

Owner's/Operator's Manual

Maruyama U.S., Inc.
3570 Shelby Lane
Denton, TX 76207 U.S.A
940-383-7400
maruyama@maruyama-us.com
www.maruyama-us.com

Contents

1. In order to work safely	2. Method for using the measuring cup	7
3. Cautions prior to work	3. Cleaning, Recharging, and Storage	7
Confirmation of standard parts	4. Cleaning the inside of chemical tank	7
Name of each part	5. Cleaning the pump slide with water	7
Cautions when using this product	6. Water draining	7
Functions of the operating section	7. Recharging the battery	8
2. Handling and operating methods	8. Consumption parts list	8
Nozzle assembling	9. The battery	9
Battery remainder determination method	4. Troubleshooting and remedies	10
Dispensing chemicals	6. Wiring diagram	11
Starting	5. Specifications	11
Stopping		

Preface

Thank you for purchasing this product. This operation manual explains the correct handling method, simple checks and maintenance of this product. Please read this operation manual carefully, understand its contents, and use it to maintain the superior performance of this product. Keep this manual carefully after you read it and use it for extended operation of this product. Note that discrepancies between the actual product and the content of this manual may be found as we are continually making improvements to

provide better quality products to our customers. Please send any inquiries about this product to your nearest sales office.

Please keep this operation manual carefully. If you lose this operation manual, purchase a replacement at your nearest sales office or our sales office. Modifying this product prevents safe and comfortable operation, and is very dangerous.





Warnings

In this manual, important handling cautions are indicated as follows:

- A DANGER** Death or serious injury may occur when not complying with the warning.
- A WARNING** Possibly death or serious injury may occur when not complying with the warning.
- A CAUTION** Possibly injury may occur when not complying with the warning
- CAUTION** Machine will possibly be damaged if not complying with the warning

A Warning label

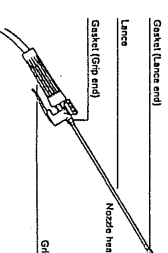
-Always remove dirt or mud to make the indications legible. -The following alarm labels are attached.

-  Read operation manual thoroughly. Make sure you read the operation manual thoroughly prior to use.
-  Wear personal protective equipment. Wear protectors such as hat, safety glasses, ear plugs during work.
-  Prohibition of fire. Do not put a naked flame close to a piece where store machine or doing maintenance.
-  Cautions for electrical shock. There are danger of electric shock during operation, so do not touch the electric parts.

2. handling and operating method

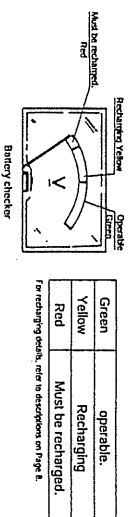
Nozzle assembling

First ensure that the gasket is put in place, screw the lance into the grip, and nozzle head into the lance. In that step, check the gasket in place to prevent water leakage, and then tighten the screw securely. Be sure to tighten it while retaining the excessive tightening, which will cause the gasket to stick out.



Checking the battery remainder Battery remainder determination method

- Pour approximately 1 liter of water into the chemical tank.
- Turn the switch ON, wait until the pump sucks water to raise the pressure, and then check the graduation of the battery balance meter.



CAUTION

- Be sure to pour water in the chemical tank before inspection. Otherwise, the pump runs without load and causes a failure.
- Make it a rule to recharge the battery if the pointer approaches the yellow zone, even if it is still in the green zone.

Cautions during operation

- In normal operation, avoid a continuous work for a stretch of 2 hours or more to maintain health.
- An operating Battery-driven Sprayer unit loaded with a solution of chemicals is a heavy object. Tidy up the farm field and avoid any unstable and unreasonably hard work.
- Pay attention to clothes, field conditions, and the direction of wind to prevent exposure to agrochemicals and environmental solution.
- During operation, do not allow any unauthorized person to approach the spraying site.
- Ensure that the gasket of the lid for chemical tank and tighten the lid securely so that it keeps the solution from spouting out.
- Never point the solution-spraying nozzle to any person.
- Before taking a break or meal, gargle well and wash hands and face with soap water.
- If a person feels abnormally in physical condition, allow him/her to receive a doctor's examination.

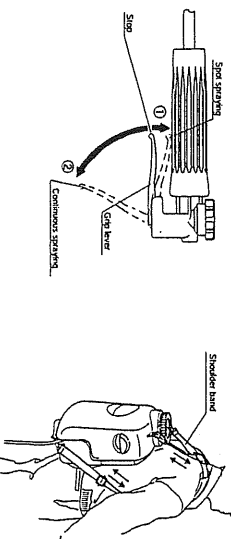
Precautions after use

- Thoroughly remove the remnant solution in the tank, put it in the original container, and slow away from the reach of infants. Also clearly remove the residual solution deposit on the machine surface. Otherwise the residue will cause rusting and failures.
- Clean the inside of chemical tank, spraying hose and nozzle with clean water.
- If any area is damaged, repair it before storage. Totally use the specified genuine parts and supplies available from us.
- Keep the storage place from humidity, dust and other foreign matters.

When the unit is to be stored for a long period of time, exercise the recharge and discharge of the battery to prevent it from performance degradation.

Functions of the operating section

- 1. Grip**
 - Gripping the grip lever, opens the valve, and thus spraying starts.
 - Releasing the grip lever, closes the valve, and thus spraying stops.
- 2. Shoulder band**
 - Adjust the band length as follows.



4

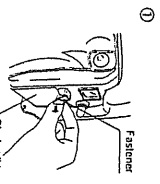
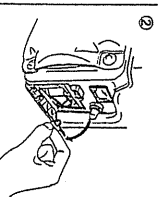
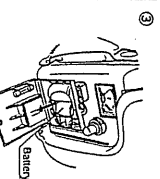
English

English

5

How to exchange the battery assy.

Remove the Battery

-  Pull the fastener.
-  Take off the lid and fastener.
-  Pull battery off.

Install the Battery

The battery

A DANGER

- Be sure to observe the following. Otherwise electrolyte leakage, heat generation, or rupture may occur.
- Do not disassemble or remodel the battery.
- Do not use soldering to the battery.
- Do not use any unauthorized recharging unit, but the dedicated one.
- Do not put the battery in fire or heat it up.
- Do not connect the terminals + and - together with metal object.
- Do not connect any strange unit, but the specified one.
- Ensure that terminals + and - are correctly connected with the corresponding ones of the battery and other units.
- Do not directly connect the battery with the receptacle of power supply and cigarette lighter of a vehicle.
- If the battery electrolyte gets in your eye, rinse it with clean water without rubbing it, and immediately receive a doctors examination. Otherwise you may loose sight.

1. AIn order to work safely

Cautions prior to work

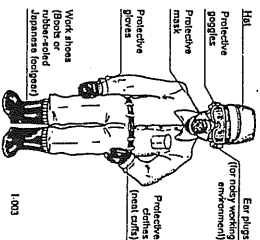
Wear proper work clothes and protective gear.

A spraying operator wearing proper work clothes and gear

Do not allow the following persons to perform spraying:

- A person who cannot perform normal spraying operation because of extreme fatigue due to overwork, disease, drug alcohol effect, or any other similar reason.
- Drunk person
- Pregnant woman
- Persons not responsible for the spraying work.

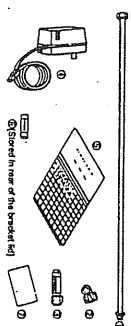
WARNING
Regularly inspect and maintain these protective items to ensure that they can work normally and use them properly.



1.003

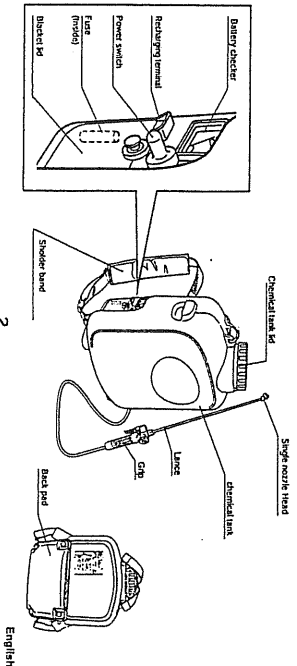
Confirmation of standard parts

After opening the package, confirm that all accessories are present. If accessories are missing or damaged, inform the sales outlet where you purchased the product.



No.	Description	Quantity
1	Nozzle	1
2	Single nozzle head	1
3	Variable nozzle head	1
4	Recharging Unit	1
5	Operation Manual	1
6	Fuse	1
7	Warranty Card	1

Name of each part



2

English

Despensing chemicals

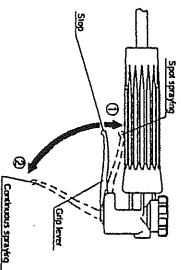
● Carefully read in advance the instruction sheet of the chemical to be used, and follow the specified dispensing method and precautions for using it.

CAUTION

- When using a hydrate chemical, first dispense at its specified proportion, put it in a bucket or other container and allow it to dissolve well before hand.
- When pouring the solution in the tank, be sure to use the strainer provided.

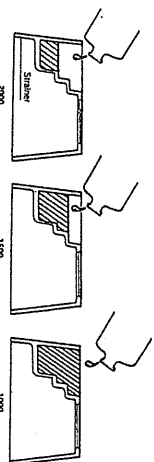
Start and Stop

Power switch



Method for using the measuring cup

Use the convenient measuring cup (as a rough indicator) attached to the back of the strainer.



3. Cleaning, Recharging, and Storage

Cleaning the inside of chemical tank

- After recovering the remnant solution, clean the inside of chemical tank by using clean water, stop this unit.

CAUTION

Before cleaning, inspection and recharging, be sure to stop this unit.



6

English

4. Troubleshooting and remedies

- If spray mist abnormally, recharge failure, or fuse blown-off occurs, the following disorders should be suspected.
- For the items marked with a white asterisk "*", contact the distributor that delivered the battery to you or our sales office for adjustment or repair.

Abnormality	Spray Failure	Remedy
Connector disengagement	Connect properly.	
Switch malfunction	Replace it.	*
Open circuit of wiring	Replace or repair it.	*
Fuse blown-off	Replace it.	*
Motor disconnection	Replace it.	*
Motor winding burnout	Replace it.	*
Battery voltage drop	Recharge or replace it.	
Nozzle clogging	Clean it.	
Pump operation stopped.	Replace it.	*

Cautions when using this product

This product can be used for the following agricultural work. Avoid use for purposes other than the following.

- 1) Spraying chemicals for blight or harmful insects on general farm crops
 - 2) Spraying chemicals for blight or harmful insects on fruit trees
 - 3) Spraying chemicals for blight or harmful insects on crops cultivated in greenhouse
 - 4) Spraying chemicals for blight or harmful insects on flowers
 - 5) Spraying disinfecting liquid or insecticide on farm house or chicken house
 - 6) Spraying chemicals and water for blight or harmful on garden trees, bonsai, or lawns
 - 7) Spraying disinfecting liquid and insecticide for urban sanitation
 - 8) Spraying chemicals for blight or harmful insects on flower beds and in parks
 - 9) Spraying weed killer to control weeds
 - 10) Cleaning and spraying water for vegetables or root vegetables
- When transporting by automobile, take action to prevent the machine from falling.

CAUTION

- Do not use this machine when there are people, especially children, near the site.
- Because the tank when completely filled with the chemical is very heavy, pay careful attention not to hurt your lower back when carrying it.
- Always adopt a safe working posture when carrying the tank.
- Do not work at elevated sites using stairs or ladders while carrying the tank.

- (1) When transporting the unit by vehicle, take necessary measures to prevent falling of it.
- (2) When loading and unloading heavy objects, neither act in an unnatural posture nor work alone.
- (3) Conduct inspection, maintenance services and cleaning in a flat area
- (4) Ensure that each joint is free from loosened bolts and nuts and damage.
- (5) Properly mount every removed cover for rotating part and the like for inspection and maintenance services.
- (6) Connect each connector for electric wiring and take necessary measures to prevent the wires from being rubbed.
- (7) Protect electric wiring from oil, water, and fire.

English

3

Cleaning the pump inside with water

CAUTION

After cleaning the inside of chemical tank, pour water into the tank again, run the pump, and clean the pump inside and the nozzles until the sprayed mist of chemical solution is completely replaced with clean water.

Leaving the pump inside without water-cleaned will cause failure of the pump and nozzles.

Cleaning the strainer

- Clean the strainer.

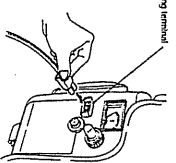


Water draining

CAUTION

- Do not fail to drain the tank. Otherwise the freezing of water may damage the pump in winter.
- After draining the chemical tank, grip the grip lever to run the pump without head as far as the remaining water in the tank is completely discharged. Never continue the no-load run of the pump for longer than 1 minute. Otherwise the pump may be damaged.

Recharging terminal



Recharging the battery

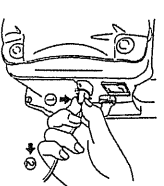
1. Insert charge the plug of charger to sprayer.
 2. Check the plug.
 3. Insert input plug to AC voltage. Standard at charging time.
- | | |
|---------------|-----------------|
| Battery | 12V 2.5AH |
| Charging time | about 6.5 hours |
3. After full charge, pull out input plug.
 4. Pull out plug of charger.

DAANGER

Use the genuine charger and battery. Otherwise the battery may be ruptured.

CAUTION

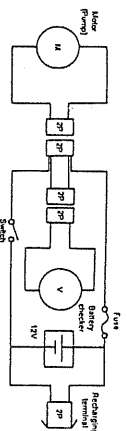
1. Charge in the room, charge in cool area.
2. Do not put anything on the charger.
3. Do not let plug and electrical line short.
4. Avoid water to plug, electrical line and charger.
5. Do not run sprayer during charging battery.
6. Do not remodeling anything.
7. Do not give charger vibration.
8. Pull out AC input plug as long as does not charging.



English

7

Wiring diagram



5. Specifications

- These specifications may be modified without prior notice.

Model	Description
M329 (GUARDIAN)	
Dimensions (L x W x H)	220x130x110 mm
Weight	3.7kg