



FJD RM21

Autonomous Mower

User Manual

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Read Before Use:



To reduce the risk of injury, the user must read and understand this manual before using the mower.

Keep this manual properly for future reference.





Safety Instructions



This symbol indicates important safety instructions. Failure to follow these instructions could endanger the personal or property safety of the operator and others. Before operating the mower, read and understand all the instructions in this manual.

The severity of hazards may be assessed according to the following signal words.

Safety Symbol	Signal Word	Explanation
	DANGER	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
	WARNING	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
	NOTICE	(Without the safety symbol) Indicates a potential situation which could result in property loss.

 WARNING	<p>Before using the mower, ensure that you have read and understand all the safety instructions in this manual, including the safety symbols. Do not use the mower unless you understand all the safety warnings and instructions herein. The mower can only be used by people who have read, understand, and will follow all the safety instructions and warnings in this manual and on the mower, and have reached the minimum age required by local laws and regulations.</p>
 WARNING	<p>When operating the mower, always follow the basic safety instructions to reduce the risk of explosion, electric shock, fire, and other accidents that could result in serious personal injury.</p>
 WARNING	<p>California Proposition 65: Battery posts, terminals, and related accessories contain lead and lead compounds known to the State of California to cause cancer, birth defects, or other reproductive harms. See www.p65warnings.ca.gov for details. Wash your hands after handling.</p>
 WARNING	<p>Failure to follow the operation instructions could cause injury to the operator or others. The owner must understand all the instructions and only allow approved personnel who understand these instructions to operate the mower. The operator must be sound in body and mind and not under the influence of mind altering substances such as medicines, alcohol, and drugs.</p>
 DANGER	<p>Ensure that the mower is operated according to the safety instructions in this manual. Any carelessness or mistake could result in serious personal injury. The mower can cut off hands and feet, and throw objects. Failure to follow the safety instructions in this manual could result in serious personal injury or death.</p>
 DANGER	<p>People wearing pacemakers or other medical electronic devices must consult a doctor before using the mower. Operating the electrical equipment nearby could interfere with or result in a failure of the pacemaker.</p>
NOTICE	<p>Only qualified mechanics are allowed to maintain and repair the mower. We suggest you have your mower serviced by a local dealer. When servicing, use only identical replacement parts.</p>

Operator

Do not operate the machine if you are under eighteen or the minimum age specified in local laws and regulations.

Operating Environment

1. Drive in an open field far from the crowd and ensure that there are no irrelevant personnel or vehicles in the operation area.
2. Stay away from people, livestock, obstacles, wires, tall buildings, and signal towers to avoid interference with signals.
3. Do not operate in extreme weathers such as heavy rain, thick fog, snow, lightning, and strong wind.
4. Ensure that there is no human or obstacle around the vehicle's path during testing, calibration, adjustment, or auto turning to prevent personal injury or property damage.

Inspection

1. Ensure that the battery level is high.
2. Ensure that the parameter calibration is complete before auto operations.
3. Ensure that the antennas and associated components are properly installed. Calibrate again if any of them is moved.
4. Ensure that all cables are intact. If any damage is found, stop the operation and replace the cable.

Others

1. Disassembling the product without authorization may invalidate the warranty.
2. Damage caused by force majeure events, such as lightning strikes, overvoltage, and collision, is not covered by the warranty.
3. Connect the devices strictly in accordance with this manual. When connecting cables such as data cables, hold the end of the plug and gently plug or unplug it. Do not pull the plug by force or twist it, which may break the pins.

FCC Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

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1 Overview

1.1 User Instructions

This manual is aimed to help the owners and operators understand how to maintain and operate this mower. Read this manual carefully. Information and instructions in this manual can help you obtain reliable mower performance. It is the owner's responsibility to ensure that the operators and technicians read and understand this manual. Before operating, read this manual and all the safety symbols. It is also the owner's responsibility to ensure that the operators and technicians are qualified for and capable of operating the mower. All the dealer technicians must be familiar with the safe operation of the mower. Never allow children or untrained personnel to operate or repair the mower. Note that local laws may have the minimum age requirements for the operators.

1.2 Use of Manual

This manual applies to the FJD RM21 series. It provides users with the basic operation, assembling, adjusting, and maintenance instructions of the mower. As operating conditions may vary, this manual cannot cover all scenarios. In this manual, directions such as rightward and leftward are used in relation to the direction you are facing. All the figures used in this manual are up to date at the time of printing, but they may differ from the mower you receive due to upgrades and modifications. FJDynamics reserves the right to re-design and modify the mower without notice. If you notice any change that is not shown in this manual, consult your local dealer about the updates.

1.3 Intended Use of Mower

This 48V autonomous mower is only intended to be used for cutting grass.

1.4 General Safety Rules

1. Before attempting to assemble and operate the mower, read, understand, and follow all the instructions and warnings in this manual. Keep this manual properly for future reference.
2. Be familiar with all controls and their correct operation. Learn how to stop the mower and disengage all controls quickly.
3. Never allow children or untrained personnel to operate or repair the mower. Note that there can be an age limit on the operator according to your local laws and regulations.
4. If you come across a situation that is not covered in this manual, use extreme caution and contact the customer service for help.

1.5 Modifications

To improve the machine performance, contact FJDynamics for official modifications. By modifying the mower yourself, you waive the right to make any legal claims based on this manual. Use only genuine FJDynamics parts for modifications. Using other parts will void the warranty. Do not install non-standard devices on the mower without the consent from FJDynamics. Otherwise it may cause personal injury or damage the mower.

To improve the machine performance, contact FJDynamics for official modifications. By modifying the mower yourself, you waive the right to make any legal claims based on this manual. Use only genuine FJDynamics parts for modifications. Using other parts will void the warranty. Do not install non-standard devices on the mower without the consent from FJDynamics. Otherwise it may cause personal injury or damage the mower.

1.6 Warranty

1.6.1 Warranty Registration Form

The owner must fill out the Warranty Registration Form provided in the owner's package to register the mower. As the new owner of the mower, when you use the form, it must be filled out and signed by both the authorized dealer and the initial purchaser.

1.6.2 Serial Number

The nameplate is located on the front of the mower, and it provides the following information:

- Name, model, and serial number
- Key specifications and symbols
- Manufacturer and manufacture date

Register the serial number and the model of the mower on the Warranty Registration Form if repair or replacement is required.



Figure1 Sample nameplate



Note: Any unauthorized modification or use of non-approved parts will void the warranty. FJDynamics will not be responsible for any subsequent consequences. All warranty services and repairs must be performed by authorized FJDynamics dealers.



Reference: chapter 13 "Warranty Policy"

2 Power Tool Safety Warning



Read all safety warnings, instructions, illustrations and specifications provided with the power tool. Failure to follow all instructions listed below may result in electric shock, fire and/or serious injury. Save all warnings and instructions for future reference. The power tool in the warning refers to a mains-powered tool (with a cord) or battery-powered tool (cordless).

2.1 Work Area Safety

- Keep work area clean and well lit. Cluttered or dark areas invite accidents.
- Do not operate power tools in explosive atmospheres, such as in the presence of flammable liquids, gases or dust. Power tools create sparks which may ignite the dust or fumes.
- Keep children and bystanders away while operating a power tool. Distractions can cause you to lose control.

2.2 Electrical Safety

- Power tool plugs must match the outlet. Never modify the plug in any way. Do not use any adapter plugs with earthed (grounded) power tools. Unmodified plugs and matching outlets will reduce risk of electric shock.
- Avoid body contact with earthed or grounded surfaces, such as pipes, radiators, ranges and refrigerators. There is an increased risk of electric shock if your body is earthed or grounded.
- Do not expose power tools to rain or wet conditions. Water entering a power tool will increase the risk of electric shock.
- Do not abuse the cord. Never use the cord for carrying, pulling or unplugging the power tool. Keep cord away from heat, oil, sharp edges or moving parts. Damaged or entangled cords increase the risk of electric shock.
- When operating a power tool outdoors, use an extension cord suitable for outdoor use. Use of a cord suitable for outdoor use reduces the risk of electric shock.
- If operating a power tool in a damp location is unavoidable, use a residual current device (RCD) protected supply. Use of an RCD reduces the risk of electric shock.

2.3 Personal Safety

- Stay alert, watch what you are doing and use common sense when operating a power tool. Do not use a power tool while you are tired or under the influence of drugs, alcohol or medication. A moment of inattention while operating power tools may result in serious personal injury.
- Use personal protective equipment. Always wear eye protection. Protective equipment such as a dust mask, non-skid safety shoes, hard hat or hearing protection used for appropriate conditions will reduce personal injuries.
- Prevent unintentional starting. Ensure the switch is in the off-position before connecting to power source and/or battery pack, picking up or carrying the tool.

- Carrying power tools with your finger on the switch or energizing power tools that have the switch on invites accidents.
- Remove any adjusting key or wrench before turning the power tool on. A wrench or a key left attached to a rotating part of the power tool may result in personal injury.
- Do not overreach. Keep proper footing and balance at all times. This enables better control of the power tool in unexpected situations.
- Dress properly. Do not wear loose clothing or jewelry. Keep your hair and clothing away from moving parts. Loose clothes, jewelry or long hair can be caught in moving parts.
- If devices are provided for the connection of dust extraction and collection facilities, ensure these are connected and properly used. Use of dust collection can reduce dust-related hazards.
- Do not let familiarity gained from frequent use of tools allow you to become complacent and ignore tool safety principles. A careless action can cause severe injury within a fraction of a second.

2.4 Power Tool Use Instructions

- Do not force the power tool. Use the correct power tool for your application. The correct power tool will do the job better and safer at the rate for which it was designed.
- Do not use the power tool if the switch does not turn it on and off. Any power tool that cannot be controlled with the switch is dangerous and must be repaired.
- Disconnect the plug from the power source and/or remove the battery pack, if detachable, from the power tool before making any adjustments, changing accessories, or storing power tools. Such preventive safety measures reduce the risk of starting the power tool accidentally.
- Store idle power tools out of the reach of children and do not allow persons unfamiliar with the power tool or these instructions to operate the power tool. Power tools are dangerous in the hands of untrained users.
- Maintain power tools and accessories. Check for misalignment or binding of moving parts, breakage of parts and any other condition that may affect the power tool's operation. If damaged, have the power tool repaired before use. Many accidents are caused by poorly maintained power tools.
- Keep cutting tools sharp and clean. Properly maintained cutting tools with sharp cutting edges are less likely to bind and are easier to control.
- Use the power tool, accessories and tool bits etc. in accordance with these instructions, taking into account the working conditions and the work to be performed. Use of the power tool for operations different from those intended could result in a hazardous situation.
- Keep handles and grasping surfaces dry, clean and free from oil and grease. Slippery handles and grasping surfaces do not allow for safe handling and control of the tool in unexpected situations.

2.5 Battery Tool Use Instructions

- Recharge only with the charging pile or charger specified by the manufacturer. A charging pile or charger suitable for one type of battery may create a risk of fire when used with another type of battery.
- Use power tools only with specifically designated battery packs. Use of any other battery packs may create a risk of injury and fire.
- When battery pack is not in use, keep it away from other metal objects, like paper clips, coins, keys, nails, screws or other small metal objects that can make a connection

- from one terminal to another. Shorting the battery terminals together may cause burns or a fire.
- Under abusive conditions, liquid may be ejected from the battery; avoid contact. If contact accidentally occurs, flush with water. If liquid contacts eyes, additionally seek medical help. Liquid ejected from the battery may cause irritation or burns.
- Do not use a battery pack or tool that is damaged or modified. Damaged or modified batteries may exhibit unpredictable behavior resulting in fire, explosion or risk of injury.
- Do not expose a battery pack or tool to fire or excessive temperature. Exposure to fire or temperature above 130 °C may cause explosion.
- Follow all charging instructions and do not charge the battery pack or tool outside the temperature range specified in the instructions. Charging improperly or at temperatures outside the specified range may damage the battery and increase the risk of fire.

2.6 Service

- Have your power tool serviced by a qualified repair person using only identical replacement parts. This will ensure that the safety of the power tool is maintained.
- Never service damaged battery packs. Service of battery packs should only be performed by the manufacturer or authorized service providers.

3 Precautions

3.1 Operator Instructions

- During operation, operators must wear approved personal protective equipment, at least including safety helmets, protective eyewear, hearing protection, appropriate clothing, and safety shoes. Personal protective equipment cannot eliminate the risk of injury, but it will reduce the injury severity if an accident does occur.
- Only allow operators, who are responsible, trained, familiar with the instructions, and physically capable to operate the machine.
- Do not wear scarves, loose clothing, shorts, and sandals that may be caught up by moving parts. Do not use the mower barefoot.
- Always wear a full face shield or dust mask when operating in a dusty environment.
- Always wear gloves when handling the blades.
- Always wear hearing protection to avoid damage to hearing when operating. Do not use radios or music headphones.
- The operator must concentrate on the mowing task, and always look ahead of the mower's path while staying aware of the surroundings.
- Pay full attention in case any abnormality occurs.
- Ensure that the first aid equipment is available nearby when operating the mower.
- Do not operate the mower when feeling tired.
- Do not operate the mower under the influence of medicines, alcohol, and drugs.

3.2 Mowing Operation

- Before operating, read, understand, and follow all the instructions on the machine and in this manual.
- Let someone know that you are mowing so that he or she can offer help when an injury or accident occurs.
- People who operate, maintain, and repair the mower must read and understand this manual. Abide by the age limit set by the local laws and regulations. The owner is responsible for training them.
- The owner and the operator of the mower should take safety precautions against accidents and are responsible for accidents or injury occurring to themselves and others, and property damage.
- Do not put your hands or feet near rotating parts or under the mower. Always stay away from the discharge opening.
- Ensure that the mowing area is free of bystanders and animals. Stop the mower if anyone enters the mowing area.
- Do not mow in reverse unless necessary. Check the surroundings when using the remote controller to operate the mower.
- Do not operate the mower when safety devices are not in place or damaged.
- Do not operate the mower lacking proper maintenance.
- Slow down before turning.
- Do not drive at high speeds, especially in crowded areas or on slopes.
- Do not carry passengers.
- Do not mow slopes steeper than 20 degrees.
- Do not leave a running mower unattended. Always park on level ground, engage the parking brake, and then turn off the mower.

- Pay attention to the traffic when operating near or crossing a road.
- Clean oil spills before operating or storing the mower.
- In case of abnormal vibration, stop the mower and troubleshoot immediately. Abnormal vibration often indicates that the mower is not working normally.
- Stop the blades and turn off the power supply when not mowing. Wait for all parts to stop before cleaning the mower or removing the discharge chute. After the mower is turned off, the blades will still rotate for a few seconds. Do not put any parts of your body near the blades before the blades stop completely.
- If the mower runs into a foreign object, stop the mower immediately and check for damage when safety is ensured.
- If situations occur that are not covered in this manual, use care and good judgment. Contact Local Dealer for assistance.

3.3 Mowing Area

- Before mowing any area, thoroughly check the area for holes, falling objects, and hidden objects that may cause danger. Remove objects that can be thrown by the blades, such as stones, toys, and wires.
- Do not operate near people and animals. Do not mow when children or others are around.
- Make a mowing plan to avoid discharging grass clippings toward roads, sidewalks, bystanders, vehicles, and windows.
- Do not mow anything other than grass.
- During mowing, do not drive through leaves or other debris that may cause build-up.
- Stop the blades when driving across dirt roads, gravel roads, or paved roads.
- Use extreme caution when approaching blind corners, doorways, shrubs, trees, or other objects that can block your view and impede mowing.
- To reduce the risk of electric shock, do not operate the mower in rain, on wet roads, or on wet grass.
- To avoid loss of control and rollover, do not operate the mower near drop-offs or near water, and reduce the driving speed and use extreme caution on slopes.

3.4 Slope Operation

- Slopes are a major factor related to loss of control and rollover that could result in serious injury or death. Use extreme caution when operating on slopes. Do not mow the slope if you are not sure whether it is suitable for operation.
- Do not start or stop the mower on slopes.
- Do not mow slopes steeper than 20 degrees.
- Do not operate the mower when the traction, steering, or stability is in question. Tires can slide even if the mower is stopped.
- Always keep the mower in gear when driving down slopes. Do not use the neutral gear and coast down slopes.
- Watch for holes, ruts, stones, or other unnoticeable obstacles. Be extremely careful in tall grass areas where obstacles may be hidden. Uneven terrain and obstacles could overturn the mower.
- Drive at low speeds so that you do not have to stop on slopes.
- Do not mow on wet grass. Wet grass can cause the tires to slip on slopes.
- Move slowly and gradually on slopes. Do not change the speed or direction suddenly. Otherwise, the mower could roll over.
- Use extreme caution when operating the mower with grass collectors or other attachments, because they can affect the stability of the mower.

3.5 Child Safety

- Tragic accidents can occur if the operator does not notice the presence of children. Children tend to be attracted by mowers and mowing activities. Do not assume that children will remain where you last saw them.
- Keep children away from the mowing area and supervised by a responsible adult other than the operator.
- Stay alert and turn off the mower if a child enters the mowing area.
- Ensure there is no children around when mowing or driving the mower.
- Never allow children to operate the mower.
- Use extreme caution when mowing near blind corners, shrubs, trees, or other objects that may block your view.

3.6 Battery and Charging Safety



The battery may present a risk of fire or chemical burn if misused. Do not disassemble, overheat or incinerate the battery. Leakage from the battery may occur under extreme usage, charging or temperature conditions or if the battery is damaged, crushed or punctured. This leakage indicates a failure of the battery and the battery should be properly disposed of.



Note: Only use the batteries and charging pile/charger provided by FJDynamics to avoid damage to the mower.

- Do not use the charging pile/charger in rain, in wet locations or near flammable liquids or gases.
- Do not place the charging pile outdoors, in a humid place, in a place prone to accumulation of water, or in a place with flammable liquids or gases.
- The recommended voltage is marked on the charging pile/charger. Do not connect the charging pile/charger to a different AC voltage.
- An extension cord should not be used unless absolutely necessary. Use of an improper extension cord could result in a risk of fire, electric shock, or electrocution. If an extension cord must be used, ensure that it can withstand the current of the charging pile/charger. Otherwise, the voltage will drop, resulting in charging failure and overheat.
- Do not use multiple extension cords.
- Ensure that the power cord is in good condition. Regularly check the power cord and the extension cord to see whether the insulation is broken, damaged, or cracked. Disconnect the damaged cord from the outlet and the charging pile/charger and repair or replace it immediately.
- Use the power cord properly and keep it away from heat, oil, water, sharp edges and moving objects. Hold the plug when disconnecting the power cord from the outlet. Do not drag the charging pile/charger by the power cord.
- Do not modify the plug or power cord in any way.
- Properly place the charging pile/charger to avoid being stepped on, tripped over, or damaged.
- Store the charging pile/charger and the power cord in a cool and dry place.
- Keep the charging pile/charger and the power cord away from all liquids.

- Use extra care when loading the mower onto a truck or a trailer with a ramp. The mower falling from the ramp could result in serious injury or death.
- Use a full width ramp for loading the mower onto a trailer or truck.
- Only transport the mower with approved trailers. Turn the power switch to the off position with the indicator off, and fix the front and rear wheels and the body with heavy-duty belts to prevent mower movement in any direction and avoid damage during transport.
- Engaging the parking brake is not sufficient to lock the mower in place during transport. You should also fix the mower firmly and horizontally on the carrier and lift the deck to its highest position.
- The angle between the ramp and the ground should not exceed 20 degrees.
- Load the mower onto truck or trailer by driving up ramps of suitable strength using a slow speed. Do not lift the mower by hand.
- Be familiar with the control devices before driving the mower up or down a ramp.
- Do not operate the mower on public roadways.
- Check and abide by local traffic regulations before transporting the mower on roads.

3.7 Transport

- Use extra care when loading the mower onto a truck or a trailer with a ramp. The mower falling from the ramp could result in serious injury or death.
- Use a full width ramp for loading the mower onto a trailer or truck.
- Only transport the mower with approved trailers. Turn the power switch to the off position with the indicator off, and fix the front and rear wheels and the body with heavy-duty belts to prevent mower movement in any direction and avoid damage during transport.
- Engaging the parking brake is not sufficient to lock the mower in place during transport. You should also fix the mower firmly and horizontally on the carrier and lift the deck to its highest position.
- The angle between the ramp and the ground should not exceed 20 degrees.
- Load the mower onto truck or trailer by driving up ramps of suitable strength using a slow speed. Do not lift the mower by hand.
- Be familiar with the control devices before driving the mower up or down a ramp.
- Do not operate the mower on public roadways.
- Check and abide by local traffic regulations before transporting the mower on roads.

3.8 Storage



Store the mower properly. Power off the mower before cleaning.

- Allow the mower to cool before storage.
- When not in use, the mower should be stored indoors in a dry place, out of reach of children, and prolonged direct sunlight.

3.9 Service

- Remove the batteries or disconnect the power supply before repairing, cleaning, or taking parts off the mower.
- Do not reach below the blade guards. Keep your hands, feet, and clothes away from rotating blades.
- Only use accessories authorized by FJDynamics.
- Electrical maintenance should only be performed by trained professionals.
- Keep the blades sharp and clean for best performance and safe operation.
- Check the daily and weekly maintenance lists to ensure that electrical connection is firm and bolts are tightened.
- Never remove or tamper with safety devices. Regularly check their proper operation. Never do anything to interfere with the intended function of a safety device or to reduce the protection provided by the safety device.
- Repair or replace damaged parts before restarting and operating the mower.
- Periodically inspect the mower cables. Damaged cables should be repaired by an authorized service agency.
- Use caution when replacing the blade. Wrap the blade or wear gloves. Replace the damaged blade. Do not repair or alter the blade.
- Keep the mower free from accumulation of grease, dirt, and other possibly combustible materials.
- To avoid personal injury and mower damage, do not clean the mower with a pressure washer.
- Do not use the battery-operated mower in rain.
- Never remove or tamper with safety devices. Regularly check their proper operation. Never do anything to interfere with the intended function of a safety device or to reduce the protection provided by the safety device.
- Tires must be inflated to the pressure specified in the manual. Too much air in the tire could cause the tire to burst, causing personal injury. Do not use tires with scratches or cracks, as such tires may burst. Contact FJDynamics or a local dealer for replacement or repair of tires, tubes, and rims.