



# Owner's Manual

## Genesis Series

### Push Pal



**IMPORTANT: READ THIS MANUAL IN  
ENTIRETY BEFORE OPERATING**

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# Introduction

This walk-behind machine is a dedicated ice-control solution system and is intended to be used by professional, trained operators for spraying ice-control solutions used on residential or commercial properties. Using this equipment improperly or for purposes other than its intended use may prove dangerous to you and others. You are responsible for operating the equipment properly and safely.

Read this manual carefully to learn how to operate and maintain your equipment properly and to avoid injury and product damage.

A digital version of this manual that can be accessed on the VSI website ([www.vsinnovation.com](http://www.vsinnovation.com)).

If service, parts, or additional information is needed please contact VSI Technical Service (1-507-252-3033) for more information.

# General Safety

This product is capable of causing personal injury. Always follow all safety instructions to avoid personal injury.

- Read and understand the contents of this *Owner’s Manual* before operating or servicing the equipment.
- Use your full attention while operating the machine. Do not engage in any activity that causes distractions; otherwise, injury or property damage may occur.
- Use appropriate personal protective equipment (PPE) to guard against contact with chemicals.
- Do not put your hands or feet near moving components of the machine.
- Do not operate the machine without all guards and other safety protective devices in place and in proper working order on the machine.
- Keep bystanders, children, and pets out of the operating area.
- Never allow children to operate the machine. Allow only people who are responsible, trained, familiar with the instructions, and physically capable to operate the equipment.
- Shut off the equipment, wait for all movement to stop, and allow the equipment to cool before adjusting, servicing, cleaning, or storing it.

Improperly using or maintaining this machine can result in injury. To reduce the potential for injury, comply with these safety instructions and always pay attention to the safety alert symbol. Failure to comply with these instructions may result in personal injury or death.

## Safety Instructions

- Read the *Operator's Manual*.
- All operators should be training before operating the machine.
- Wear eye protection.
- Shut off the machine before walking away.
- Do not put flammable liquids in the tank.

- Keep cigarettes, sparks, and flames away from the battery.
- Ventilate when charging or using the battery in an enclosed space.

**Important: Remove the battery from the machine before charging it.**

Charge the battery as needed; refer to *Charging the Battery* later in the manual.

## Quick-Start Installation

Follow the steps below to set up and prepare the machine for use.

1. Unfold the Handle
2. Check the Tire Pressure
3. Charge the Battery
4. Install Battery and Connectors

## 4. Install Battery and Connectors

Once the battery is charged, reinstall the battery and its connectors on the machine. Refer to *Installing the Battery* later in the manual.

## Detailed Installation Instructions

### 1. Unfold the Handle

1. Pull the detent pin out.
2. Raise the handle and secure it in the upright position with the detent pin.

### 2. Check the Tire Pressure

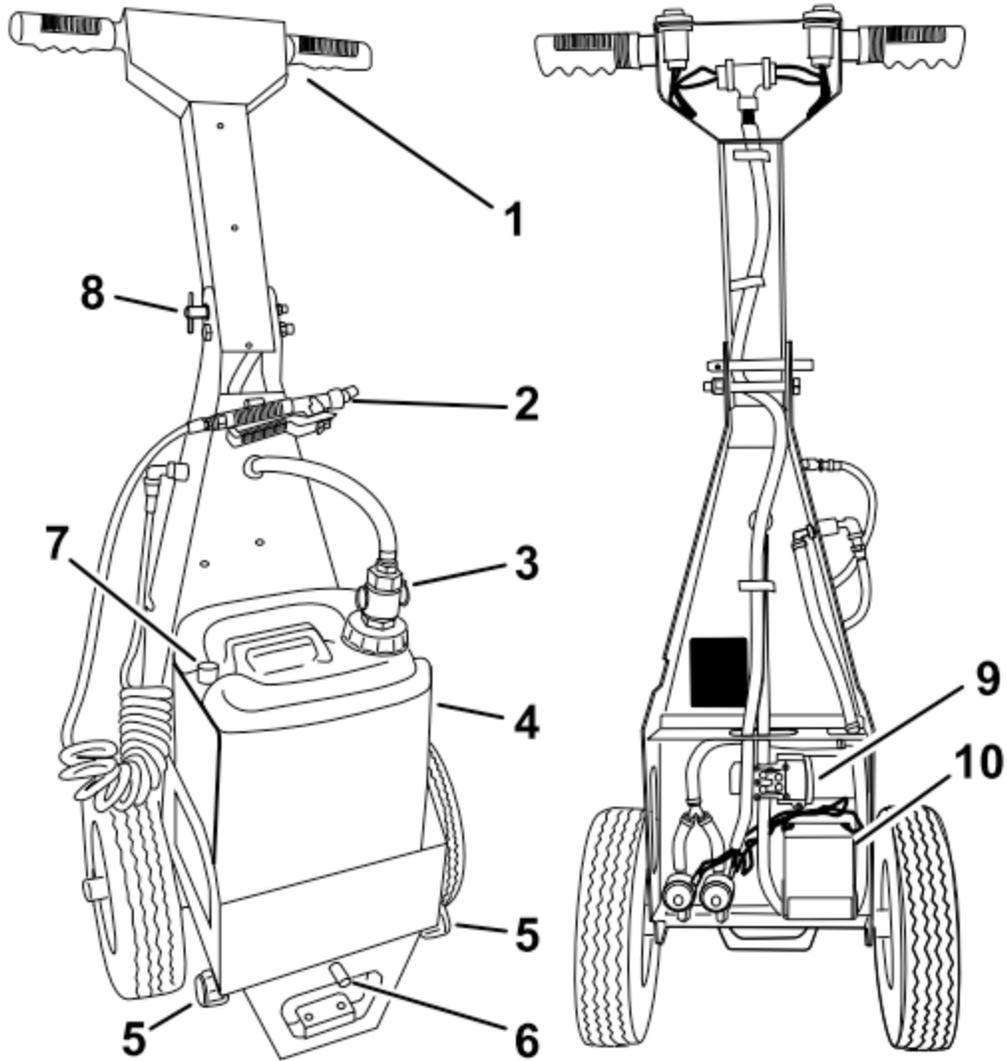
**Pressure:** 18 PSI

Check the air pressure in the tires for proper inflation.

### 3. Charge the Battery

**Charging the battery produces gasses that can explode and cause serious injury.**

# Product Overview



- 1. Handle
- 2. Spray Gun
- 3. Camlock Hose
- 4. Brine Container
- 5. Spray Bar

- 6. Fan Tip
- 7. Vent Cap
- 8. Detent Handle Pin
- 9. Pump
- 10. Battery

## 1. Handle

The handle is used by the operator to manually push or pull the walk-behind unit as needed..

## 2. Spray Gun

The spray gun is available to spray brine in areas not accessible by the spray bar or fan tip. See *Using the Spray Gun* later in the manual.

## 3. Camlock Hose

The camlock hose is used to draw brine from the brine container. This camlock allows the operator to disconnect from an empty container and easily connect to a full, replaced brine container.

## 4. Brine Container

The brine container is a 5 gallon removable jug. See *Installing the Brine Container* later in the manual.

## 5. Spray Bar

The spray bar directs the flow of liquid down in the path of the machine. This feature will most often be used for post-treatment applications.

## 6. Fan Tip

The fan tip directs the flow of liquid in a broad path in front of the machine. This feature will most often be used for pre-treatment applications.

## 7. Vent Cap

Open the vent cap when using the machine to prevent a vacuum effect in the brine container when sprayer brine. Close the vent cap when transporting the machine.

## 8. Detent Handle Pin

The detent handle pin secures the handle in the upright or folded position.

## 9. Pump

The 12V pump draws liquid from the brine container and pumps to the spray bar, fan tip, or spray gun.

## 10. Battery

The battery powers the walk-behind unit.



# Specifications

**Note:** Specifications and design are subject to change without notice.

## Machine Specifications

<b>Description</b>	<b>Brine Buddy</b>
Length (inches)	17
Width (inches)	21
Height with handle raised (inches)	49
Height with handle folded (inches)	37
Weight (Empty)	70 lbs
Brine Container Capacity	5 Gal

## Attachments and Accessories

A selection of VSI approved attachments and accessories are available for use with the sprayer to enhance and expand its capabilities. Contact VSI for further information.

To ensure optimum performance and continued safety certification of the machine, use only genuine VSI replacement parts and accessories. Replacement parts and accessories made by other manufacturers could be dangerous, and such use could void the product warranty.

# Operation

## *Before Operation*

### Before Operation Safety

#### General Safety

- Never allow children or untrained people to operate or service the machine. Local regulations may restrict the age of the operator. The owner is responsible for training all operators and mechanics.
- Become familiar with the safe operation of the equipment, operator controls, and safety signs.
- Shut off the pump, wait for all movement to stop, and allow the machine to cool before adjusting, servicing, cleaning, or storing it.
- Know how to shut off the pump on the machine quickly.
- Check that safety switches and shields are attached and functioning properly. Do not operate the machine unless they are functioning properly.
- Before operating the machine, inspect it to ensure that the components and fasteners are in good working condition. Replace worn or damaged components and fasteners.
- Ensure that all fluid line connectors are tight and that all hoses are in good condition before applying pressure to the system.
- Become familiar with the operating area; hidden obstructions such as curbs and pipes can damage the machine.

#### Chemical Safety

Chemical substances used in the machine system may be hazardous and toxic to you, bystanders, and animals, and they may damage plants, soil, and other property.

- Read the information on each chemical. Refuse to operate or work on the sprayer if this information is not available.
- Verify that there is an adequate supply of clean water and soap nearby, and immediately wash off any chemicals that contact you.
- Carefully read and follow the chemical warning labels and safety data sheets (SDSs) for all chemicals used, and protect yourself according to the chemical manufacturer's recommendations.
- Always protect your body while using chemicals. Use the appropriate personal protective equipment (PPE) to guard against contact with chemicals, such as eye protection and/or face shield and chemical-resistant gloves.
- Obtain proper training before using or handling chemicals.
- Use the correct chemical for the job.
- Follow the chemical manufacturer's instructions for safely applying the chemical. Do not exceed the recommended system application pressure.
- Do not fill, calibrate, or clean the machine while people, especially children, or pets are in the area.
- Do not clean nozzles by blowing through them or placing them in your mouth.
- Always wash your hands and other exposed areas as soon as possible after working with chemicals.
- Keep chemicals in their original packages and stored in a safe location.
- Properly dispose of unused chemicals and chemical containers as instructed by the chemical manufacturer and your local codes.
- Follow all local, state, and federal regulations for spreading or spraying chemicals.

## Installing the Brine Container

**Capacity:** 5 Gallons

**Note:** You can use multiple containers and fill them prior to use during a weather event. Use the quick connection camlock hose to easily exchange the containers.

**Important:** Use only premixed brine to prevent dangerous chemical reactions.

1. Pull the rings on the quick connection camlock hose up and remove the hose from the container.
2. Remove the brine container cap with the draw tube.
3. Remove the brine container from the machine.
4. Fill the container with a premixed brine or install a previously filled container.
5. Install the brine container cap with the draw tube.
6. Install the container into the machine.
7. Install the quick connection camlock hose onto the cap and secure it by pulling the rings down.
8. Wipe up any spills.

## Performing Daily Maintenance

Before starting the machine each day, perform the Each Use/Daily procedures listed later in this manual.

## *During Operation*

### During Operation Safety

- The owner/operator can prevent and is responsible for accidents that may cause personal injury or property damage.
- Wear appropriate clothing, including eye protection; substantial, and slip-resistant footwear. Tie back long hair and do not wear loose clothing or loose jewelry.
- Wear appropriate personal protective equipment as directed in Chemical Safety.
- Use your full attention while operating the machine. Do not engage in any activity that causes distractions; otherwise, injury or property damage may occur.
- Do not operate the machine while ill, tired, or under the influence of alcohol or drugs.
- Do not operate the machine when there is a risk of lightning.
- Keep bystanders and pets away from the machine during operation.
- Do not operate the machine without good visibility or light.
- Always operate the machine from the operating position.
- Look behind and down before backing up to be sure of a clear path.
- Use extreme care when approaching blind corners, shrubs, trees, or other objects that may block your view.
- Slow down and use caution when making turns and crossing roads and sidewalks with the machine. Always yield the right-of-way.
- Never leave a running machine unattended.
- Before leaving the operating position, park the machine on a level surface, shut off the machine, and wait for all moving parts to stop.
- Shut off the machine in the following situations:
  - Before clearing blockages
  - Before checking, cleaning, or maintaining the machine
  - Before leaving the operating position

- Shut off the pump, wait for all movement to stop, and allow the machine to cool before adjusting, servicing, cleaning, or storing it.
- Use accessories and attachments approved by VSI only.

## Sprayer Safety

- Do not aim the spray gun at any person or animal.
- Do not place your hand or any other part of your body in front of the spray nozzle.
- Do not leave the equipment under pressure when you are not present.
- Do not use the hand spray gun if the hose, trigger lock, nozzle, or any other part is damaged or missing.
- Do not use the hand spray gun if there are any leaks in any hoses, fittings, or other components.
- Do not spray near power lines; the spray stream could contact the power lines and give you potentially fatal electrical shock.
- Never spray while people, especially children, or pets are nearby.

## Operating the Sprayer

**Important: Always push the machine by hand. Do not tow the machine.**

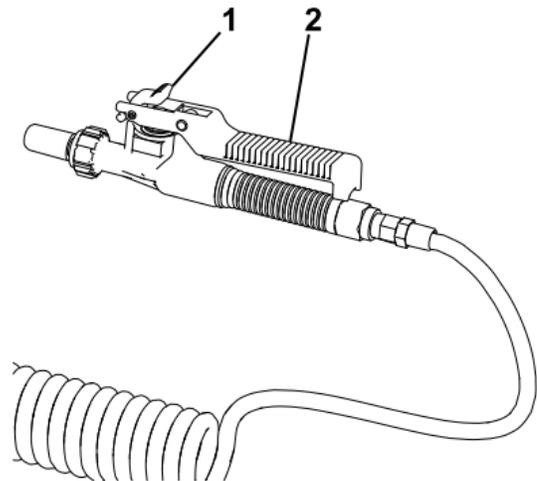
1. Move the machine to the location where you will be spraying.
2. Using the selection switch, select which method of spraying you want to use on the machine.
3. Push the pump switch to the *ON* position.
4. Spray the area.
5. When you are done spraying, switch the sprayer to the *OFF* position.

## Using the Spray Gun

1. Using the selection switch, select the *SPRAY GUN* position.
2. Push the pump switch to the *ON* position.
3. Squeeze the handle on the spray gun to begin spraying.

Rotate the handle lock to continue spraying without squeezing the trigger.

4. When you are done spraying, release the trigger and switch the machine to the *OFF* position.



## Spraying Tips

- Do not overlap areas that you have previously sprayed.
- Watch for clogged nozzles. Replace all worn or damaged nozzles.

## Unclogging a Nozzle

If a nozzle becomes clogged while you are spraying, clean the nozzle as follows:

1. Shut off the sprayer.

2. Remove the clogged nozzle and clean it using a spray bottle of water and a toothbrush.

3. Install the nozzle.

## After Operation

### After Operation Safety

- Shut off the machine, wait for all movement to stop, and allow the machine to cool before adjusting, servicing, cleaning, or storing it.
- Tie the machine down securely using straps, chains, cables, or ropes. Both front and rear straps should be directed down and outward from the machine.
- Do not store material in the sprayer tank.
- Rinse the sprayer tank with RV antifreeze before storing it.
- When storing the machine for more than 30 days, refer to *Storage* later in this manual for important information.
- Keep all parts of the machine in good working condition and all hardware tightened.
- Replace all worn, damaged, or missing decals.

### Emptying the Container

1. Turn the sprayer pump switch to the *OFF* position.
2. Remove the quick connection camlock hose from the container.
3. Remove the container from the machine.
4. Remove the cap and dispose of chemicals.

**Important: Dispose of the sprayer tank chemicals according to local codes and material manufacturer's instructions.**

5. Install the cap, install the container into the machine, and attach the quick connection camlock hose.

## Flushing the Sprayer System

**Important: Use only clean water when cleaning the sprayer.**

**Important: You must always drain and flush out the sprayer after each use. Failure to flush and clean the sprayer may allow the chemicals to dry and obstruct the lines, valves, nozzle bodies, pump, and other components.**

Clean the spray system after each spraying session. To properly clean the spray system, perform the following:

- Complete 3 separate rinse cycles.
- Use the cleaners and neutralizers as recommended by your chemical manufacturers.
- Use pure, clean water (no cleaners or neutralizers) for the final rinse.

1. Fill the container with clean water, install the cap, and install the quick connection camlock hose.

**Note:** You can use a cleaning or neutralizing agent in the water as needed. On the final rinse, use only clean, clear water.

2. Select the *FAN TIP* position on the selection switch.
3. Push the pump switch to the *ON* position and spray water to clear the tip.
4. Push the pump switch to the *OFF* position.
5. Select the *SPRAY BAR* position on the selection switch.
6. Push the pump switch to the *ON* position and spray water to clear the bar.

**accessories are fully clean, preventing damage to the system.**

7. Push the pump switch to the *OFF* position.
8. Select the *SPRAY GUN* position on the selection switch.
9. Push the pump switch to the *ON* position and spray water to clear the gun
10. Push the pump switch to the *OFF* position.
11. Repeat steps 1 through 10 at least 2 more times to ensure that the spray system is fully cleaned.

## Transporting the Machine

Fold the handle and secure the machine to a trailer or vehicle to transport the machine.

**Important: You must always complete 3 rinse cycles to ensure that the spray system and spray**

## Maintenance

**Failure to properly maintain the machine could result in premature failure of machine systems, causing possible harm to you or bystanders.**

**Keep the machine well maintained and in good working order as indicated in these instructions.**

## ***Recommended Maintenance Schedule(s)***

<b>Maintenance Service Interval</b>	<b>Maintenance Procedure</b>
Before each use or daily	<ul style="list-style-type: none"><li>● Check the battery</li><li>● Check the fuses</li><li>● Check the tire pressure</li><li>● Check the hoses</li></ul>
After each use	<ul style="list-style-type: none"><li>● Empty the sprayer container</li><li>● Flush the sprayer system</li></ul>
Before storage	<ul style="list-style-type: none"><li>● Check the tire pressure</li><li>● Check and tighten all fasteners</li><li>● Condition the spray system</li></ul>
Yearly or before storage	<ul style="list-style-type: none"><li>● Condition the spray system</li></ul>

## Maintenance Safety

- Before adjusting, cleaning, servicing, or leaving the machine do the following:
  - Park the machine on a level surface
  - Shut off the machine
  - Wait for all moving parts to stop
  - Allow machine components to cool before performing maintenance
- Allow only qualified and authorized personnel to maintain, repair, adjust, or inspect the machine.
- Do not fill or clean the machine while people, especially children, or pets are in the area.
- Keep your hands, feet, clothing, and any parts of your body away from any moving parts. If possible do not make adjustments with the machine running.
- Before performing any maintenance, thoroughly clean and rinse the machine; refer to *Chemical Safety* in the manual.
- Chemicals used in the machine system may be hazardous and toxic to you, bystanders, animals, plants, soils, or other property.
  - Carefully read and follow the chemical warning labels and safety data sheets (SDSs) for all chemicals used, and protect yourself according to the chemical manufacturer's recommendations.
  - Always protect your skin while you are near chemicals. Use the appropriate personal protective equipment (PPE) to guard against contact with chemicals, including eye protection and/or face shield, chemical-resistant gloves, and substantial footwear.
  - Refuse to operate or work on the sprayer if chemical safety information is not available.
  - Do not fill, calibrate, or clean the machine while people, especially children, or pets are in the area.
- Do not clean spray nozzles by blowing through them or placing them in your mouth.
- Always wash your hands and other exposed areas as soon as possible after working with chemicals.
- To ensure that the entire machine is in good condition, keep all hardware properly tightened.
- Never tamper with safety devices. Check their proper operation regularly.
- If the machine requires a major repair or you need technical help, contact an authorized VSI distributor.
- Modifying this machine in any manner may affect machine operation, performance, durability, or its use, and result in injury or death.
- Carefully release pressure from components with stored energy.

## Electrical System Maintenance

### Electrical System Safety

- Disconnect the battery before making any repairs. Disconnect the negative terminal first and the positive terminal last. Connect the positive terminal first and negative last.
- Charge the battery in an open, well-ventilated area, away from sparks and flames. Unplug the charger before connecting or disconnecting the battery.
- Wear protective clothing and use insulated tools.

### Servicing the Battery

**Service Interval:** Before each use or daily

Always keep the battery clean and fully charged with the charger provided with the machine. Use a paper towel to clean the battery case. If the battery terminals are corroded, clean them with a solution of four parts water and one part baking soda. Apply a light coating of grease to the battery terminals to prevent corrosion.

Voltage: 12 V

## Removing the Battery

**WARNING: Incorrect battery cable routing could damage the machine and cables, causing sparks. Sparks can cause the battery gasses to explode, resulting in personal injury.**

- Always disconnect the negative (black) battery cable before disconnecting the positive (red) cable.
- Always connect the positive (red) battery cable before connecting the negative (black) cable.

**WARNING: Battery terminals or metal tools could short against metal machine components, causing sparks. Sparks can cause the battery gasses to explode, resulting in personal injury.**

- When removing or installing the battery, do not allow the battery terminals to touch any metal parts of the machine.
- Do not allow metal tools to short between the battery terminals and metal parts of the machine.

1. Disconnect the negative (black) ground cable from the battery post.
2. Remove the positive (red) battery cable.
3. Remove the battery from the machine.

## Charging the Battery

**Charging the battery produces gasses that can explode.**

**Never smoke near the battery and keep sparks and flames away from the battery.**

**Important: Always keep the battery fully charged to prevent battery damage when the temperature is below 32\* F.**

1. From a fully discharged battery, charge the battery for 5 hours using the charger provided with the machine.
2. When the battery is fully charged, unplug the charger from the electrical outlet, and disconnect the charger leads from the battery posts.
3. Install the battery into the machine and connect the battery cables.

## Installing the Battery

**WARNING: Incorrect battery cable routing could damage the machine and cables, causing sparks. Sparks can cause the battery gasses to explode, resulting in personal injury.**

- Always disconnect the negative (black) battery cable before disconnecting the positive (red) cable.
- Always connect the positive (red) battery cable before connecting the negative (black) cable.

**WARNING: Battery terminals or metal tools could short against metal machine components, causing sparks. Sparks can cause the battery gasses to explode, resulting in personal injury.**

- When removing or installing the battery, do not allow the battery terminals to touch any metal parts of the machine.
- Do not allow metal tools to short between the battery terminals and metal parts of the machine.

1. Place the battery in the machine.

2. Connect the positive (red) battery cable.
3. Connect the negative (black) battery cable.

## Servicing the Fuse

The electrical system is protected by fuses. It requires no maintenance. If a fuse blows, check the component or circuit for a malfunction or short.

## Replacing the In-Line Fuse

There are replaceable in-line fuses on the wire harness.

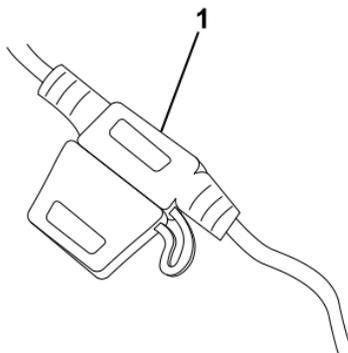
1. Find the in-line fuse on the wire harness and remove the fuse cap.
2. Remove and inspect the fuse.

If the fuse is burnt out, discard it and install a new fuse with the same rating; refer to the table below.

**Important: Do not use a fuse with a rating higher than the original fuse; serious damage to the electrical system or a fire could result.**

Light Fuse	Accessory Fuse
10 A	10 A

3. Install the fuse cap and cushion.



# Drive System Maintenance

## Checking the Tire Pressure

**Service Interval:** Before each use or daily

Maintain the air pressure in the tires at 18 PSI.

## Inspecting the Hoses

**Service Interval:** Before each use or daily

Examine each hose in the machine for cracks, leaks, or other damage. At the same time, inspect the connections and fittings for similar damage. Replace any hoses and fittings if damaged.

# Sprayer Maintenance

## Conditioning the Machine

**Service Interval:** Before storage

**Important: Use only propylene glycol (non-toxic RV antifreeze) with corrosion inhibitors. Do not use recycled propylene glycol. Do not use ethylene glycol based antifreeze.**

**Do not use propylene glycol with soluble alcohols (methanol, ethanol, or isopropanol) or brines added.**

1. Place the machine on a drain pad area.
2. Add 1 gallon of conditioner to the container.
3. Turn on the machine.

4. Use the selection switch to select each method of spraying and spray until the nozzles discharge all of the conditioner.

**Note:** Most propylene glycol RV antifreeze is colored pink. Use a catch container to sample the discharge.

5. Shut off the sprayer when the container is empty.

## Cleaning

### Cleaning the Machine

**Service Interval:** After each use

**Important: You can wash the machine with a mild detergent and water. Do not pressure wash the machine. Avoid excessive use of water, especially near the electrical system. Pressure washing can force dirt and water into critical parts.**

1. Empty the sprayer container (after each use).
2. Flush the sprayer system (after each use).
3. Condition the sprayer system (yearly or before storage).

## Storage

Do not store material in the sprayer tank.

### Storing the Machine

1. Remove salt, sand, and grime from the external parts of the entire machine.

**Important: You can wash the machine with a mild detergent and water. Do not pressure-wash the machine. Avoid excessive use of water, especially near the electrical system. Pressure-washing can force dirt and water into critical parts.**

2. Condition the sprayer system.
3. Check the tire pressure.
4. Dispose of extra chemical solution; recycle it according to local regulations.
5. Check and tighten all fasteners. Repair or replace any part that is damaged or missing.
6. Store the machine in a clean, dry, garage or storage area.
7. Disconnect the negative (black) battery cable.
8. Disconnect the positive (red) battery cable.

### Removing the Machine from Storage

1. Check for cracked welds.
2. Check all fasteners; tighten as necessary.
3. Check the hoses for cracks or leaks.
4. Lightly sand areas that are scratched, chipped, or rusted.
5. Apply dielectric grease to all of the wire harness connectors.

# Troubleshooting

<b>Problem</b>	<b>Possible Cause</b>	<b>Corrective Action</b>
The pump does not prime.	<ol style="list-style-type: none"> <li>1. The sprayer container vent cap is closed.</li> <li>2. The liquid in the hoses is frozen.</li> <li>3. The pump inlet fitting O-ring is damaged or missing.</li> </ol>	<ol style="list-style-type: none"> <li>1. Open the vent cap.</li> <li>2. Bring the machine to a warm area to thaw.</li> <li>3. Replace the O-ring.</li> </ol>
The sprayer pump runs and shuts off repeatedly.	<ol style="list-style-type: none"> <li>1. The sprayer nozzles are clogged or frozen.</li> <li>2. The liquid in the hoses is frozen.</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean the spray nozzles.</li> <li>2. Bring the machine to a warm area to thaw.</li> </ol>
The sprayer is not spraying.	<ol style="list-style-type: none"> <li>1. The sprayer switch is in the <i>OFF</i> position.</li> <li>2. The spray nozzles are clogged or frozen.</li> <li>3. The liquid in the hoses is frozen.</li> <li>4. The hoses are clogged.</li> </ol>	<ol style="list-style-type: none"> <li>1. Turn the sprayer switch to the <i>ON</i> position.</li> <li>2. Clean the spray nozzles.</li> <li>3. Bring the machine to a warm area to thaw.</li> <li>4. Clean the hoses.</li> </ol>
Liquid is dripping from the spray nozzles when the system is not in use.	<ol style="list-style-type: none"> <li>1. The nozzles are loose.</li> </ol>	<ol style="list-style-type: none"> <li>1. Tighten the nozzles.</li> </ol>
Too little liquid is being sprayed.	<ol style="list-style-type: none"> <li>1. The spray nozzles are clogged or frozen.</li> <li>2. The liquid in the hoses is frozen.</li> <li>3. The hoses are clogged.</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean the spray nozzles.</li> <li>2. Bring the machine to a warm area to thaw.</li> <li>3. Clean the hoses.</li> </ol>
There is a large gap in the middle of the spray pattern.	<ol style="list-style-type: none"> <li>1. The spray nozzles are clogged or frozen.</li> <li>2. The liquid in the hoses is frozen.</li> <li>3. The hoses are clogged.</li> </ol>	<ol style="list-style-type: none"> <li>1. Clean the spray nozzles.</li> <li>2. Bring the machine to a warm area to thaw.</li> <li>3. Clean the hoses.</li> </ol>

# **Voigt Smith Innovation LLC**

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