



ATV Sprayer
Owner's Manual
Model ATV-25



Paul B. Zimmerman Inc. • 50 Woodcorner Rd. • Lititz PA 17543
(717) 738-7350 • www.pbzinc.com

Paul B. Zimmerman Inc. thanks you for choosing to purchase one of our sprayer models. We appreciate your business and want to personally fill all of your sprayer needs. We also desire to provide you with the technical support and needed parts that will allow you to continue spraying without disruption. See the Contact Us section on page 13.

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Before You Begin

- ◆ **Please read and understand this manual and its instructions and warnings completely before operating the sprayer.**
- ◆ **Be aware of all safety guidelines, warnings, and cautions including those of the ATV or utility vehicle**
- ◆ **Read and understand the chemical manufacturer's labels, warnings, and instructions.**
- ◆ **Know and fulfill all state pesticide applicator license requirements.**
- ◆ **Familiarize yourself and other operators with the sprayer's components and how all parts are operated.**

! Safety Precautions !

General Guidelines

Every year many unnecessary accidents occur due to improper equipment handling and a disregard for safety precautions. You, the operator, can avoid accidents by observing the precautions in this section.

- ◆ The operator should be a responsible adult. **Do not allow persons to operate this sprayer until they have displayed a thorough understanding of sprayer safety precautions and operational use!**
- ◆ **All operators must also fulfill state pesticide applicator license requirements!**
- ◆ Never attempt to operate this sprayer when under the influence of alcohol or drugs.
- ◆ The best defense against accidents is a careful and responsible operator.
- ◆ A chemical warning decal and an owner's manual warning decal are located on the applicator's tank. Be aware of their location. See Figure 1 and Figure 2.
- ◆ Always replace any warning decals that aren't legible or are missing.
- ◆ Always replace any safety warning decals that are not legible or are missing.
- ◆ When transporting the sprayer on public roads, always follow state and local regulations regarding safety and transportation requirements. Use the necessary lights and slow moving vehicle (SMV) emblems.
- ◆ If there is any portion of this manual that you do not fully understand, please contact Paul B. Zimmerman, Inc.

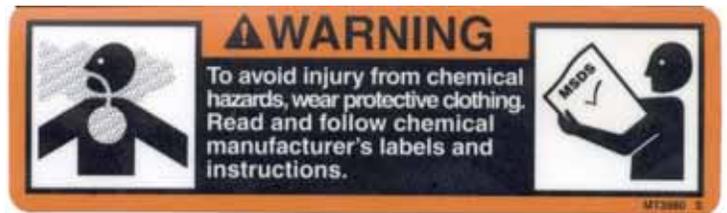


Figure 1: Chemical Warning Decal(# DEMENT3980)



Figure 2: Owner's Manual Decal(# DE39)

Before Operation

- ◆ Carefully study and understand this owner's manual.
- ◆ **Read and follow chemical manufacturer's labels, warnings, and instructions!** A material safety data sheet (MSDS) should be provided by the chemical manufacturer.
- ◆ To avoid injury from chemical hazards, **wear the proper protective clothing. Each chemical manufacturer's clothing requirements are listed under the "Personal Protective Equipment (PPE) section in the chemical instructions.**
- ◆ Do not wear loose-fitting clothing which may catch in moving parts.

- ◆ It is also recommended that operators wear suitable hearing and eye protection.
- ◆ Never exceed the ATV or utility vehicle manufacturer's load rating.
- ◆ **Give the sprayer a visual inspection** for any worn parts, loose bolts, or other visible problems, and make the necessary repairs. **See the maintenance section on page 7.**
- ◆ Make sure the area is clear of any people or obstructions before using the sprayer.
- ◆ Have all operators practice operating the sprayer and its attachments until all persons are completely capable of safe operation.

During Operation

- ◆ **Always be aware of bystanders, particularly children!** Always look before moving the sprayer or the ATV.
- ◆ **No passengers** are allowed on or in the ATV or sprayer at anytime.
- ◆ Keep hands and body parts clear of all moving parts.
- ◆ Be aware of dangerous terrain such as holes, slopes, drop-offs, banks, rocks, and hidden hazards.
Operate the ATV and sprayer up and down slopes, not across.
- ◆ Allow for sprayer boom length when making turns.
- ◆ Never leave running equipment unattended!
- ◆ Remember that accidents can even happen to seasoned operators. Always take your time and follow all safety instructions.

Following Operation

- ◆ Following operation, stop ATV unit, set brakes, shut off engine, and remove ignition key.
- ◆ Park the sprayer on a hard level surface
- ◆ Store the sprayer away from human and livestock activity.
- ◆ Do not permit children to play on or around sprayer.

Pump Safety Precautions

- ◆ Never pump flammable or explosive fluids such as gasoline, fuel oil, kerosene, etc.
- ◆ **Note: The pump may be run run dry for limited periods without resulting in damage.** Regardless of whether the pump is running dry or with liquid, it should not be run continuously for extended periods of time. This could cause the pump to exceed its maximum temperature rating.
- ◆ Always disconnect the power to the pump when working on the pump. Failure to do this could result in electrical shock.

Mounting the Sprayer

This sprayer is designed to be mounted on the rack or on the back of most ATVs and utility vehicles. Mounting the sprayer correctly and securely will ensure consistent and safe spraying.

1. Before installing your sprayer, **make sure that the sprayer unit does not exceed the ATV manufacturer's load rating.** The sprayer unit could weigh up to 230 lbs when filled with 25 gallons of water.
2. In most cases, the sprayer unit is placed on the rear rack of the ATV and securely strapped down. In a permanent situation the sprayer unit could also be bolted down. Regardless of how the sprayer is mounted, it is essential that sprayer is properly secured.
3. Each mounting kit includes a 8' wiring harness. The end of the harness with the fuse needs to be attached to a power source that contains at least 10 amps, 12 volts. In most cases this is your ATV's battery. The other end of the harness attaches to the Shurflow Pump. **Do not attach the wiring harness while the ATV is running!**
4. Position the On-Off switch where it is readily accessible for stopping and starting the pump.

Calibrating the Sprayer

Note: All calibration needs to be done with water!

When spraying with the boom, the sprayer must be calibrated to ensure proper spray coverage. The calibration process is simplified when broken up into the following three steps:

1. Calculate the speed of the ATV or utility vehicle.
2. Determine the nozzle size and consult the calibration chart for the desired or instructed Gallon per Acre(GPA).
3. Set the the pressure accordingly using the relief valve.

1. Calculating the Speed

It is important to to determine what speed your ATV will be traveling at while spraying. While some ATVs have speedometers, it is still recommended that speed is calculated for all ATVs for accuracy purposes. To determine the speed follow the four following steps:

1. Measure a 200 foot or 300 foot distance on a field or a surface similar to where you will be spraying.
2. Drive the ATV and sprayer (half-full is optimal) across the measured distance at a constant rate of speed. There can be no changes in speed while you are measuring the time. This should be a comfortable speed for spraying.

3. Have someone measure the amount of time(in seconds) it takes to travel the measured distance.
4. Your speed can be found by entering your data into the equation $\text{Speed(mph)} = (\text{Distance(ft)} \times 60) / (\text{Time(seconds)} \times 88)$ or by consulting the table to the left.

Note: It is helpful for future references to record the exact RPM and gear used to find your speed.

Speed in MPH	Time required(seconds) to travel a distance of:	
	200 feet	300 feet
1.0	136	205
1.5	91	136
2.0	68	102
2.5	55	82
3.0	45	68
3.5	39	58
4.0	34	51
4.5	30	45
5.0	27	41
5.5	25	37
6.0	23	34
6.5	21	31
7.0	19	29

2. Determining Nozzle Size and Using Calibration Chart

The spray nozzles on your sprayer are color-coded to match up with the calibration chart. After you have determined your nozzle size, you need to look at the calibration chart. Using your ATV speed, nozzle size, and desired gallons per acre (GPA), find the pressure (psi) necessary to achieve your GPA. It is important to note that lower pressure settings will result in less spray drift.

Example: Assume you have found your ATV speed to be 5 MPH, your nozzles are yellow (XR11002), and you want to spray 10 GPA. Upon looking at the chart, you find that you should set the sprayer's pressure at about 29 psi in order to apply 10 GPA.

3. Adjusting the Pressure on Your Sprayer

Note: All calibration needs to be done with clean water!

You have found the correct pressure setting, but must now adjust the sprayer to that pressure setting. Before you adjust the sprayer's pressure, it is important to set the ATV's RPM at the rate that was used to find the ATV's speed. The relief valve controls the sprayer's pressure and is located directly beside the pressure gauge. When you go to spray, turn the relief valve until you achieve the necessary pressure. You have successfully calibrated the sprayer

Note: Due to normal wear, Teejet® recommends that you replace your sprayer nozzles after every spraying season. Nozzle replacement will ensure accurate spraying performance.

Calibration Chart

Tip Size	PSI	GPM of one nozzle	Gallons Per Acre			
			3 MPH	4 MPH	5 MPH	6 MPH
XR110015	15	0.092	9.2	6.8	5.5	4.6
	20	0.11	10.8	8.2	6.5	5.4
	30	0.13	12.8	9.7	7.7	6.4
	40	0.15	14.8	11.1	8.9	7.4
XR11002 (Standard Size)	15	0.12	11.8	8.9	7.1	5.9
	20	0.14	13.8	10.4	8.3	6.9
	30	0.17	16.8	12.6	10.1	8.4
	40	0.20	19.8	14.9	11.9	9.9
XR110025	15	0.15	14.8	11.1	8.9	7.4
	20	0.18	17.8	13.4	10.7	8.9
	30	0.22	21.8	16.3	13.1	10.9
	40	0.25	24.8	18.6	14.9	12.4

Please note: Flow rates are calculated using water.

Operating Instructions

Before operating the sprayer, it is important that you read this entire manual and know all safety precautions. Always take your time and be alert when operating your sprayer. This will allow you to safely spray without accident or interruption.

Spraying with the Boom

1. Calibrate the sprayer using the preceding calibration instructions and chart. This will determine what pressure to spray at in order to achieve the desired Gallons per Acre (GPA).
2. Fill the tank with some water in order to set the pressure and test for leaks.
3. Prepare the sprayer for spraying by closing the ball valve in the boom supply line
4. Start the ATV and engage the pump by turning on the power switch on the wiring harness. The ATV should be running at the RPM rate determined when you calibrated your sprayer. Ensure that there are no leaks in any of the lines.
5. Using the relief valve, adjust the sprayer's pressure to the pressure rating found when you calibrated your sprayer. When you open the boom supply line valve you may need to readjust the pressure.
6. You may now fill the tank with the amount of water and chemicals recommended by the chemical being used. After the tank is full, engage the pump and allow the water to circulate to ensure proper mixing of the chemicals and water. You are now ready to begin spraying.

7. Upon arriving at the spraying location, open the booms, engage pump, and make sure the pressure setting is correct. While spraying always remember to maintain a constant level of speed and RPM (rates found when calibrated).

Note: Since the maximum pump pressure is 45 psi, setting the pressure above 45 psi will cause the pump to cycle on and off.

Spraying with the Spray Gun

1. Fill the tank with some water in order to set the pressure and test for leaks.
2. Prepare the sprayer for spraying by closing the ball valve in the boom supply line
3. Start the ATV and engage the pump by turning on the power switch on the wiring harness. The ATV should be running at the RPM rate determined when you calibrated your sprayer. Ensure that there are no leaks in any of the lines.
4. Adjust the sprayer's pressure using the relief valve to your desired setting
5. You may now fill the tank with the amount of water and chemicals recommended by the chemical being used. After the tank is full, engage the pump and allow the water to circulate to ensure proper mixing of the chemicals and water. You are now ready to begin spraying.
6. Upon arriving at the spraying location, engage the pump, and make sure the pressure setting is correct. Press the trigger on the spray gun to engage the gun. The tip at the end of the gun can be turned to adjust the spray pattern.

Maintenance Instructions

Routine Maintenance

It is very important to perform routine maintenance on your sprayer before and after each use. Good maintenance practices will help to guard against any unnecessary sprayer breakdowns or accidents.

1. It is recommended to perform a visual and physical inspection for any worn parts, loose bolts, or other visible problems. Make all necessary repairs before spraying. See the Contact Us section (pg. 13) for instructions on ordering parts and getting technical help.
2. **After each use it is important to rinse the pump** and all components by running water through the system. Rinsing the pump with fresh water will greatly improve the life of the pump!
3. The inline filter should be taken out and rinsed. **Note:** Be careful not to lose the gasket in the filter bowl. A missing gasket will cause the strainer to leak.
4. Tip strainers should also be taken out and rinsed after every use. Tip strainers are a small screens that are located behind each spray nozzle on the boom.

Pump Maintenance

1. Follow all pump safety precautions and warnings (pg. 3). Following these guidelines will help to ensure many years of smooth and trouble-free pumping.
2. **Always flush the pump out with fresh water after every use.** It is also very important to winterize your pump to prevent freezing and corrosion. See below for winterizing instructions.
3. After many years of use you may find that your pump is leaking or has experienced a decrease in performance. You may need to change the diaphragm or the switch. Contact Paul B. Zimmerman for parts and technical support.

Winterizing your Sprayer

To avoid damage from freezing and corrosion, it is important to winterize your sprayer before temperatures grow too cold.

1. Verify that the tank is empty and rinsed out. Dump ½ - 1 gallon of RV nontoxic antifreeze into the tank. **It is not recommended to use standard Antifreeze. Standard antifreeze can be harmful to humans, animals, crops, and the environment.**
2. Engage the pump and spray with the boom and subsequently the spray gun. Make sure that the antifreeze has been pumped through the entire system including all spray nozzles.
3. Store the sprayer in a dry location away from the elements.
4. Before spraying in the spring it is recommended to flush the sprayer with fresh water to cleanse it of the antifreeze and any other buildup. It would also be beneficial to do a thorough inspection of all sprayer components before spraying.

Paul B. Zimmerman, Inc. Limited Warranty

25 Gallon ATV Sprayer: Model ATV-25

Warranty Coverage

Paul B. Zimmerman, Inc. hereby provides a **Limited One (1) Year Warranty** on the 25 gallon ATV sprayer, model ATV-25, manufactured by Paul B. Zimmerman, Inc. from the date of original purchase. ATV sprayers built by Paul B. Zimmerman, Inc. are warranted against any manufacturer's defects that may occur to any of the sprayer's components in the 12 months following the original date of purchase. This warranty covers the purchaser of this ATV sprayer and any other owners who own it during the one year warranty period. To retain the warranty, the ATV sprayer must be operated and maintained as ascribed by its owner's manual.

Warranty is void if:

1. The ATV sprayer has been subjected to, in the opinion of Paul B. Zimmerman, Inc., negligent handling, misuse, an accident or if the instructions in the owner's manual were not followed.
2. The ATV sprayer's components have been altered in any manner or repairs have taken place with unapproved parts. Alterations include adjusting the pressure setting of the pump.
3. The ATV sprayer and its components were subject to freezing or freezing conditions. The ATV sprayer must have been winterized as per the maintenance instructions to retain the warranty.
4. The ATV sprayer was powered by a power source other than a 10 amp, 12 volt DC power source.
5. A non-compatible chemical was used and/or if the sprayer operator failed to rinse all chemical residue out of the sprayer's components after use.
6. A petroleum-based, oil-based, or flammable product was used and caused damage to the pump, tank, hoses, or any other component.

Getting Service

All ATV sprayer warranty claims must be made through Paul B. Zimmerman, Inc. All warranty claims must be submitted with an invoice or a proof of purchase that denotes the purchase date and place. If you have any questions or comments concerning this warranty, please contact Paul B. Zimmerman, Inc.

Parts List (cont.)

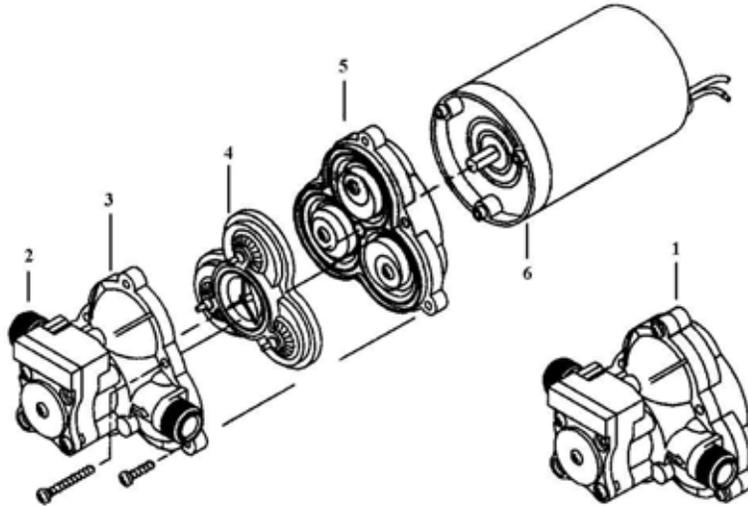
<i>Ref #</i>	<i>Qty</i>	<i>Part Number</i>	<i>Description</i>
14	1	9408	Ball valve, 1/2" hose barb
15	N/A	6108	Vinyl reinforced hose braided hose, 1/2"
16	1	3A1212	Poly adapter, 1/2" MNPT x 1/2" hose barb
17	2	8TT12	Poly threaded tee, 1/2" NPT
18	1	3M12	Poly nipple, 1/2" x short
19	4	FW14S	Stainless flat washer, 1/4"
20	1	60323	Tank lid, 5"
21	2	MR1024*38S	Stainless machine screw, 10/24 x 3/8"
22	1	3EL1238	Poly elbow, 1/2" MNPT x 3/8" hose barb
23	1	C13201	Large gun holder clip
24	1	N189472	Small gun holder clip
25	1	2312012PP**	Poly relief valve, 1/2", 100 psi
26	1	10957	Poly tank, 25 gallon
27	1	DEMT3980	Warning label
28	1	T234	Sprayer frame
29	4	H5C516*34	Course bolt, 5/16" x 3/4", grade 5
30	4	LW516	Lock washer, 5/16"
31	12	NC38	Course nut, 3/8"
32	6	LW38	Lock washer, 3/8"
33	1	T38	Poly hose barb, 3/8"
34	2	BF1210	Boom mounting clip
35	4	H5C38*214	Course bolt, 3/8" x 2 1/4", grade 5
36	1	BF1211	Center boom frame
37	1	GG100	Stainless guage, liquid filled, 2 1/2", 100 psi
38	2	NNC12	Nylon lock nut, 1/2"
39	2	FW12	Flat washer, 1/2"
40	2	H5C12*5	Course bolt, 1/2" x 5", grade 5
41	2	H5C38*2	Course bolt, 3/8" x 2", grade 5
42	1	BF1212L	Left boom wing
	1	BF1212R	Right boom wing (not shown)
43	2	N221267	Zinc eye bolt, 3/8" x 4"
44	2	33*TS	Extension spring, 1" x 6"
45	8	QJ111SQ114	Nozzle body clamp, 1-1/4" square
46	8	2195010NYB*	Chemsaver end cap assembly
47	8	CP21953EPR*	EPDM rubber diaphragm
48	6	CP22240NYB*	1/2" nozzle body tee (only the body)
	2	CP22237NYB	1/2" nozzle body elbow (not shown)
49	6	22252312500NYB	Complete nozzle body tee, 1/2" (includes ref# 46, 47, 48)
	2	22251311500NYB	Complete nozzle body elbow, 1/2" (not shown)
50	8	8079PP50	Stainless nozzle screen, 50 mesh, red
51	8	CP19438EPR	EPDM nozzle gasket
52	8	XR11002VK***	Ceramic spray tip, yellow
53	8	256126NYR	QJ nozzle cap, yellow
54	1	9429*	Fused pigtail wiring harness
55	1	9425	8' wiring harness with switch (includes ref# 54)

* Individual part is included in a complete assembly.

** Relief valve breakdown listed on page 12.

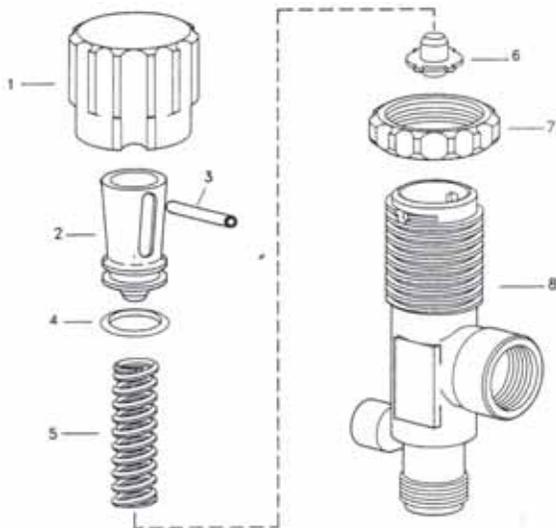
*** Other tips are available; see page 5 for calibration chart.

Shurflo Pump Breakdown



<i>Ref #</i>	<i>Qty</i>	<i>Part Number</i>	<i>Description</i>
1	1	94-236-11	Complete pump head
2	1	94-230-36	Switch kit, 45 PSI
3	1	94-231-30	Upper housing kit (does not include switch)
4	1	94-232-05	Viton valve kit
5	1	94-238-03	Drive kit with diaphragm
6	1	1111100	Motor, 12 volt

23120 Relief Valve Parts Breakdown



<i>Ref #</i>	<i>Qty</i>	<i>Part Number</i>	<i>Description</i>
1	1	CP23122-NY	Nylon adjusting cap
2	1	CP23124-PP	Polypropylene spring retainer
3*	1	CP23126-302SS	Stainless retaining pin
4*	1	CP7717-15-EPR	EPDM rubber O-ring
5*	1	CP23127-302SS	Stainless spring
6	1	CP23125-PP	Polypropylene guide seat
7	1	CP23123-PP	Poly lock ring
8	1	CP23128-PP	Polypropylene body, 1/2" MNPT
*	1	PK-AB23120-KIT	Spare parts kit (includes ref # 3,4,5)

Contact Us

We desire to give you continuing service in the best manner possible. This includes listening to your comments, suggestions, and problems. We will do our best to answer all questions thoroughly and in a timely manner. We have trained sprayer technicians who are more than willing to listen to any questions or problems and help you to find a feasible solution.

Ordering Parts

We have a fully-stocked parts department that will be able to meet all of your parts needs. Our trained salespersons will ensure that all purchases are processed smoothly and shipped in a timely manner. Our hardware store also has a plumbing, electrical, automotive, paint, lawn & garden, and a power tool department. We are set up to ship our products via UPS and would be glad to work with you on the best shipping solution. If you desperately need a part, we are able ship UPS Next Day Air for many locations.

Note: When ordering parts, please provide our sales staff with the correct part number and description listed on the parts list. **To directly reach our parts department, please call (717) 738-7355 ext 2000.**



50 Woodcorner Road
Lititz PA, 17543
Parts Dept (717) 738-7355 ext 2000
Corporate Office (717) 738-7350
Fax (717) 738-8061
www.pbzinc.com

