



# WORKHORSE

S P R A Y E R S®

by PSE®, a Division of Green Leaf, Inc.®

## Assembly / Operation Instructions / Parts



ATV 2507

### 25 GALLON DELUXE ATV SPRAYER - 7 NOZZLE

Polyethylene Tank  
12 Volt Diaphragm Pump  
2.2 G.P.M.  
Lever Handgun  
15 Ft. of 3/8" Hose (handgun)  
Pressure Gauge  
Adjustable Pressure range (0-60 PSI Max.)  
7 Nozzle Fold Out Boom  
Quick Detach Spray Boom Feature

### — GENERAL INFORMATION

The purpose of this manual is to assist you in assembling, operating and maintaining your lawn and garden sprayer. Please read it carefully as it furnishes information which will help you achieve years of dependable trouble-free operation.

### — ASSEMBLY

Tools required:

- 1 - 7/16" End Wrench
- 2 - 1/2" End Wrenches
- 1 - Thread Sealant
- 1 - 9/16" End Wrench
- 1 - Blade Screwdriver
- 1 - 3/16" Allen Wrench

### — WARRANTY / PARTS / SERVICE

Workhorse products are warranted for one year from the date of purchase against manufacture or workmanship defects for personal or homeowner usage with proof of purchase. Workhorse products are warranted for 90 days for commercial users. Any unauthorized modification of a Workhorse brand sprayer will void warranty.

Your authorized dealer is the best source of replacement parts & service. To obtain prompt, efficient service, always remember to give the following information:

1. Correct part description and part number.
2. Model number of your sprayer.

Part description and part numbers can be obtained from the illustrated parts list section of this manual.

Whenever you need parts or repair service, contact your distributor/ dealer first. For warranty work always take your original sales slip, or other evidence of purchase date, to your distributor / dealer.

## — OPERATION

This sprayer is designed to be attached to an ATV rack or other stable surface. The pumping system draws solution from the tank, through the strainer and to the pump. The pump forces the solution under pressure to the spray wand and spray boom. The pump has a pressure switch which will shut the pump off when it reaches 60 PSI. Pressure may be regulated by opening or closing the bypass valve located on the top of the tank. Also, the boom can be cycled on and off with this valve. See the illustration in this manual for more details on using the bypass valve.

**Regularly inspect the suction supply screen on the inside of the tank. Flush with water to clear any accumulated debris.**

## — CALIBRATION

Chemical labels may show application rates in gallons per acre, gallons per 1000 square feet or gallons per 100 square feet. You will note that the tip chart shows all three of these rating systems. Once you know how much you are going to spray then determine (from the tip chart) the spraying pressure (PSI), and the spraying speed (MPH). Conditions of weather and terrain must be considered when setting the sprayer. Do not spray on windy days. Protective clothing must be worn in some cases. **Be sure to read the chemical label carefully.** Determining the proper speed of the tractor can be done by marking off 100, 200 and 300 feet. The speed chart indicates the number of seconds it takes to travel the distances. Set the throttle and with a running start travel the distances. Adjust the throttle until you travel the distances in the number of seconds indicated by the speed chart. Once you have reached the throttle setting needed, mark the throttle location so you can stop and go again (returning to the same speed). Add water and proper amount of chemical to tank and drive to the starting place for spraying. When you are ready to spray, turn the boom valve to the "on" position. This will start solution spraying from the tips once the pump is turned on. The pressure will decrease slightly when the boom is spraying.

## — AFTER SPRAYING

After use, fill the sprayer part way with water. Start the sprayer and allow clear water to be pumped through the plumbing system and out through the spray wand and boom. Refill the tank about half full with plain water and use a chemical neutralizer such as Nutra-Sol® or equivalent and repeat cleaning instructions. Flush the entire sprayer with the neutralizing agent. Follow the chemical manufacturer's disposal instructions of all wash or rinsing water.

## — WINTER STORAGE

Drain all water and chemical out of sprayer, paying special attention to pump and valves. These items are especially prone to damage from chemicals and freezing weather. The sprayer should be winterized before storage by pumping a solution of RV antifreeze through the entire plumbing. Proper care and maintenance will prolong the life of the sprayer.

### RATE CHART FOR 80/110-02 SPRAY TIP

Pressure (PSI)	Capacity (GPM)	GALLONS PER ACRE BASED ON WATER - 20" SPACING						
		1 MPH 88 FPM	2 MPH 176 FPM	3 MPH 264 FPM	4 MPH 352 FPM	5 MPH 440 FPM	7.5 MPH 660 FPM	10 MPH 880 FPM
20.0	0.14	41.8	20.9	14.0	10.5	8.4	5.6	4.2
30.0	0.17	51.2	25.6	17.2	12.9	10.3	6.9	5.1
40.0	0.20	59.2	29.6	19.8	14.9	11.9	7.9	5.9
50.0	0.23	66.4	33.2	22.2	16.6	13.3	8.8	6.6
Pressure (PSI)	Capacity (GPM)	GALLONS PER 1000 SQ. FT. BASED ON WATER - 20" SPACING						
		.96	.48	.32	.24	.19	.13	.10
20.0	0.14	.96	.48	.32	.24	.19	.13	.10
30.0	0.17	1.18	.59	.39	.30	.24	.16	.12
40.0	0.20	1.36	.68	.45	.34	.27	.18	.14
50.0	0.23	1.52	.76	.51	.38	.31	.20	.15
Pressure (PSI)	Capacity (GPM)	GALLONS PER 100 SQ. FT. BASED ON WATER - 20" SPACING						
		.096	.048	.032	.024	.019	.012	.009
20.0	0.14	.096	.048	.032	.024	.019	.012	.009
30.0	0.17	.117	.059	.039	.029	.024	.015	.011
40.0	0.20	.135	.066	.045	.034	.027	.018	.013
50.0	0.23	.152	.076	.050	.038	.030	.020	.015

MPH- Miles Per Hour • FPM- Feet Per Minute • PSI- Pounds Per Square Inch • GPM- Gallons Per Minute

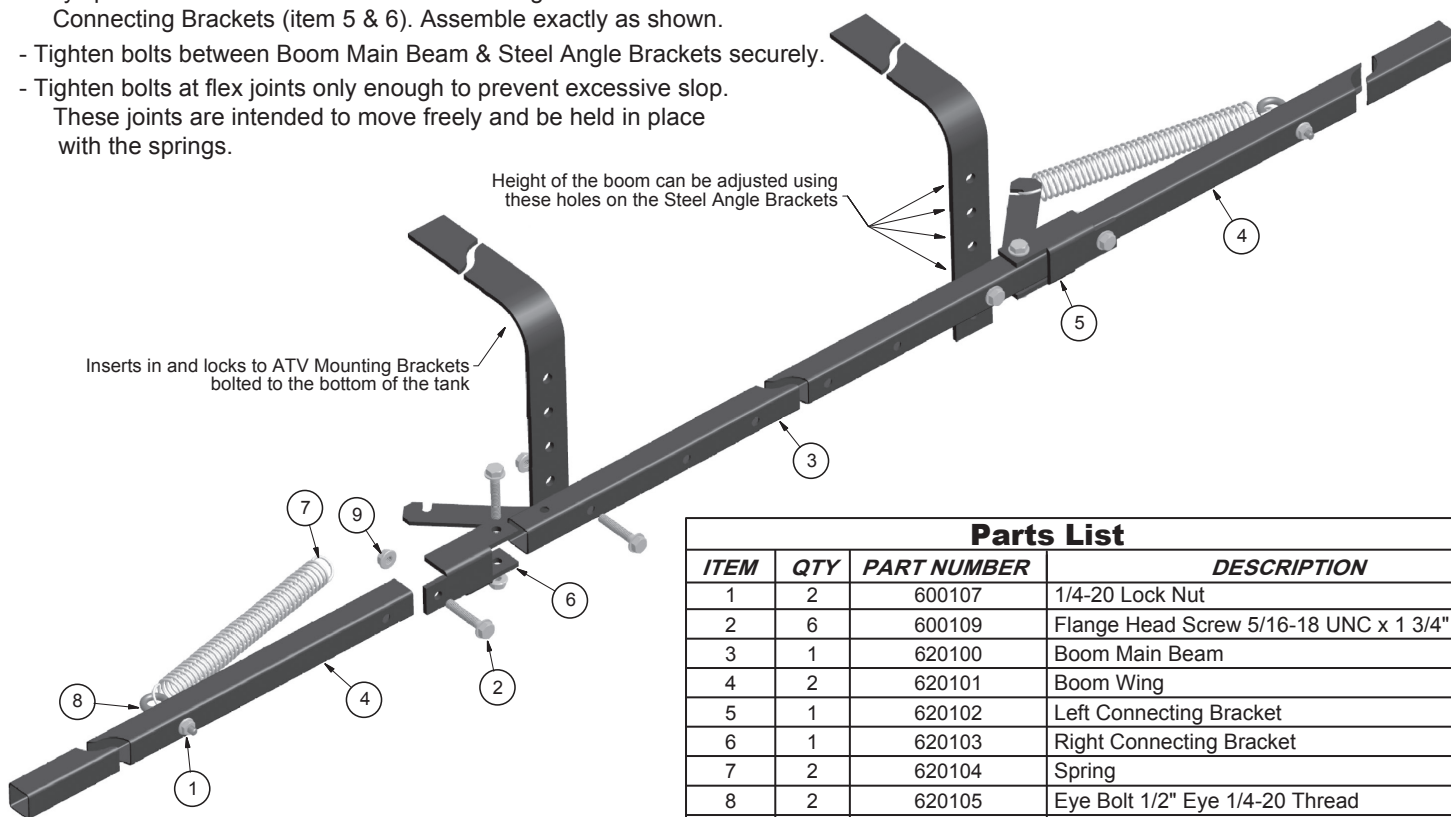
**WARNING:** Some chemicals will damage the pump valves if allowed to soak untreated for a long period of time. Always flush the pump with water after use. Do not allow chemicals to sit in pump for extended times of idleness. Follow chemical manufacturers instructions on disposal of all waste water from the sprayer.

#### WARNING:

This product can expose you to chemicals including DEHP, known to the State of California to cause birth defects or other reproductive harm.

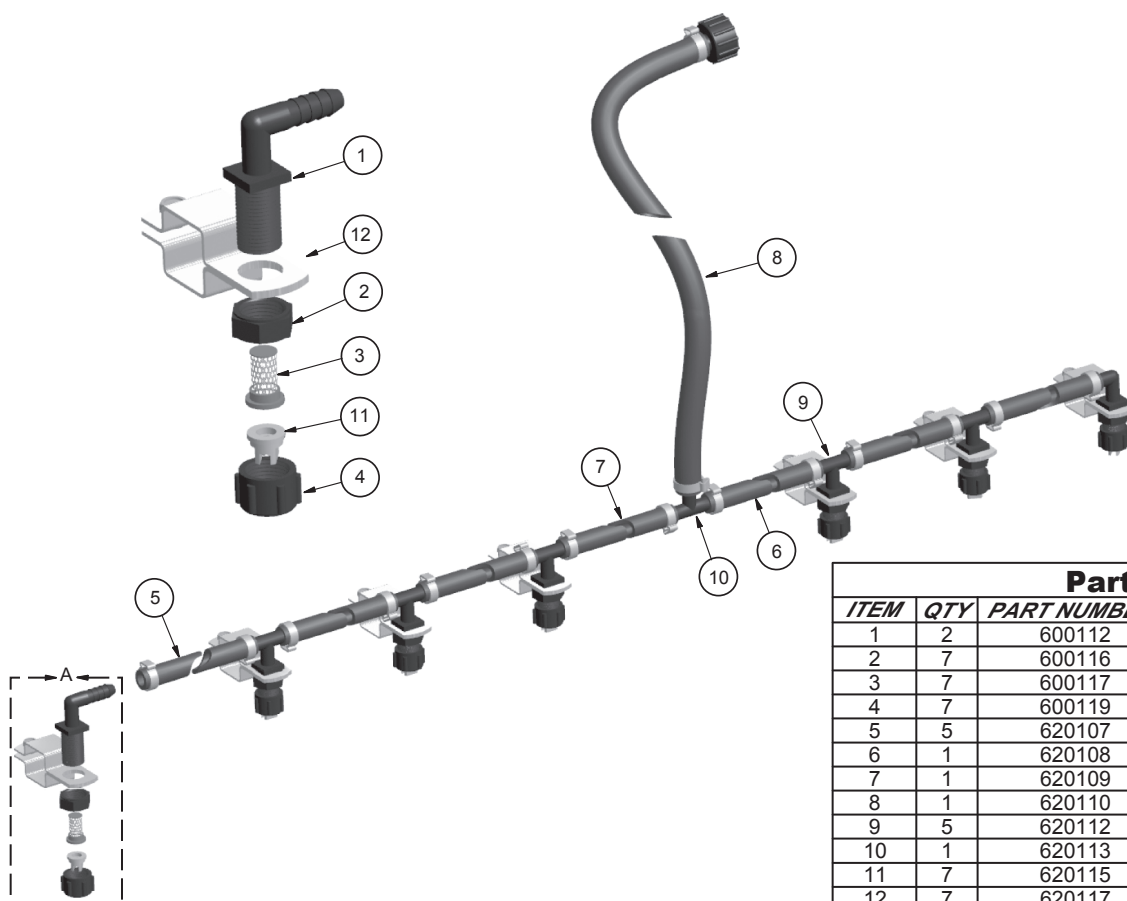
## Assemble Boom Frame as illustrated below:

- Pay special attention to the orientation of the right and left Connecting Brackets (item 5 & 6). Assemble exactly as shown.
- Tighten bolts between Boom Main Beam & Steel Angle Brackets securely.
- Tighten bolts at flex joints only enough to prevent excessive slop. These joints are intended to move freely and be held in place with the springs.



**Parts List**

ITEM	QTY	PART NUMBER	DESCRIPTION
1	2	600107	1/4-20 Lock Nut
2	6	600109	Flange Head Screw 5/16-18 UNC x 1 3/4"
3	1	620100	Boom Main Beam
4	2	620101	Boom Wing
5	1	620102	Left Connecting Bracket
6	1	620103	Right Connecting Bracket
7	2	620104	Spring
8	2	620105	Eye Bolt 1/2" Eye 1/4-20 Thread
9	6	620106	5/16-18 Lock Nut

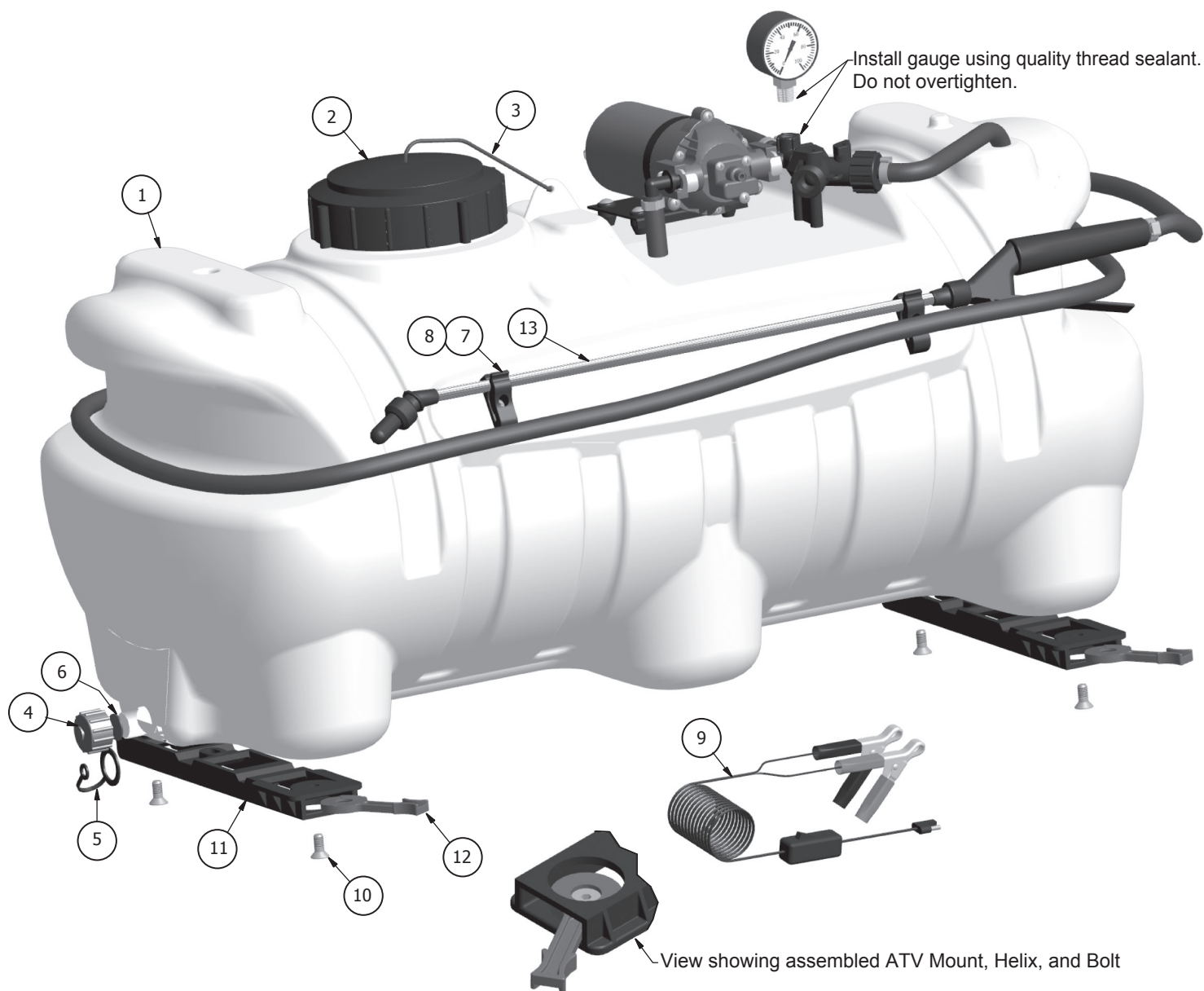


**Parts List**

ITEM	QTY	PART NUMBER	DESCRIPTION
1	2	600112	NTL38 P Fitting
2	7	600116	N1116 P Nut
3	7	600117	Check Valve / Strainer
4	7	600119	8027 P Nut
5	5	620107	φ 3/8" x 20" Hose
6	1	620108	φ 3/8" x 3 3/4" Hose
7	1	620109	φ 3/8" x 15" Hose
8	1	620110	φ 1/2" x 52" Hose Assembly
9	5	620112	NTT 38 P Fitting
10	1	620113	T 1238 P TEE Fitting
11	7	620115	Flat Fan Spray Tip
12	7	620117	B 11-1 SQ Boom Clamp

## Assembly Instructions

- Install gauge in location shown using quality thread sealant.
- Install Drain Cap, Drain Cap Gasket & Drain Cap Tether as shown.
- Install ATV Boom Mount & ATV Helix Lever in two places on bottom of tank as illustrated using 4 bolts (item 10). Do not over tighten.

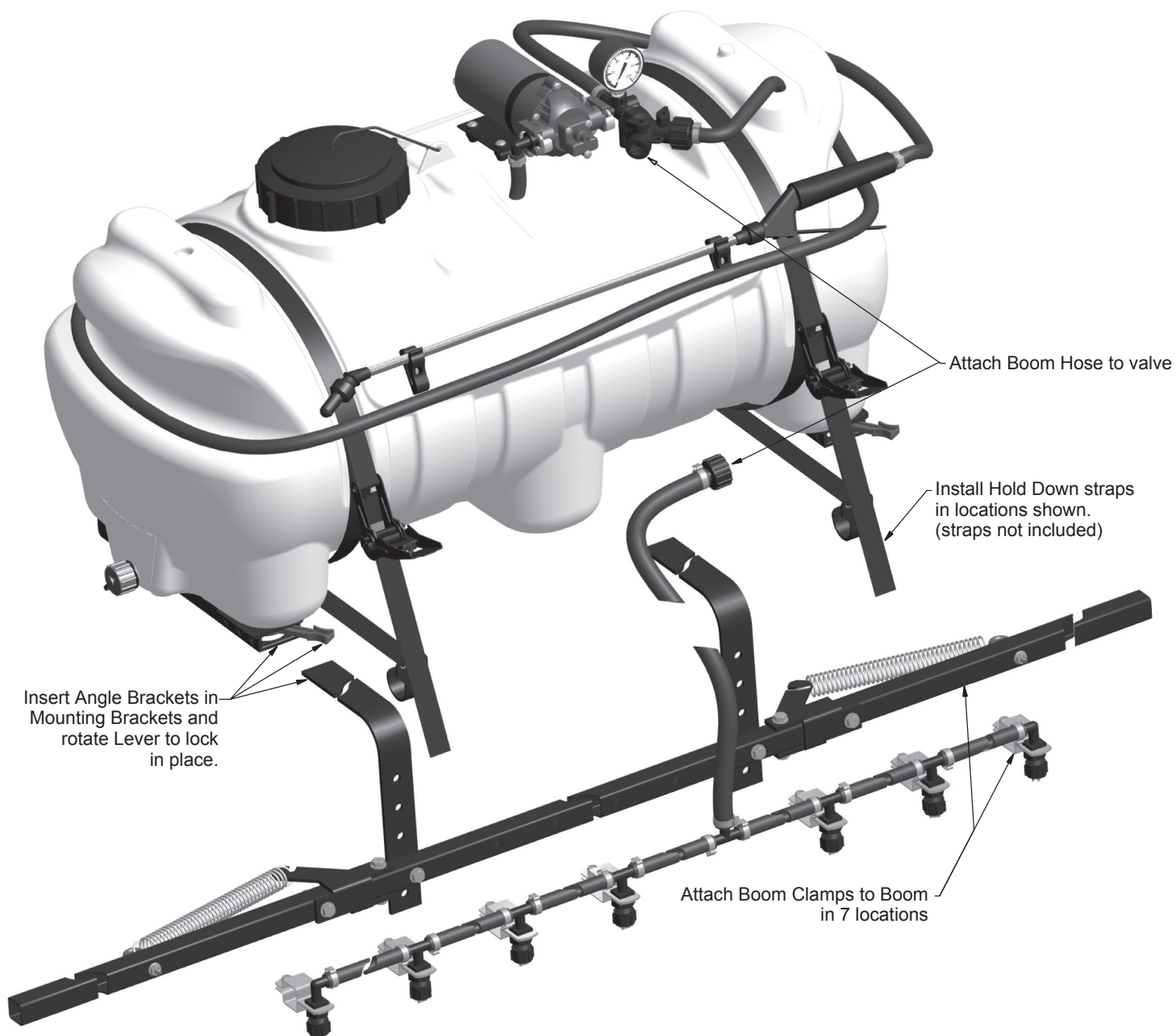


### Parts List

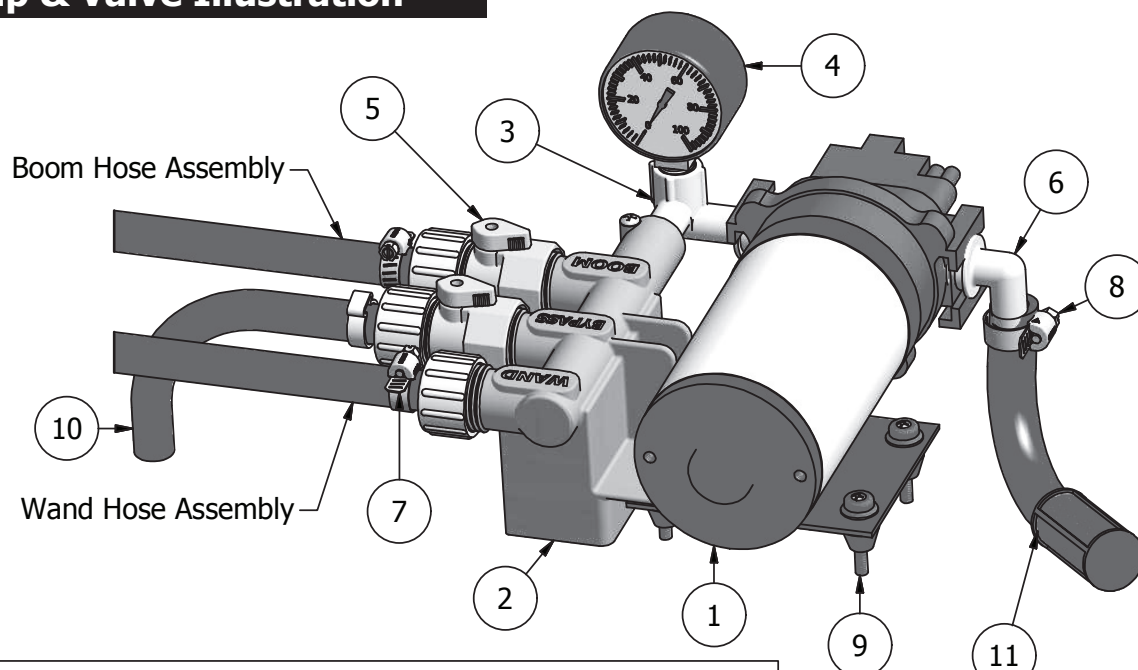
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	600132	25 Gallon Tank
2	1	600133	Tank Lid
3	1	600134	Tank Lid Tether
4	1	600136	Tank Drain Cap
5	1	600137	Tank Drain Cap Tether
6	1	600138	Tank Drain Cap Gasket
7	2	600151	Spray Wand Clip
8	2	600152	Wand Clip Screw
9	1	600153	Lead Wire Assy. w/ Switch (96")
10	4	600188	5/16-18 FLT HD SCT Cap Screw
11	2	600189	ATV Boom Mount
12	2	600190	ATV Helix Lever
13	1	600156	Deluxe Gun & Hose Assembly



## Complete Assembly



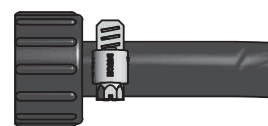
## Pump & Valve Illustration



### PARTS LIST

ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	640451	2.2 GPM Pump*
1	1	630201	4.0 GPM Pump*
1	1	630031	5.0 GPM Pump*
2	1	600289	Manifold Body
3	1	600291	Elbow (2.2 pumps)
3	1	600292	Elbow (4.0 & 5.0 pumps)
4	1	600129	Gauge 0-100 PSI
5	2	600216	Inline Valve
6	1	600287	QD EL 12
7	2	600120	5/8" Hose Clamp
8	1	600288	1/2" Hose Clamp
9	4	600130	10-24 x 1.25 Screw
10	1	600213	Relief Hose Assembly
11	3	600315	Suction Hose Assembly
12	1	600298	Cap Assembly (not shown)

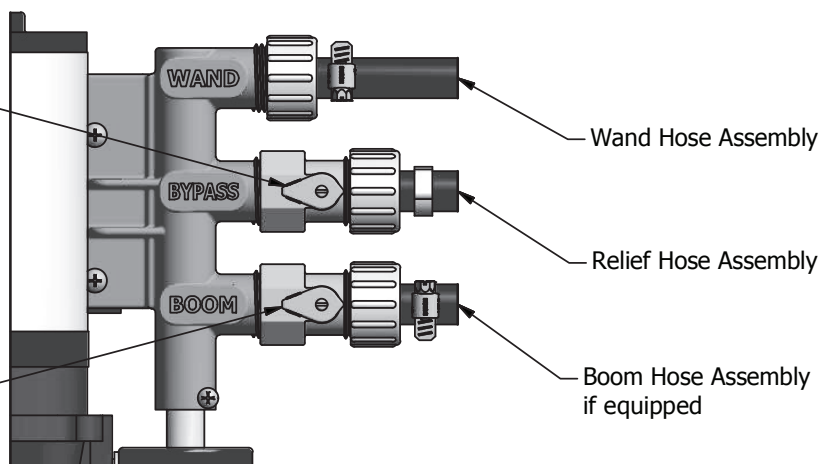
Install Wand Hose Assembly onto Swivel Barb Assembly, by placing a Hose Clamp over the open end of the hose on the Wand Hose Assembly. Then pressing the open end of the hose onto the Swivel Barb Assembly like shown. Secure in place by tightening the Hose Clamp as shown.



\*Pump included depends upon model purchased.

The Lever adjusts the system pressure by relieving liquid back to the tank. Adjusting this lever will increase or decrease pressure to both the spray wand and the spray boom.

The lever turns the spray boom on and off



# PowerFLO™ 7800 Series

12 Volt DC Motor-Driven Diaphragm Pumps



**Model: 7802: 2.2 GPM**

## Specifications —

### Motor:

Type: 12 VDC, permanent magnet, totally enclosed, non-ventilated

Leads: 18 AWG, 12" long

Duty Cycle: See Heat Rise graph

Temperature Limits: Motor is not equipped with thermal protection. For user safety, optimal performance, and maximum motor life, the motor surface temperature should not exceed 150°F (66°C) (see Heat Rise graph above right).

### Pump:

Type: 3 chamber positive displacement diaphragm pump, self priming, capable of being run dry, demand or bypass model.

Certifications: NSF Standard 58

Liquid Temperature: 140°F (60°C) Max.

Priming Capabilities: 14 feet (4 m)

Max Pressure: 60 PSI

Inlet/Outlet Ports: 7802: Quick Attach

### Materials of Construction:

Housing: Polypropylene Diaphragm: Santoprene

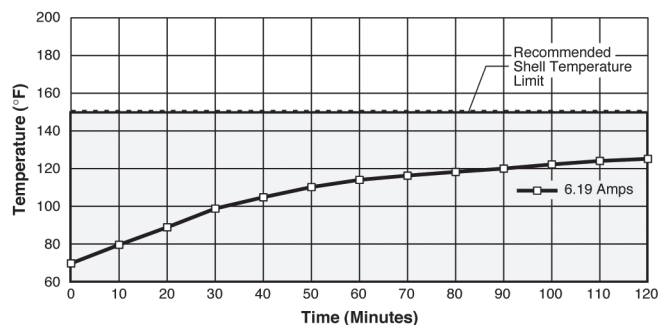
Valves: Viton Fasteners: Stainless steel

**Weight:** 6 lbs (2.7 kg)

## Installation and Operation Precautions —

1. The pump is equipped with a pressure sensing demand switch that controls the maximum operating pressure.
2. In addition, never subject the pump to pressures above 125 PSI (8.5 bars).
3. As long as there is inlet water pressure, the pump will not stop forward flow of water even if the motor is turned off. Be sure the system has positive means of shutting off water supply.
4. Do not operate pump in an explosive environment. Arcing from the motor brushes, switch or excessive heat from an improperly cycled motor may cause an explosion.
5. Do not locate the pump motor near low temperature plastics or combustible material. The surface temperature of the motor may exceed 250°F (120°C).
6. Do not pump gasoline or other flammable liquids. Pump head materials are designed for use with water only. Do not use with petroleum products.
7. Do not assume fluid compatibility. If the fluid is improperly matched to the pumps' elastomers, a leak may occur.
8. To prevent electrical shock, disconnect power before initiating any work. In the case of pump failure, the motor housing and/or pump fluid may carry high voltage to components normally considered safe. Therefore, always consider electrical shock hazard when working with and handling electrical equipment. If uncertain, consult an electrician. Electrical wiring should only be done by a qualified electrician per local and state electrical codes.

## Heat Rise



Approximate values, actual values will vary with ambient temperature.

## Pressure Sensing Demand Switch —

The PowerFLO Series 7800 pump is controlled by a built-in pressure sensing demand switch. When a faucet or valve is opened down stream of the pump, line pressure drops thus starting the pump automatically. Conversely, when the valve shuts, the line pressure increases turning the pump off automatically. The pressure switch actuates in response to the pump outlet pressure at a predetermined and preset pressure. The pump label indicates the predetermined ON and OFF pressures. Typically, the OFF pressure is accurately set at the Factory and the ON pressure is within an allowable range below that value. In response to the characteristics of the system in which the pump is installed, the flexibility and length of the tubing, the faucet or valves and the duration that they are open; these pressure settings may vary. Therefore, variation in pressure setting is expected with use and over time.

### Adjusting the Pressure Switch:

Should the pressure switch OFF setting vary with use and time to an unsuitable value, it may be adjusted for optimum performance. Turn the setscrew clockwise to increase the OFF pressure setting and counter clockwise to decrease. The screw should not be adjusted more than one half turn without consulting the Factory. Excessive adjustment of the pressure switch could cause low system pressure, rapid cycling ON/OFF operation, and reduced pump and motor life. Damage may occur. The Warranty does not cover improper adjustment of the pressure switch.

## Servicing —

Every Year: Check system against operating standards.

Every 2-3 Years: We recommend replacing the diaphragm and checking against operating standards.

### \* Important return safety instructions:

When you return your pump for warranty or repair, you must always do the following:

1. Flush chemical residue from the pump (best done in the field).
2. Tag pump with type of chemicals having been sprayed.
3. Include complete description of operation problem, such as how pump was used, symptoms of malfunction, etc. Since pumps can contain residues of toxic chemicals these steps are necessary to protect all the people who handle return shipments, and to help pinpoint the reason for the breakdown.

## Troubleshooting Guide —

### Problem/Causes and Remedies:

Pump will not Start

Check:

- Correct voltage ( $\pm 10\%$ ) and electrical connections
- Fuse or breaker
- Pressure switch operation and correct voltage at switch
- Rectifier or motor for open or grounded circuit
- Locked drive assembly

Pump will not Prime (No discharge with motor running)

Check:

- Debris in strainer
- Restriction (kinks) in inlet/outlet tubes
- Debris or swelling in inlet/outlet valves

Pump will not Shut Off (Output line closed and no leaks)

Check:

- Air trapped in outlet line or pump head
- Correct voltage to pump
- Debris in pump inlet/outlet valves
- Loose drive assembly or pump head screws
- Pressure switch operations/adjustments

Leaks from Pump Head or Switch

Check:

- Loose screws at switch or pump head
- Switch diaphragm ruptured or pinched
- Punctured diaphragm if fluid is present

## Spray & Pump FAQs —

### --Why does the pump not run all the time?

This is a demand pump and only runs with flow; spray wand, by-pass, spray tips or leak in system

### --Why does the pump surge while using the spray wand?

Low flow may cause the pump to surge (or cycle). This could happen when the spray wand is adjusted for a small or fine spray pattern. To overcome, slightly open the by-pass valve.

### --How do I adjust the pressure?

Pressure should be adjusted by regulating the by-pass valve (slightly opening or closing).

### --What is the optimal operating pressure?

40 PSI - This can be accomplished by turning on the pump and adjusting the bypass valve until the gauge reads 40 PSI (or slightly higher). The pump will run continuously. Ensure that the boom and/or handgun is not spraying while you set the pressure. The pressure will drop slightly when the boom and/or handgun is operated.

### --What pressure should the pressure gauge read?

Please refer to the operation instructions for boom operating pressures, varying boom pressures can be achieved by regulating or adjusting the by-pass valve. Typically the spray wand will be operated between 20 and 40 PSI.

### --What is the recommended PSI to inflate the tires?

30 PSI Max

### --My pump quit and will not restart - what should I check?

Check all electrical connections. Ensure switch is in the on position. Check in-line fuse and/or fuse in car adapter end. Ensure correct voltage  $\pm 10\%$ . 12-13 volt

### --Low flow or no flow at all - what should I check?

Check for a clogged suction hose and/or suction strainer. Often you will need to clean the suction strainer. Check for proper voltage.

### --Is there a fuse for the sprayer?

Yes, either an in-line fuse, a fuse located in the car adapter housing or both.

### --What size fuse should I use as a replacement?

7.5 amp

### --What is the range of the spray wand?

35 feet max

### --How should I clean the tank after use?

Tank should be cleaned with Nutrasol® or similar tank cleaning agent, and then rinsed with water.

### --Is there an adjustment screw on the pump to adjust pressure?

Yes, please refer to the operation instructions, "Adjusting the Pressure Switch".

### --How do I remove / replace fuse?

Unscrew in-line fuse connector, or unscrew the car adapter housing.

### --Can the spray tip on the wand be replaced with a different type of tip?

Yes, however your wand comes with a #18 tip which is standard. Brass tips generally produce better spray patterns than plastic.

### --Each time I turn on the pump my fuse blows.

1) Excessive voltage 2) Improper adjustment of the pressure switch 3) Damaged wiring harness.

### --What is the warranty (time duration) on pump, tank, trailer pieces, and accessories?

1 year as stated in operation instructions.

### --Pressure gauge reads 85 -90 psi before shutting off - should pump shut off at 60 psi?

Pump 7802 2.2 GPM comes preset from the factory to shut off at 60 PSI. Should this vary please see, "Adjusting the Pressure Switch" in the operation manual. Turn on pump and hold spray wand open, slowly adjust until the pump shuts off at 60 PSI.

### --Pump continues to run and surge when not spraying.

Ensure the by-pass is completely closed and your system has no leaks. Check by-pass hose to ensure no fluid is passing through the valve while in the closed position. If so replace valve.

**WARNING - Ensure the wiring harness does not become pinched or damaged in any way. This may damage the pump or cause the wiring harness to overheat, resulting in a melt down or fire.**