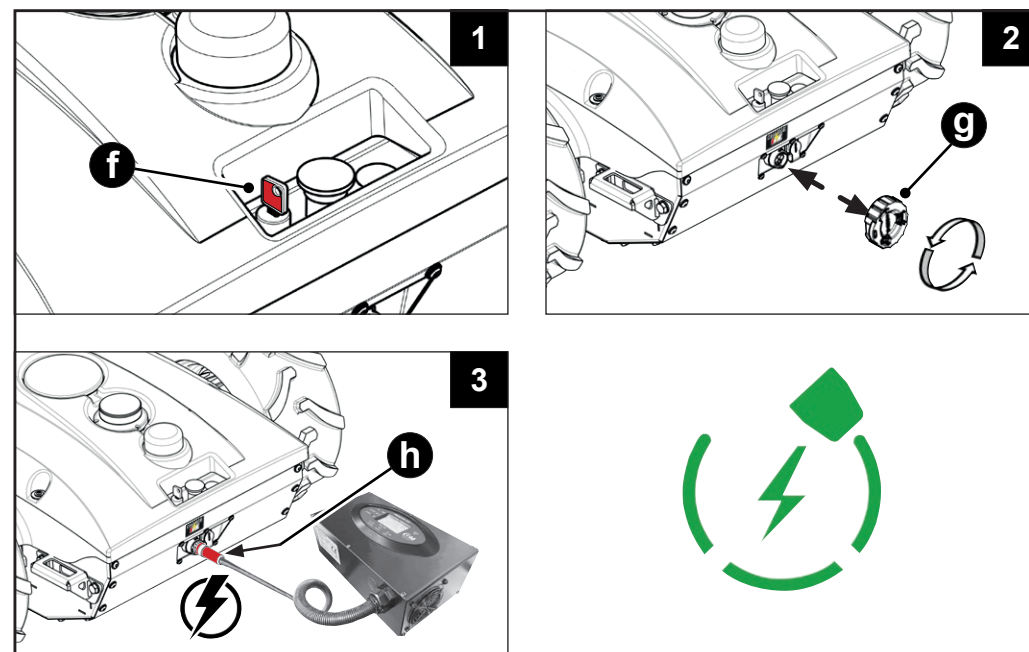


Fig. 34

15. SERVICE, REPAIR and WARRANTY PROCEDURES

The mower is a professional product and should be repaired only by qualified personnel. Repair operations may require special equipment, technical documentation, and instruments for checking electrical parameters, as well as appropriate testing tools for verifying proper operation.

Therefore, it is strongly recommended not to undertake complete disassembly of the product unless you are a qualified specialist and have access to professional tools and equipment.

15.1 Warranty Repairs

Repairs on products still within the warranty period must be carried out exclusively by authorized service centres.

Failure to comply with this requirement will automatically void the warranty. See full policy at section 19.

15.2 General Information on Repair

Although, as recommended, repairs should preferably be performed at an authorized service center, certain minor repairs may be carried out by other technicians.

In such cases, the following instructions must be observed.

Before Disassembly:

- Thoroughly clean the equipment to remove all dirt and debris.
- Prepare a clean and organized workspace, with paper, cloths, tools, and appropriate equipment such as: a compressed air gun, a rubber mallet, a brass pin punch, a vise with soft jaws, and a clean container to collect oil.
- Have available an exploded view drawing and parts list of the product.
- Plan ahead, considering that once the product has been disassembled, all exposed seals and gaskets should be replaced.



Do not attempt to repair hidden faults or defects whose nature is not fully understood.

If such a condition is suspected, do not disassemble the equipment, do not perform tests or experiments, and contact the nearest authorized service centre.

Pre-Repair Inspection

- Check that the equipment is complete and undamaged, and that all bolts and fasteners are correctly installed and properly tightened.
- Verify that all the controls, as well as all safety systems and protective guards, are in good working condition, free from deformation, and in their original configuration.
- If any components have been modified, adjusted, or adapted, they must be discarded and replaced with new genuine parts.
- If any warning labels or safety stickers are damaged, illegible, or missing, plan to order replacements referring to the spare part catalogue.
- Inspect the cutting elements to ensure they are correctly oriented and not the cause of operational problems.
- Check the charging system and batteries for proper operation and condition.

Disassembly

- Try to memorize, as far as possible, the tightening torque and the original position of all screws and fasteners.
- Disassemble the relevant parts, taking note of their original placement and the orientation of the seals and gaskets.



The components of the mower are manufactured with the highest care and precision. Handle them with caution to avoid deformation or accidental drops, and always keep the work area perfectly clean.

Do not intervene on parts of the machine whose functioning details are not fully understood.

**INSPECTION OF ELECTRICAL COMPONENTS**

The electrical equipment must not be disassembled.

If the motors show any malfunction and/or other faults, the machine must be returned to the authorized service workshop for inspection and repair.

Access to the electrical parts of the equipment is permitted only to qualified electricians who are fully familiar with the functional details of the product and aware of the risks associated with working on live parts and on the machine's control and command systems.

15.3 Spare Parts and Authorized Service Support

The spare parts are specified in the component list and are identified by specific product codes.

Please refer to the Spare Parts Portal on the Barbieri Group website.

Available resources include:

- User manuals and spare parts catalogues
- Assembly and adjustment instructions
- Technical bulletins and updates
- Maintenance and safety guides
- Fault diagnosis tools
- Scheduled maintenance programs

16. TROUBLESHOOTING

16.1 Radio-controlled Error List

ERROR CODE	DESCRIPTION	WHAT TO DO
104	EMERGENCY LINE INTERRUPTED	Check Emergency switch
121	CAN2 DRV1 absent	System reboot
130	CAN2 DRV2 absent	System reboot
131	CAN2 DRV2 absent	System reboot
105	DRIVE1 disconnected	System reboot
107	MACHINE UPSIDE-DOWN	Turn the machine the right way up
109	12V BATTERY LOW	Charge 12V battery
111	HEAT LIMITER	Cool down the machine
112	BLADE OVERLOAD	Reduce the workload on the blades
113	BLADE STUCKED	Check the blades
150	RTK ERROR	

16.2 Motor Drive Error Codes

MOTOR DRIVE				
Driver1	Driver2	Driver3	DESCRIPTION	WHAT TO DO
200	300	400	Flash failure	Contact Service
201	301	401	Default Parameter	Contact Service
202	302	402	Default Protect	Contact Service
203	303	403	Reserved	Contact Service
204	304	404	Overloaded	Reduce Speed
205	305	405	Overvoltage	Check resistor
206	306	406	Low-Voltage	Check Power Supply
207	307	407	Power Fail	Serious Drive Fault
208	308	408	Driver Temp.	Reduce speed
209	309	409	Motor Temp	Reduce speed
210	310	410	Resistor overload	Drive more smoothly
211	311	411	Internal Temp	Cool circuits
212	312	412	Regenerat.Circuit	
213	313	413	Overvoltage 12V	Check Battery
214	314	414	Undervoltage 12V	Check Battery
216	316	416	Brake error	Contact Service
218	318	418	Phase loss	
219	319	419	motor sensor	
220	320	420	sensor init err	Switch off - switch back on
221	321	421	curr.over-range	
222	322	422	Sin-Cos error	Check Motor Sensor
223	323	423	Overspeed	Contact Service
224	324	424	Generic Fault	
226	326	426	FieldBus Error	Check Driver Communcation
229	329	429	Externa Fault	
230	330	430	STO missing	
240	340	440	Motor Unplugged	Check cable

17. WARNINGS, PERSONAL PROTECTIVE EQUIPMENT AND RESIDUAL RISKS

17.1 Introduction

The radio-controlled lawn mower is safe when properly installed and used in accordance with the instructions described in this manual.

Operation is permitted only by trained and qualified personnel who have read and fully understood the contents of this manual.

17.2 Mechanical Hazards

When used correctly, the equipment does not present any **electric or mechanical hazards**. It is **strictly forbidden to dismantle or access the internal parts** of the equipment.

**IMPORTANT:**

Work on internal parts and electric components must be carried out EXCLUSIVELY by qualified personnel, and only after disconnecting the electrical supply from the batteries and/or the battery charger. For any doubts, always contact the manufacturer service department.

**WARNING!**

DISCONNECT THE ELECTRICAL SUPPLY FROM THE BATTERY CHARGER AND BATTERIES BEFORE OPENING THE ENCLOSURE OR ACCESSING INTERNAL PARTS!



17.3 Risks from Hazardous Substances and Products

The substances, materials, and fluids used or generated during operation may pose risks or health hazards.

Always handle such materials with care, using the personal protective equipment (PPE) specified in the safety data sheet (SDS) of the product in use.

As a general rule, always wear protective gloves and safety glasses or a face shield.

**WARNING. HANDLE WITH CARE THE PRODUCTS USED WITH THE EQUIPMENT.**

ALWAYS WEAR THE PERSONAL PROTECTIVE EQUIPMENT (PPE) SPECIFIED FOR THE PRODUCT IN USE (REFER TO THE PRODUCT'S SAFETY DATA SHEET).

Maintenance operations may only be performed by qualified personnel.

16.4 Safety Signs and Residual Risks

After evaluating the residual risks, the machine is fitted with the appropriate safety pictograms and warning labels to alert the end user to potential hazards during operation.



Handle sanitizing agents, detergents, and/or lubricants with care, **ALWAYS** using the **PPE (Personal Protective Equipment) specified in the corresponding Safety Data Sheets (SDS) - typically protective gloves, safety glasses or face shield, suitable clothing, and a respirator or mask when required.**

Do not release fluids into the environment.

Follow the instructions provided in the Safety Data Sheets and those issued by the respective prod-uct manufacturers.

During operation, do not inhale any dust generated by cutting activities. Avoid direct contact with the material being processed.

Cleaning and maintenance operations:

Do not inhale any aerosolized products.

Highly atomized liquid droplets can remain suspended in the air for long periods and are rapidly absorbed by the lungs.

Depending on the chemical substance being sprayed, this may cause serious injury or even death.

Do not use the equipment in the presence of hazardous, flammable, and/or unstable liquids.

It is essential to evaluate and be aware of any potentially dangerous interactions between the equipment and hazardous atmospheres.

Do not use any substances or products without the written authorization of BARBIERI Srl.

Cleaning and maintenance: Read the label of the chemical substance you intend to use and follow the instructions provided under the "Precautions" and "Directions for Use" sections.

If these details are missing, you must request from the manufacturer and/or distributor the instructions for use and safety precautions, including the required personal protective equipment (PPE) - such as respirator, mask, gloves, and protective clothing.



During cleaning and maintenance, keep the equipment placed on the floor or on a stable workbench to prevent risks to the operator and damage to the machine.

Wear the PPE specified for the task, suitable for the activities performed with the equipment.



Do not spray or atomize any flammable liquid in the vicinity of the equipment, even when it is not operating, as hot parts may present ignition risks and cause accidents.



Risk of hazardous fluid leakage or environmental pollution:

The fluids used must not be released into the environment.

Follow the established procedures for collecting any accidentally spilled fluids, in compliance with company procedures and local regulations applicable in the country of use.



Always wear the personal protective equipment (PPE) when operating the product.

During mowing activities, debris or hazardous objects may be projected from the cutting area.



Maintenance must be carried out only by qualified personnel, using authorized components and spare parts supplied or approved by BARBIERI Srl, particularly regarding the hydraulic motor and the related connection hose.



The operation of the equipment generates potentially hazardous levels of noise and vibration.

It is mandatory to wear PPE such as protective gloves and hearing protection during machine operation.

Refer to the values indicated in paragraph 6.3 of this manual for reference noise and vibration levels.

18. DISPOSAL

18.1 Introduction



WARNING: The equipment contains components and substances that must not be released into the environment or disposed of through normal household waste collection systems.

The product must be disposed of in accordance with applicable regulations governing materials containing substances that are potentially hazardous to the environment.

Deliver the equipment to be disposed of to the manufacturer and/or to an authorized recycling or waste collection center (such as a municipal or regional collection facility). For further information or clarification, please contact the manufacturer Barbieri Srl. Before disposal, drain all fluids from the equipment, using the appropriate personal protective equipment (PPE) and collect them in suitable containers for proper reuse or authorized disposal.

18.2 Battery disposal procedure

Prior to recycling, the battery should be completely discharged, the terminals must be taped and the entire battery should be inserted into a plastic bag. The battery must be recycled at an approved recycling facility only.

Please, refer to the specific regulation of the country.

18.3 Environmental compliance

Waste Hierarchy:

European legislation establishes a waste hierarchy, prioritizing prevention, reuse, recycling, and energy recovery over landfill disposal.

Separate Collection:

It is essential to separate the different components of the hydraulic product to enable correct treatment and recycling.

Specific Components and Disposal Methods

Hydraulic Oils:

Used hydraulic oils are considered hazardous waste and must be disposed of at authorized collection centers.

Never pour hydraulic oil into the ground, drains, or waterways.

Collect used oil in sealed containers and deliver it to a licensed hazardous waste treatment company.

Metal Components:

Metal parts (such as steel or aluminium) can be recycled.

Dispose of them at authorized metal recycling facilities.

Plastic and Rubber Components:

Check local regulations for the correct disposal of plastic and rubber components.

In many cases, they can be recycled through local plastic waste collection systems.

18.4 Recommendations

Perform regular maintenance of the equipment to extend its service life and reduce waste production.

- Whenever possible, use environmentally friendly lubrication oil.
- Stay informed about recycling and reuse programs promoted by industry organizations and manufacturers.

By following these recommendations, you will contribute to responsible waste management and the protection of the environment.

Do not release fluids or components into the environment.

At the end of the product's service life, the lubrication oil must be disposed of responsibly, in full compliance with current European environmental regulations.

Proper disposal helps reduce environmental impact and promote a circular economy.

19.1 Warranty Scope

All Barbieri Group - BHV products are covered by a limited 24-month warranty from the date shown on the sales document issued to the buyer, covering defects in materials and assembly processes.

Components with a reduced warranty period:

- 90 days: belts, tires, stickers, and other parts subject to normal wear and tear
- 180 days: tracks, electrical and electronic parts (e.g. circuit boards, relays, control units).

19.2 Warranty Limitations

The manufacturer's responsibility is limited to the repair or replacement of components found to be defective, only for the original purchaser and after technical verification at the manufacturer headquarters.

The warranty does not cover transportation costs to or from BHV authorized centers or the manufacturer's headquarters.

In case of defects related to the internal combustion engine or its components, the manufacturer will forward the claim to the engine manufacturer, who will manage the repair through their authorized service network.

The manufacturer reserves the right to modify or improve its products at any time without the obligation to update or adapt previous models to new versions.

19.3 Warranty Exclusions

The warranty does not cover:

- Damage during transport or shipping (entirely the courier's responsibility).
- Requests to replace the entire product due to customer dissatisfaction.
- Damage caused by improper use, negligence, accidents, or unauthorized modifications.
- Repairs done outside the authorised service network or without prior authorization.
- Costs related to transport, travel, pick-up/delivery, or product downtime.

19.4 Claim Procedure

Warranty claims must be submitted only through the Ticket Portal, accessible on the website www.barbieri-group.com.

1. Machine serial number
2. Date and number of the sales document
3. Date of the fault
4. Type and detailed description of the fault
5. Operating hours (for models with hour counters)
6. If applicable - List of replaced components, with Barbieri Group spare part code, description, and quantity

Deadlines:

- The claim must be submitted within 15 days from the repair date
- Full documentation (e.g. invoice, work order) must reach Barbieri Group within 30 days from the completion of the repair.

Incomplete claims or claims with incorrect information (serial number, model, part code, sale/repair date, customer data) will not be considered and may be rejected.

19.5 Labor and Reimbursement

- Labor is reimbursed based on Barbieri Group Flat Rates, currently set at €43.00/hour according to the reparation time table available in the Ticket Portal reserved area.
- Any exceptions to these rates must be requested and approved in advance by Barbieri Group Technical Support.
- Repairs done by unauthorized workshops require prior approval and documentation (invoice or work order).
- Costs for transportation, mileage, travel, diagnostics, pick-up, and delivery are not covered by the warranty.

19.6 Warranty Spare Parts

Replaced components under warranty are covered by a 90-day warranty from the repair date. To receive reimbursement, the warranty claim must include:

- Proof of purchase of the original Barbieri Group spare part
- Fault documentation (e.g. work order, invoice, receipt)
- Detailed description of the fault found

Obligation to keep replaced parts:

The buyer must keep the replaced parts for 90 days, labeled with:

- Request number
- Customer name
- Model and serial number
- Component code
- Repair date

After 90 days, if no further instructions are received from Barbieri Group, parts may be disposed of properly.

19.7 Return of Defective Parts

Defective parts cannot be returned without written authorization from Barbieri Group Technical Support.

In case of return approval, Barbieri Group will provide specific return instructions.

Barbieri Group reserves the right to suspend or cancel the warranty credit until the requested parts are received for inspection.

Failure to send the parts within 30 days may result in cancellation of the credit.

19.8 Resources and Support

For more technical information, updates, and support: visit the Spare Parts Portal on the BARBIERI GROUP website.

Available resources include:

- User manuals and spare parts catalogues
- Assembly and adjustment instructions
- Technical bulletins and updates
- Maintenance and safety guides
- Fault diagnosis tools
- Scheduled maintenance programs

19.9 Warranty Extension Period

If the customer purchases the 5-year warranty extension, labour costs and spare parts will be covered under the following conditions:

- The machine has not exceeded 2,000 operating hours.
- The failure is not caused by transport damage, improper use, negligence, accidents, unauthorised modifications, or incorrect repairs.
- The battery has been properly stored, charged, and handled according to the instructions.

In the event of a battery failure, the warranty claim will be validated only after a detailed battery analysis performed by the battery manufacturer.

19.10 EXTENDED BATTERY WARRANTY

The extended warranty is intended to protect the investment for a period of 5 years by covering the risk of any failures during the machine's depreciation period.

In addition to covering the cost of the main electrical and electronic components that may need to be replaced, this warranty also covers the batteries, which represent a significant expense in the event of failure.

The extended warranty is valid for **5 years or 1,000 charging cycles**, whichever comes first.

A charging cycle means one complete charge and discharge cycle. Partial cycles count as a fraction of a charging cycle.

The battery is a component that may be easily and prematurely degraded under **certain** specific conditions, which must be avoided throughout the battery's service life.

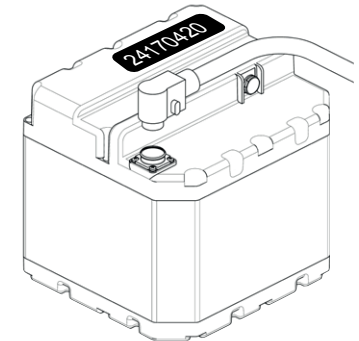
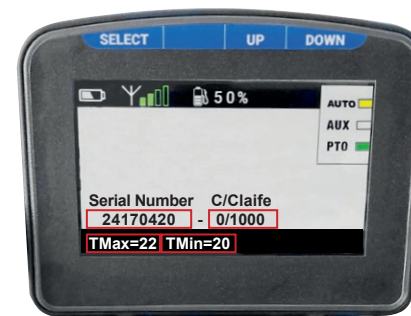
In particular

1. TEMPERATURES

The battery must not be exposed to:

- Temperatures above **65°C**
- Temperatures below **-20°C**

Exposure of the battery beyond these thresholds will automatically void the warranty.



It is possible to check the battery status from the remote control.

With the machine switched on, press the emergency stop mushroom button and then reset it. Then press buttons "B" and "C" simultaneously; the screen shown in FIG. 1 will appear.

From this screen, the following information can be viewed:

241710420: Battery serial number, shown on the upper part of the battery

0/1000: Life cycles used / total warranty life cycles

TMax=22: Maximum temperature reached by the battery, in degrees Celsius

TMin=20: Minimum temperature reached by the battery, in degrees Celsius

By moving the joystick up and down, it is possible to switch from one battery to the next.

2. ALARMS FOR ABNORMAL CONDITIONS

The BMS (Battery Management System) records when the battery operates under severe conditions that degrade the capacity of the cells. Each alarm of this type reduces the number of guaranteed battery cycles:

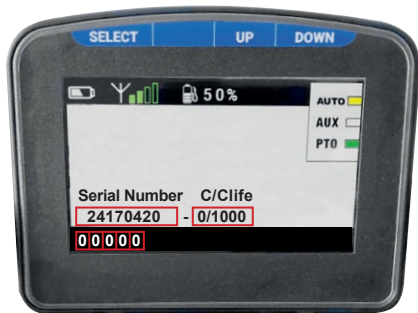
OT (Over Temperature): The battery has operated at temperatures above **45°C**. For each alarm, the service life is reduced by 5 charging cycles.

UT (Under Temperature): The battery has operated at temperatures below **-10°C**. For each alarm, the service life is reduced by 10 charging cycles.

UC (Under Charge): The battery has remained completely discharged, below 5%, for more than 5 days. For each alarm, the service life is reduced by 1 charging cycle.

When in storage, the battery loses an average of 1% charge every **5 days**; therefore, the recharging interval depends on the initial charge percentage.

→ With an initial charge of 50%, storage for 6 months is possible.



After pressing and resetting the emergency stop mushroom button with the machine switched on, pressing buttons “B” and “C” simultaneously will display the screen shown in **FIG. 1**.

By moving the joystick sideways, it is possible to switch to the screen shown in **FIG. 2**.

From this screen, the following information can be viewed:

A series of 5 indicators (**0-0-0-0-0**), where:

- The first indicates the number of complete charging cycles performed
- The second is **OT**: exceeding the upper temperature limit
- The third is **UT**: exceeding the lower temperature limit
- The fourth is **UV**: exceeding the minimum discharge limit
- The fifth is **UC**: days during which the battery remained with a charge level below 5%.

CE DECLARATION

EC-Certificate of Conformity



This declaration of conformity is issued under the sole responsibility of the manufacturer and issued on a voluntary basis according to the European Directive 2006/42/CE ann.2A

Manufacturer and depositary **BARBIERI Srl** - P.le Luigi Sturzo, 15 - 00144 Roma (RM) Italia w/
of the technical file: production site in Via Seccalegno, 23 - 36040 Sossano (VI) Italia.

Product: Radio controlled grassland mower

Model:	XCROSS
ID Number:	RC65*****
Year of production:	2026
Power:	kW 5
Mass (Kg):	189,7

The object of the declaration described above is in conformity with the relevant Union harmonisation legislation:

MACHINERY DIRECTIVE (MD) 2006/42/EC
ELECTROMAGNETIC COMPATIBILITY DIRECTIVE (EMC) 2014/30/EU,
RADIO EQUIPMENT DIRECTIVE (RED) 2014/53/EU
RESTRICTION OF HAZARDOUS SUBSTANCES (RoHS) Directive 2011/65/EU and amendment

Tested according to:

References to the relevant harmonised standards used or references to the other technical specifications in relation to which conformity is declared:

UNI EN ISO 12100
CEI EN 62841-1
IEC 61000-6-3:2020
IEC 61000-6-2:2016
EN IEC 61000-6-3:2021
EN IEC 61000-6-2:2019
EN 300 328 V2.1.1;
EN 300 328 V2.2.2;
EN 61326-3-1:2017;
EN 301 489-1 V2.2.3;
EN 301 489-17 V3.1.1;
EN 301 489-17 V3.2.4



Date: 14/07/2026

Director product services operations:



POWER PRODUCT