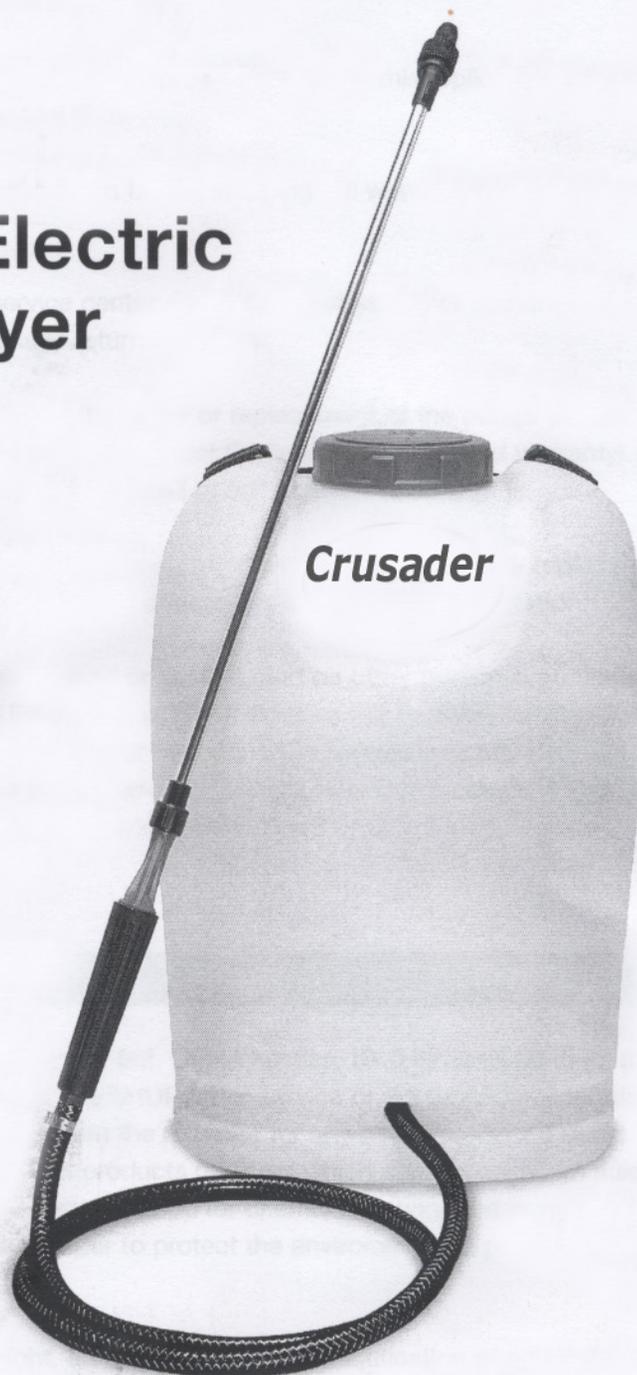


Crusader Rechargeable Electric Backpack Sprayer

Model 5000

Instruction Manual-
Owner's Manual



! WARNING

Carefully read and follow all safety precautions in Owner's Manual. Improper use can cause serious injury to user and bystanders!

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NOTE: BATTERY MUST BE CHARGED 24HRS BEFORE FIRST USE! See page 6 for instructions.

Allow only persons who fully understand this manual to operate your sprayer.

To obtain maximum performance, life and satisfaction from your sprayer, it is very important that you read and understand the safety precautions and maintenance instructions on page 1 before using your sprayer.

WARNING

Because a backpack sprayer involves weight bearing of the tool itself on the users body, special safety precautions must be observed.

Guide to this Manual

This manual includes operating instructions for the backpack Sprayer.

It also includes information other than operating instructions that requires your special attention. Special symbols are used to bring your attention to important information.

! **WARNING** Where there is a risk of personal injury to the user, a bystander, or property damage.

⚙ **WARNING** Where there is a risk of damage to the sprayer or sprayer components.

🌿 **WARNING** Note on correct procedure for preventing environmental damage.

Failure to follow the instructions for use and maintenance of this product will void the expressed product warranty and any implied warranty.

Safety Precautions

! **WARNING** Use of backpack sprayers can be dangerous. You must read, understand, and comply with the following safety precautions for your protection and the protection of others. If you lose this manual, Crusader will provide you with a replacement manual free of charge.

! **WARNING** Improper or careless use of this sprayer can cause serious injury. Minors should never be allowed to use this sprayer. This sprayer should not be used when bystanders or animals are in the area. This sprayer should never be used while children are in the area.

! **WARNING** Never leave the sprayer unattended without turning off the power, disconnecting the power plug, relieving the line pressure, and flushing the sprayer of any harmful chemicals.

! **WARNING** Never lend or rent this sprayer without the owner's manual.
Make sure anyone using your sprayer understands all of the information included in this manual.

Operator Physical Condition

! WARNING When worn as a backpack this sprayer places weight directly on the back and shoulders of the user as well as indirectly on the lower body.

If you have any previous injuries to your back, neck, shoulders, arms or lower body, **DO NOT** use this product without first consulting your physician.

If you feel any pain or discomfort in your back neck or shoulders, arms or lower body, **DO NOT** use this product without consulting your physician.

You must be in good physical condition to operate this sprayer.

If you have, or suspect you may have any physical condition that may be aggravated by carrying weight on your back, or any strenuous activity, consult your physician before using this sprayer.

! WARNING You must be in good mental health to operate this sprayer and not be under the influence of alcohol or any drugs that could impair your vision, physical strength, dexterity, judgment, or mental capacity.

If you become tired while operating your sprayer, stop immediately, and rest. Operating your sprayer while tired may impair your strength and balance, and could result in injury if you slip or fall, or other damage if you lose control of the sprayer.

! WARNING Use of this sprayer under dangerous conditions may cause injury to the operator, bystanders and physical property. Carefully read and understand the instructions for operation of this sprayer on pages 7 -10 of this manual.

Do not modify the sprayer in any way.

! WARNING Never use this product to store or spray flammable chemicals. Explosion and death may occur.

Observe all local regulations, ordinances and laws regarding spraying, chemical use and waste disposal.

! WARNING Do not operate the sprayer in the rain. Do not operate the sprayer on steep slopes, on loose ground surfaces, on wet ground, or in any other terrain or conditions affecting balance or footing, that may cause the user to slip or fall.

Clothing

Do not wear loose fitting clothing that may become caught on obstacles while spraying. Be sure that your clothing will allow complete freedom of movement. Long hair should be confined in such a way that it does not become caught between the users back and the sprayer tank, or the tank straps and the user's shoulders.

! WARNING Good footing is a must to prevent injury from slips or falls. Wear sturdy shoes or boots with non-slip soles. Always wear proper protective clothing when handling or spraying chemicals. Protective clothing must include eye and respiratory protection as well as body and hand protection.

Carefully read and follow safety and handling instructions on chemical containers prior to chemical use. Proper eye protection and respiratory protection is a must when spraying or handling any chemical.

Use of the Sprayer

See page 4 for a diagram of the sprayer parts.

! WARNING Never operate the sprayer if it is not properly and completely assembled, or if it is damaged. Carefully inspect the unit and make sure there are no leaks. Check the operation of the spray wand before use.

Make sure the battery pack is properly installed with the battery pack retainers locked into position prior to use. See page 7 for illustration.

Place the tank on bare, flat, level ground when filling. Always make sure the inlet strainer is in place in the tank prior to filling. Remove the straps/back pad when filling the tank. Wipe any spillage from the outside of the sprayer after filling. Make sure the lid is fully tightened before use.

⚙️ WARNING The backpack is designed for use with most agricultural chemicals, pesticides, cleaning agents and many other solutions. Do not spray caustic or corrosive solutions. Contact Crusader if you are unsure if the chemical you are spraying is compatible with the sprayer.

⚙️ WARNING Do not use wettable powders with this sprayer, as it is not equipped with an agitator. Soluble powders may be used if properly mixed. Follow the filling and mixing instructions in this manual.

Make sure the straps are properly attached prior to using the sprayer. Make sure the straps and waist belt are properly adjusted prior to use.

Never point the spray wand at another person or animal, whether the sprayer is on or not.

Do not use the sprayer in windy conditions that will cause the liquid spray to be carried by the wind or "drift" to unintended areas.

Transporting the Sprayer

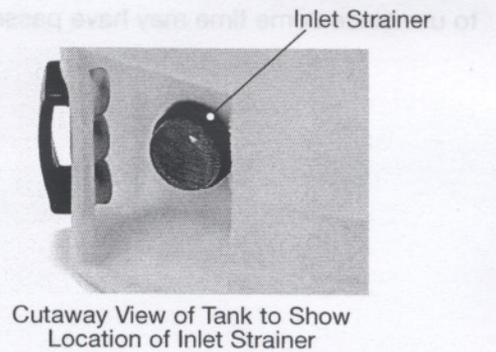
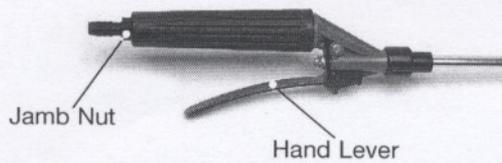
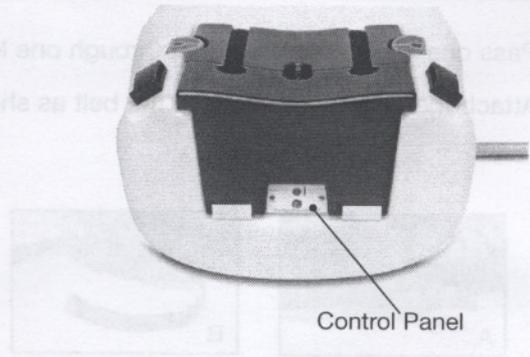
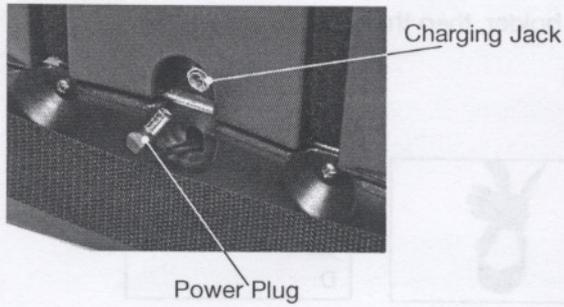
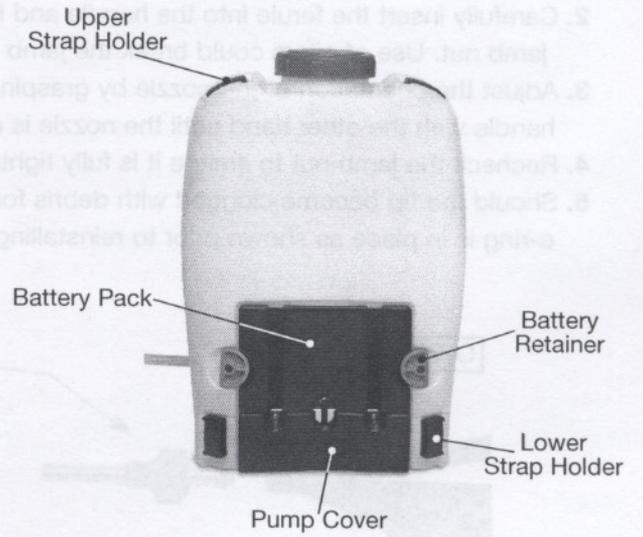
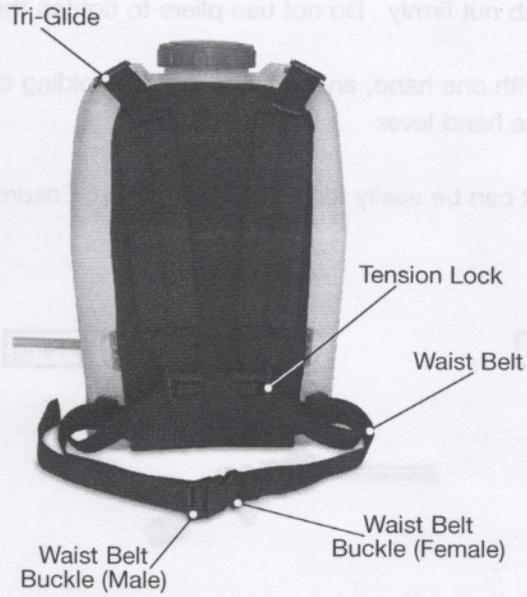
! WARNING Your backpack includes a feature in the electronics that will turn off the power to the pump if left unused for 8-10 minutes. However, always make sure the unit is turned off, the power plug is removed from the battery jack and the pressure is relieved from the sprayer prior to transporting. Always secure the sprayer when transporting to prevent it from turning over, or becoming damaged.

Maintenance and Storage

Follow the maintenance and storage instructions in this manual. Use only Crusader supplied parts and follow service instructions. Using non-approved parts will void the product warranty.

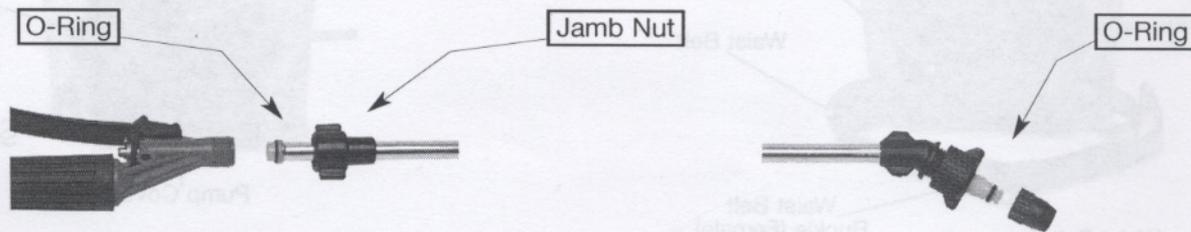
The electronics in this sprayer are engineered to work properly only with batteries supplied by Crusader. Using non-approved batteries will void the warranty. Properly dispose of batteries only at an approved recycling center.

Parts Diagram



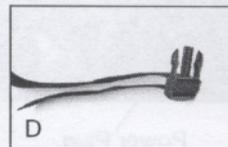
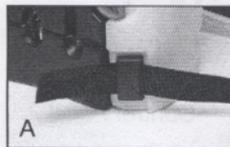
Assembling the Spray Wand

1. Check to ensure the o-ring is in place on the ferule as shown.
2. Carefully insert the ferule into the handle and tighten the jamb nut firmly . Do not use pliers to tighten the jamb nut. Use of pliers could break the jamb nut.
3. Adjust the orientation of the nozzle by grasping the nozzle with one hand, and twisting it while holding the handle with the other hand until the nozzle is aligned with the hand lever.
4. Recheck the jamb nut to ensure it is fully tightened.
5. Should the tip become clogged with debris for any reason, it can be easily removed for cleaning. Ensure o-ring is in place as shown prior to reinstalling the tip.



Attaching the Waist Belt

1. Pass one end of the waist belt through one lower strap holder, then the other as shown. (A, B)
2. Attach the male buckle end to the belt as shown. (C, D)



Your sprayer is now fully assembled. Although your battery was shipped fully charged it will require charging prior to use since some time may have passed since shipping.

Charging the Battery

NOTE: Battery must be charged 24hrs before first use.

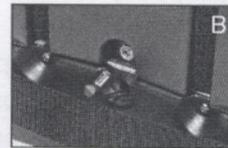
Your backpack uses a high capacity 12 Volt battery, which will provide several hours of intermittent use when fully charged, with intermittent use defined as one minute on, one minute off. For maximum life this battery requires a low amperage charge rate. A fully depleted battery will take a minimum of 14 hours to fully recharge. Always charge battery for approximately 8 hours after each use to prevent battery from reaching a low state.

The wall mount charger is a two-stage unit. It will provide maximum amperage to fully charge the battery and automatically switch to a maintenance charge rate once the battery is at full capacity to prevent overcharging.

Your backpack battery "pack" is a self-contained assembly that can be completely removed from the sprayer without tools, allowing the battery pack to be charged remotely from the sprayer. A spare battery pack can be purchased separately for heavy use situations, allowing the user to change out the battery and continue working while charging the depleted battery remotely. For your convenience the battery may also be charged while the battery pack is installed in the sprayer.

To Charge the Battery without Removing it from the Sprayer:

1. Fully loosen the shoulder straps and back pad assembly as shown to allow easy access to the battery pack. (A)
2. Remove the power plug from the charging jack as shown. (B)
3. Insert the charger plug into the charging jack as shown. (C)
4. Plug the charger into a grounded 115 Volt wall receptacle.
5. When fully charged, remove the cable plug from the charging jack and push the power plug back into place, ensuring it is fully seated.



To Charge the Battery Remotely:

1. Fully loosen the shoulder straps and back pad assembly as shown to allow easy access to the battery pack. (A)
2. Remove the power plug from the charging jack. (B)
3. Unlock the battery retainers by turning them away from the battery pack. (C, D, E)



4. Pull the battery pack away from compartment.
5. Insert the charger lead into the charging jack.
6. Plug the charger into a grounded 115 Volt wall receptacle.

8. When fully charged, remove the cable plug from the charging jack.
9. Make sure the battery retainers are in the open position as shown. (F)
10. Replace the battery pack.
11. Rotate the battery retainers to the locked position as shown. (G)
12. Push the power plug back into place making sure it is fully seated.



! WARNING Your battery retainers are brightly colored for your safety. If you see the latches showing outside of the back pad on your sprayer as shown, (A) the latches will not be properly secured. Check the latches to ensure they are locked in place prior to using the sprayer as shown. (B) With your battery fully charged you are now ready to operate the backpack.



Filling the Tank

! WARNING Always place the sprayer on a flat, level, bare ground when filling.

! WARNING Use of the inlet strainer is a must. It must be in place at all times when using the sprayer. The inlet strainer protects the pump from ingesting debris, which may cause the pump to operate poorly or not at all.

Cutaway View of Tank to Show Location of Inlet Strainer



! WARNING Your backpack is equipped with high quality, ergonomically designed shoulder straps and a full back pad for your comfort. The materials used are breathable and water resistant, yet some liquid may enter at the seams of the straps and pad. To protect these materials from chemicals the strap/pad harness should be removed when filling the tank. To remove the harness:

1. Pull the lower straps through the tension locks until free. (A)
2. Remove the upper straps from the strap holders as shown. (B, C)
3. Remove the waist belt.



If using a dissolvable powder, premix solution in a separate container according to the chemical manufacturer's instructions. Use only the exact dilution called for in the instructions provided by the powder manufacturer. Using excessive amounts of powder may result in a high concentration of solids in the sprayer tank, which may foul the pump.

! WARNING Do not use wettable powders in this sprayer. Wettable powders do not dissolve to form a solution, but are intended to require constant agitation to keep them in suspension. Your backpack does not agitate the tank contents.

Solids may settle and foul the strainer. Most popular chemicals you may be accustomed to using in wettable powder form are also available in liquid form.

! WARNING The maximum temperature of the liquid to be sprayed must not exceed 110° F/ 43° C.

WARNING Never spray insecticides with a sprayer that has been used to spray herbicides, unless the unit has been completely cleaned and flushed using the correct neutralizer per the herbicide manufacturers instructions. Failure to do so can result in the killing of plants.

It is best to fill your backpack from the side opposite that which will be against your back, so as to avoid spillage from entering the battery pack area.



When filling the tank, the level indication marks on the tank of your backpack should be considered approximate as the volume of the tank can vary in the molding process.

Always wipe the exterior of your backpack if any spillage occurred while filling. If any spillage contacted the battery pack, remove the battery back and dry the battery and terminals with a cloth, as well as the support bracket.

Once the tank is full, return the lid to the tank neck. Once in place tighten the lid firmly by rotating it clockwise.

Reinstall the waist belt per the instructions on page 5.

Replace the Harness Assembly by:

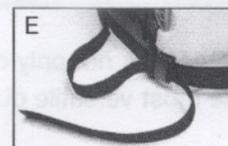
1. Slip the loose end of the upper strap through the upper strap holder.
2. Fold the loose end back toward the tri-glide (A), and pass through the first opening of the tri-glide, pulling the slack through. (B)



3. Then run the loose end through the second opening of the tri-glide. (C) pulling the slack through, and then pulling the loose end firmly to remove all slack. (D)



4. Repeat this procedure for the opposite upper strap.
5. Pass the loose end of lower strap through the lower strapholder as shown. (E)
6. Then pass the loose end of the lower strap through the bottom opening of the tension lock as shown. (F)



7. Fold the loose end back, passing it through the remaining opening of the tension lock as shown. (G)



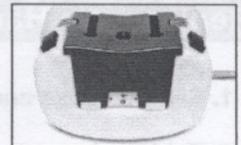
With your backpack ready for use, it is recommended you place the pack on a table or other high, level surface. Once on a table or waist high, level surface, you may put both arms through the shoulder straps, and then pull firmly down on the loose ends to tighten the straps. By using this method, you will avoid unnecessary twisting or turning, and better be able to tighten the shoulder straps.

Once your backpack is on your back with the shoulder straps tightened, buckle the waist belt and pull firmly on the loose end of the waist belt to tighten.

Turning the Power On

Your backpack features on demand operation. This means that once the power is switched on, simply squeeze the hand lever to begin spraying, and release the lever to stop. When the tank runs out of liquid, the pump will continue to run even though the wand is closed because the pump is not making enough pressure to activate the demand switch. When this occurs simply turn off the pump as described below.

1. To activate your backpack simply reach back with either hand and press the master control button once. You will notice that once you locate the button for the first time with your fingertip by feeling the raised dome of the switch, you will find it easy to locate thereafter.
2. At the same time, with the wand pointed in a safe direction, open the hand lever and watch for flow to begin.
3. Once flow has begun in a steady pattern, the pump is primed and ready for use. Simply release the hand lever to stop pump operation.
4. The hand lever features a locking mechanism that allows the handle to be locked in the on position to reduce operator fatigue. For maximum pump life, the recommended duty cycle is one minute on / one minute off of pump operation. With this in mind it is recommended that the operator avoids running the pump for more than one minute continuously with the lever in the locked position.



Selecting Speed Settings

Your backpack is not only one of the most powerful and convenient backpack sprayers available today, it is also one of the most versatile due to its variable speed capability.

- Using the low speed settings in combination with the nozzle in the most closed position will allow a fine low volume mist for delicate spraying.
- Using the lowest speed setting with the nozzle in the most open position allows for use in watering small plants or low volume dispensing.
- Using the higher speed settings with the nozzle in the most closed position will deliver a high volume mist for maximum coverage of large areas.

WARNING If the nozzle is closed too tightly in the highest speed setting, the pressure switch may rapid cycle. If this occurs, open the nozzle slightly until the cycle stops.

- Using the highest speed setting with the nozzle in the most open position provides a long-range stream.

To Change Pump Speeds:

1. Once your backpack is primed per the procedure on page 9, simply press the master control button once to advance to the next speed setting.
2. Each time the master control is pressed once, the pump will advance to the next speed setting.
3. When on speed 4, the highest setting, pressing the master control will shut the power off. To turn the power on again, simply push the master control once, and follow the above steps to advance the speed.
4. The speed may be advanced while the pump is operating with the hand lever squeezed while spraying, or with the hand lever closed, simply by pressing the master control.
5. The spray tip may be opened to the stream setting or tightened to deliver the desired cone pattern at any of the speed settings.

Turning the Power Off

1. To turn the power off, simply push the master control button, and hold the button down for two seconds. This will turn the power off no matter what speed setting the control was set at.
2. After shutting off the power, always relieve the system pressure for safety, by pointing the wand in a safe direction and squeezing the hand lever on the spray wand for several seconds.
3. After turning the power off and relieving the system pressure, always disconnect the power plug for safety.

Safety Time Out Feature

If left unused for approximately 8-10 minutes, your backpack will automatically shut the power to the pump off. To reactivate, simply push the master control button once.

Low Battery Indicator

When the battery in your backpack needs to be recharged, the pump will automatically shut off and the indicator lamp will blink.

Because your backpack has an advanced microprocessor that maintains a steady pump speed as battery charge level drops, you will not notice the pump slowing as the battery drains. With this in mind and although a single charge can last for many hours, there is no warning that your battery is near the level at which it will need to be recharged.

It is not necessary to fully deplete the battery before recharging. After any period of use, the battery may be charged and returned to full capacity without risk of damage or reduction of cycle life.

Transportation

When transporting your backpack always follow the steps in the **Turning the backpack off** instructions above. Always secure the backpack in an upright position when transporting and protect the hose from sharp objects.

If the backpack is tipped over, it is possible for the contents to seep from the lid vent. Never transport the backpack on its sides and never transport the backpack with harmful chemicals in the tank.

Cleaning and Storage

When finished spraying, turn the power off by pressing the master control button and holding it down for at least two seconds. With the wand pointed in a safe direction, squeeze the hand lever to relieve the pressure in the discharge line.

When facing the label side of the tank, reach into the bottom left corner of the sprayer tank and remove the inlet strainer, you may need the assistance of someone with a smaller arm to access this hard to reach area. Once removed clear any debris from the strainer by placing it under running water. Reinstall the strainer taking care that it is firmly in place.

Carefully unscrew the hose connection to the spray wand handle to expose the strainer. Remove the strainer and clear it of any debris by placing it under running water. Replace the strainer and hose connection, tightening it firmly.

Disconnect the power plug from the battery jack to ensure that the pump will not be unintentionally activated. Remove the strap assembly as described on page 8, and pour any remaining contents of the tank into an appropriate storage container for future use or disposal in accordance with local regulations.

Clean the tank and other exterior surfaces of your backpack by wiping with a damp cloth. Do not use abrasive cleaners or solvents to clean the tank and exterior surfaces as they may cause deterioration.

Flushing the Tank

! WARNING When flushing the tank it is recommended that you follow the chemical manufacturers flushing instructions carefully for the chemical you are spraying. Failure to do so can result in damage to humans and the environment.

It is safe to use most flushing solutions recommended by your chemical dealer so long as the solution is formulated for use with sprayers and does not include flammable or petroleum products. Follow the instructions carefully if using a flushing solution.

You may also flush the tank by adding several gallons of clean water, and after ensuring the tank lid is firmly tightened, shaking the tank to agitate the clean water and dissolve any remaining chemical. Properly dispose of the contents of the tank in accordance with local regulations.

After flushing the tank, add one gallon of clean water to the tank. Set the master control to the highest speed setting and with the wand pointed in a safe direction, squeeze the hand lever and allow the pump to run until the tank is empty. This will flush the hose and wand.

Turn the sprayer off, remove the plug from the battery jack and bleed the discharge pressure by pointing the wand in a safe direction and pulling the trigger.

Storage

Store your backpack in an upright position with the tank empty, pressure relieved from the discharge line and wand, and the power plug removed from the battery jack. Store the unit away from direct sunlight, and out of the reach of children.

When storing your backpack in freezing conditions, follow the flushing procedure as described above and then completely clear the system of fluid as follows:

Once the tank is empty, to completely clear the pump, discharge hose and wand of liquid; place the backpack on a table or high flat surface so that the wand and hose can be held below the level of the tank and allow the pump to run until the line is visibly clear of liquid.



WARNING

Warning the system must be flushed, drained and relieved of pressure prior to storage in freezing conditions to prevent damage to the pump.

Troubleshooting

Problem:	Check:
<p>Power indicator lamp does not illuminate / pump will not run.</p>	<p>Remove battery pack and check wire connections at battery terminals, black wire to (-) battery connection and black and white wire to (+) battery connection.</p>
	<p>Remove the power plug and check the battery jack to ensure it is clear of debris, chemical residue and is dry. If chemical residue is found it can be cleaned with a light spray of WD-40 which will restore use. Reinstall the power plug.</p>
	<p>Bypass the PC board by disconnecting the wire connections to the pump from the PCB and apply power directly to the pump terminals. If pump runs, replace the PCB. If pump does not run, replace pump and PCB.</p>
	<p>Remove the battery pack and check the battery with a voltmeter. If the battery shows less than 11.5 volts replace battery.</p>
<p>Power indicator illuminates / pump will not run.</p>	<p>Bypass the PC board by disconnecting the wire connections to the pump from the PCB and apply power directly to the pump wires; red (+), black (-). If pump runs, replace the PCB. If pump does not run, replace pump and PCB.</p>
<p>Power indicator illuminates, pump motor runs but does not pump fluid.</p>	<p>Check pump inlet hose to ensure it is not blocked, or leaking.</p>
	<p>Check discharge hose, wand strainer and wand tip to ensure they are not blocked.</p>
<p>Pump operates but cycles or will not shut off when wand handle is released.</p>	<p>Open the spray tip slightly until the pump stops cycling. Turn off pump, bleed system pressure, disconnect spray lance from handle and check that the spring loaded plunger in the handle is free of debris and the valve seat on the spray lance fitting is free of debris.</p>
	<p>Check all discharge hose connections, including connection at pump, for leaks.</p>
<p>Pump operates but flow rate is reduced.</p>	<p>Check the inlet strainer to ensure it is clear of debris.</p>

Spare Parts Kits

Kit	Part Number	Includes
Lid	5004	Lid
Inlet Strainer	5005	Inlet Strainer
Tri-glide Kit	5006	Tri-glides (2)
Harness Kit	5007	Shoulder Harness
Waist Belt	5008	Waist Belt and Buckles
Battery Pack	5003	Complete Battery Pack Assembly
Wall Charger	5001	Wall Charger and Cable
Pump Assembly	5014	Complete Pump Assembly with Inlet and Outlet Hoses and Hardware
PC Board	5009	PCB with Wire Harness
Sprayer Tank	5010	Tank Only
Spray Wand	5011	Spray Wand with Hose Clamp
Pump Cover	5012	Pump Cover and Mounting Screws
Spray Hose	5013	Spray Hose and Hardware

*Acid Wand

5002

Plastic Acid Resistant
Spray Wand

Specifications

Tank Material:	Polyethylene
Tank Capacity:	4 US Gallons [15.14 Liters]
Battery:	12 Volt, 7.0 Amp/Hour Sealed Lead/Acid
Charger:	Automatic Sealed Lead Acid 120 Volt 60Hz input, 12VDC 1,000 mA Output
Pump:	SHURflo SLV Series, 12 Volt, 1.0 GPM Max. 40 PSI Demand Switch
Pump Materials of Construction:	Polypropylene Pump Body, Viton® Valves, Santoprene® Diaphragm
Duty Cycle:	Intermittent
Spray Hose:	Reinforced/Braided PVC
Spray Wand:	Polypropylene handle, aluminum lance, Plastic Tip, Adjustable Cone / Stream Pattern
Inlet Strainer:	PVC / Stainless Steel

Industrial Product Limited Warranty

The Crusader back pack sprayer is warranted to be free of defects in material and workmanship under normal use, for a period of one (1) year from the date of manufacture.

The limited warranty will not apply to pumps/products that were improperly installed, misapplied, damaged, altered, or are incompatible with fluids.

All industrial pumps/products must be flushed of any chemicals before shipping.

Returns are to be shipped postage prepaid to Crusader Mfg. Inc. Crusader shall not be liable for freight damage incurred during shipping. Package returns carefully.

Crusader's obligation under this warranty policy is limited to the repair or replacement of the pump/product. All returns will be tested per Crusader factory criteria.

No credit or labor allowances will be given for pumps or products returned as defective. Warranty replacement will be shipped on a freight allowed basis.

This limited warranty is in lieu of all other warranties, expressed or implied, and no other person is authorized to give any other warranty or assume obligation or liability on Crusader's behalf. Crusader shall not be liable for any labor, damage, or other expense, nor shall Crusader be liable for any indirect, incidental, or consequential damages of any kind incurred by the reason of the use or sale of any defective product or part. This limited warranty covers industrial products distributed within the United States of American and Canada.

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