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TURFEX®

25-Gallon Tow-Behind Sprayer

US300

Owner's Manual and Installation Instructions

Original Instructions

California Proposition 65

⚠ WARNING

This product can expose you to chemicals, including lead, which are known to the State of California to cause cancer and birth defects or other reproductive harm.

⚠ CAUTION

Read this document before operating or servicing the sprayer.

This document supersedes all editions with an earlier date.

TABLE OF CONTENTS

This manual has been prepared to acquaint you with the safety information, operation, and maintenance of your new sprayer. Improper operation could cause personal injury and/or equipment and property damage. Read and understand this Owner's Manual before operating or making adjustments. Keep this manual accessible.

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

- Correct part description and part number.
- Model number of yoursprayer.

Part description and part numbers can be obtained from the illustrated Parts List. For warranty work always take your original sales slip, or other evidence of purchase date, to your distributor/dealer.

WARRANTY REGISTRATION

Warranty registration is available online at *www.TurfExproducts.com.* Under "Support" click "Warranty Registration" and submit the form online.

OWNER'S INFORMATION

Owner's Name: _____

Date Purchased: _____

Sales Outlet Name: _____ Phone:_____

Sales Outlet Address: _____

Sprayer Type (Model): _____

Production date (stamped on last page of this manual): _____

SAFETY DEFINITIONS

⚠ WARNING

Indicates a potentially hazardous situation that, if not avoided, could result in death or serious personal injury.

⚠ CAUTION

Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

NOTE: Indicates a situation or action that can lead to damage to your sprayer and vehicle or other property. Other useful information can also be described.

SAFETY PRECAUTIONS

Improper installation and operation could cause personal injury and/or equipment and property damage. Read and understand labels and this Owner's Manual before installing, operating, or making adjustments.

⚠ WARNING

Always make sure personnel are clear of areas of danger when using equipment. Maintain 60' distance from all bystanders when operating the sprayer.

⚠ WARNING

- **Always shut vehicle OFF before attempting to attach, detach, or service sprayer.**
- **Do not climb into or ride on the sprayer.**

⚠ WARNING

Overloading could result in an accident or damage. Do not exceed GVWR, GAWR, or maximum vehicle load capacity.

⚠ WARNING

Empty all liquid from tank before unhitching sprayer from vehicle. Never attempt to unhitch sprayer with liquid in it.

⚠ WARNING

Never exceed 10 mph (16 km/h) when towing loaded sprayer. Braking distances may be increased and handling characteristics may be impaired at speeds above 10 mph (16 km/h).

⚠ WARNING

Vehicle handling and characteristics will change when towing the sprayer. Avoid any sudden steering maneuvers, starts, or stops that could create sloshing and instability.

⚠ WARNING

Never operate equipment when under the influence of alcohol, drugs, or medication that might alter your judgment and/or reaction time.

⚠ CAUTION

- **Do not operate a sprayer in need of maintenance.**
- **Before operating the sprayer, reassemble any parts or hardware removed for cleaning or adjusting.**
- **Before operating the sprayer, remove materials such as cleaning rags, brushes, and hand tools from the unit.**
- **Tighten all fasteners according to the Torque Chart. Refer to the Torque Chart for the recommended torque values.**

⚠ CAUTION

Do not leave material in the unit for long periods of time.

PERSONAL SAFETY

- Remove ignition key and put the vehicle in PARK or in gear to prevent others from starting the vehicle during installation or service.
- Wear only snug-fitting clothing while working on your vehicle or sprayer.
- Wear protective clothing, eye protection, and chemical-resistant gloves when filling, using, and cleaning the sprayer. Wear additional protective gear, such as face mask or apron, as recommended on the chemical label.
- Do not wear jewelry or a necktie, and secure long hair.
- Wear safety goggles to protect your eyes from brine, battery acid, gasoline, dirt, and dust.
- Do not eat, drink, smoke, rub your eyes, or touch bare skin while spraying.
- Avoid touching hot surfaces such as the engine, radiator, hoses, and exhaust pipes.
- Always have a fire extinguisher rated BC handy, for flammable liquids and electrical fires.
- Never point spray wand at people or animals.

FIRE AND EXPLOSION

⚠ WARNING

Gasoline is highly flammable and gasoline vapor is explosive. Never smoke while working on vehicle. Keep all open flames away from gasoline tank and lines. Wipe up any spilled gasoline immediately.

Be careful when using gasoline. Do not use gasoline to clean parts. Store only in approved containers away from sources of heat or flame.

CELL PHONES

A driver's first responsibility is the safe operation of the vehicle. The most important thing you can do to prevent a crash is to avoid distractions and pay attention to the road. Wait until it is safe to operate Mobile Communication Equipment such as cell phones, text messaging devices, pagers, or two-way radios.

FUSES

If a problem should occur and fuse replacement is necessary, the replacement fuse must be of the same type and amperage rating as the original. Installing a fuse with a higher rating can damage the system and could start a fire. Fuse Replacement, including fuse ratings and locations, is located in the Maintenance section of this Owner's Manual.

BATTERY SAFETY

⚠ CAUTION

Batteries normally produce explosive gases which can cause personal injury. Therefore, do not allow flames, sparks, or lit tobacco to come near the battery. When charging or working near a battery, always cover your face and protect your eyes, and also provide ventilation.

- **Batteries contain sulfuric acid, which burns skin, eyes, and clothing.**
- **Disconnect the battery before removing or replacing any electrical components.**

NOISE

Airborne noise emission during use is below 70 dB(A) for the sprayer operator.

VIBRATION

Operating sprayer vibration does not exceed 2.5 m/s^2 to the hand-arm or 0.5 m/s^2 to the whole body.

TORQUE CHART

⚠ CAUTION

Read instructions before assembling. Fasteners should be finger tight until instructed to tighten according to the Torque Chart. Use standard methods and practices when installing equipment, including proper personal protective safety equipment.

Recommended Fastener Torque Chart

Inch Fasteners Grade 5 and Grade 8

Size	Torque (ft-lb)		Size	Torque (ft-lb)	
	Grade 5	Grade 8		Grade 5	Grade 8
1/4-20	8.4	11.9	9/16-12	109	154
1/4-28	9.7	13.7	9/16-18	121	171
5/16-18	17.4	24.6	5/8-11	150	212
5/16-24	19.2	27.3	5/8-18	170	240
3/8-16	30.8	43.6	3/4-10	269	376
3/8-24	35.0	49.4	3/4-16	297	420
7/16-14	49.4	69.8	7/8-9	429	606
7/16-20	55.2	77.9	7/8-14	474	669
1/2-13	75.3	106.4	1-8	644	909
1/2-20	85.0	120.0	1-12	704	995

Metric Fasteners Class 8.8 and 10.9

Size	Torque (ft-lb)		Size	Torque (ft-lb)	
	Class 8.8	Class 10.9		Class 8.8	Class 10.9
M6 x 1.00	7.7	11.1	M20 x 2.50	325	450
M8 x 1.25	19.5	26.9	M22 x 2.50	428	613
M10 x 1.50	38.5	53.3	M24 x 3.00	562	778
M12 x 1.75	67	93	M27 x 3.00	796	1139
M14 x 2.00	107	148	M30 x 3.50	1117	1545
M16 x 2.00	167	231	M33 x 3.50	1468	2101
M18 x 2.50	222	318	M36 x 4.00	1952	2701

These torque values apply to fasteners except those noted in the instructions.

CHEMICAL SAFETY

⚠ CAUTION

Read and adhere to manufacturer's material package labeling, including Safety Data Sheet requirements.

Immediate response is necessary in the event of sprayer leaks, bodily chemical contact, poisoning, or spills. See instructions below.

Sprayer Leak	If the sprayer develops a leak, immediately stop spraying. Turn OFF power to the sprayer and follow directions below, as applicable.
Bodily Chemical Contact	Personal contamination can occur when chemicals splash, spill, or spray directly onto a person. 1. Immediately follow First Aid instructions on chemical label. General procedures include: 1a. Eyes – immediately flush with water. 1b. Skin – wash all contaminated skin surfaces with soap and water. 1c. Clothing – remove contaminated clothing. Dispose of heavily contaminated clothing per chemical label instructions. 2. Seek medical advice if instructed on the label or if the victim experiences symptoms of harmful effects. Bring the chemical label for reference.
Poisoning by Ingestion or Inhalation	In case of poisoning from ingestion or inhalation: If the victim has collapsed or is not breathing, **call 911**. Otherwise: 1. If you are the victim, immediately seek assistance from nearby personnel, because you may become incapacitated. 2. Immediately follow First Aid instructions on chemical label. 3. Call a poison control center for further advice. In the U.S., call 1-800-222-1222. Have the chemical label available for reference.
Chemical Spills	Chemical spills must quickly be contained and properly cleaned up. Refer to the chemical label for any specific clean-up instructions. General procedures include: 1. Control the spill by stopping the source of the spill. 2. Contain the spill so that it does not spread and get into water sources. 3. Clean up the spill immediately. 4. Seek additional advice from: – Chemical manufacturer: See chemical label for contact information. – State pesticide regulatory agency: In the U.S., call the National Pesticide Information Center at 1-800-858-7378 for assistance in contacting your state's agency.

DURING ASSEMBLY

Check and test completed assembly as directed in this manual. Serious injury could result from chemical leaks if sprayer is improperly assembled.

IMPORTANT: Do not modify sprayer design.

DURING OPERATION

- Read and follow each chemical label's instructions and warnings.
- Avoid inhaling, ingesting, or coming into contact with any chemicals.
- Know applicable licensing and regulatory requirements for the chemical you plan to use.
- Know emergency procedures before handling chemicals. Carefully review the Chemical Safety procedures listed in this manual. Also, see First Aid instructions on the chemical label.
- Wear protective clothing, eye protection, and chemical resistant gloves when filling, using, and cleaning the sprayer. Wear additional protective gear, such as face masks or aprons, as recommended on the chemical label.
- Exercise extra caution around children and pets. Keep sprayer and spray materials away from them at all times.
- Do not mix or pour chemicals in an enclosed, unventilated area.
- Do not use flammable or corrosive chemicals in the sprayer.
- Flush the sprayer before switching chemicals in order to prevent dangerous chemical interactions.

BEFORE SPRAYING

- Inspect and prepare sprayer before each use as directed in this manual.
- Do not start sprayer until ready to spray, in order to avoid unintentional spray release.
- Wear additional personal protective equipment if you will be spraying overhead. You will be exposed to much more mist or errant spray in these applications. Wear chemical resistant head and neck protection, a full face mask or half-face mask with sealed goggles, and consider using a respirator.
- Do not spray when wind speed exceeds 4 miles per hour, in order to minimize spray drift.
- Keep sprayer and spray materials away from children and pets.
- Do not allow anyone younger than 16 to operate sprayer.

DURING SPRAYING

- Do not over-apply. Apply at a rate recommended by the chemical manufacturer.
- Do not eat, drink, smoke, rub your eyes, or touch your bare skin while handling chemicals and spraying.
- Never point the spray wand at people or animals.
- Do not spray near open flames or sources of heat.
- Always hold the spray wand firmly when using it to spray at higher pressures in order to prevent wand from whipping. Keep good footing and balance at all times.
- Exercise extra caution when spraying near areas accessible to children and pets.
- Clean up spills immediately per instructions on the chemical label.
- Turn OFF sprayer and relieve system pressure before leaving sprayer unattended.
- See the Troubleshooting section of this manual before attempting any repairs. Wear personal protective equipment and follow safety instructions.

AFTER SPRAYING

- Clean sprayer immediately after use according to the directions provided in this manual.
- Decontaminate yourself after you are done spraying and have cleaned the sprayer. Wash all exposed areas of the body with soap and water, and remove and launder clothing.
- Dispose or store remaining chemicals in secure storage with correctly marked container.

TRANSPORTING SAFETY

- Exercise caution in vehicle handling when driving with sprayer to avoid loss of control or rollover.
    - Keep speed to a minimum so you can maintain control. Reduce speed prior to turns.
    - Allow for more distance to stop.
    - Avoid any sudden steering maneuvers, starts, or stops that could create liquid sloshing in the sprayer and instability.
- Slow down and exercise caution on sloped or uneven terrain.
- Turn OFF sprayer before leaving it unattended.
- Do not attempt to lift sprayer with liquid in the tank.

ASSEMBLY / INSTALLATION

⚠ WARNING

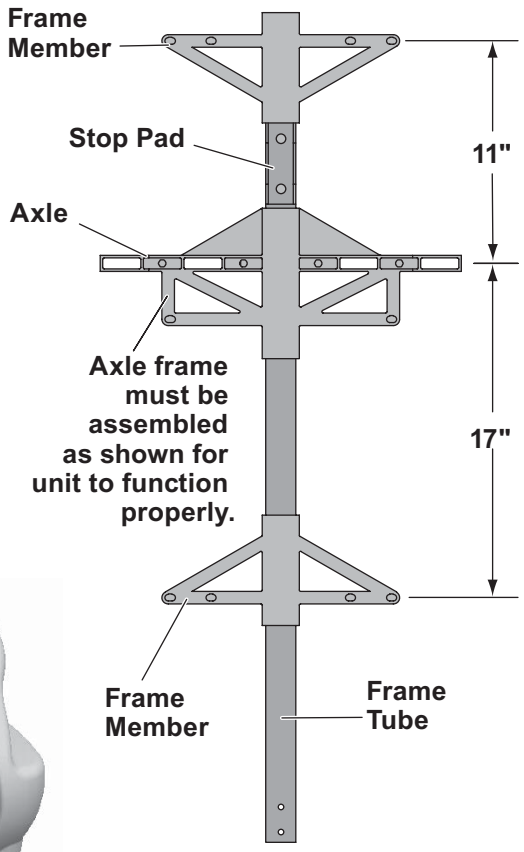
Always shut vehicle OFF before attempting to attach, detach, or service sprayer system.

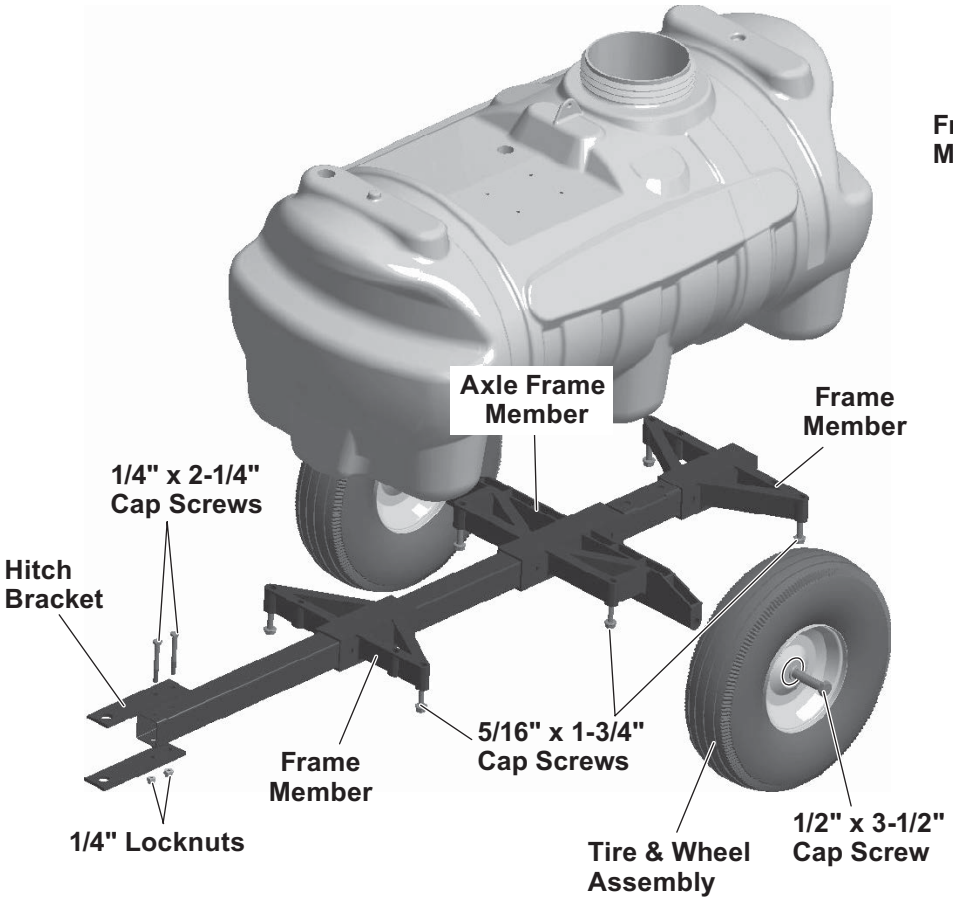
⚠ WARNING

Empty all liquid from tank before unhitching sprayer from vehicle. Never attempt to unhitch sprayer with liquid in it.

TRAILER ASSEMBLY

Assemble the tank and trailer frame as illustrated below, using hardware shown. The stop pad on the frame tube is positioned against the tank.





INSTALL SPRAY BOOM

1. Install the spray boom bracket to the rear of the tank using two 5/16-18" x 3/4" cap screws.

2. Insert the boom hose assembly through the spray boom bracket as illustrated below.

3. Snap the spray boom into the spray boom bracket, aligning the locator holes in the boom and the bracket.

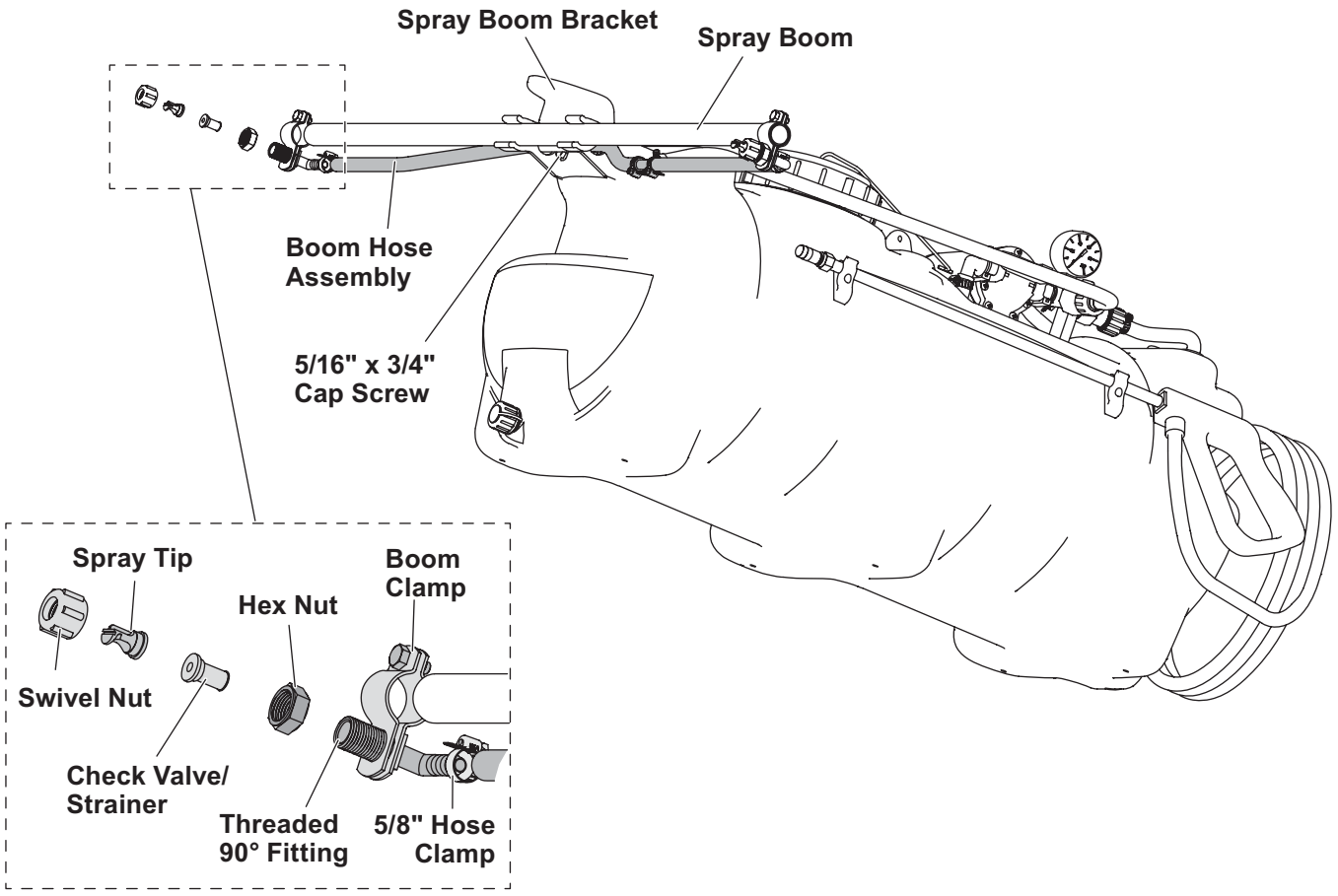
4. Install a boom clamp onto each end of the spray boom, making sure that the end with the cap screw is on top. Tighten the cap screws.

5. Slide a 5/8" hose clamp onto each end of the boom hose. Insert the threaded 90° fittings into the ends of the hose and tighten the hose clamps.

6. Install the hose assembly to the boom by inserting the threaded 90° fittings through the lower holes in the boom clamps. Secure with the supplied hex nuts and hand tighten. Do not overtighten.

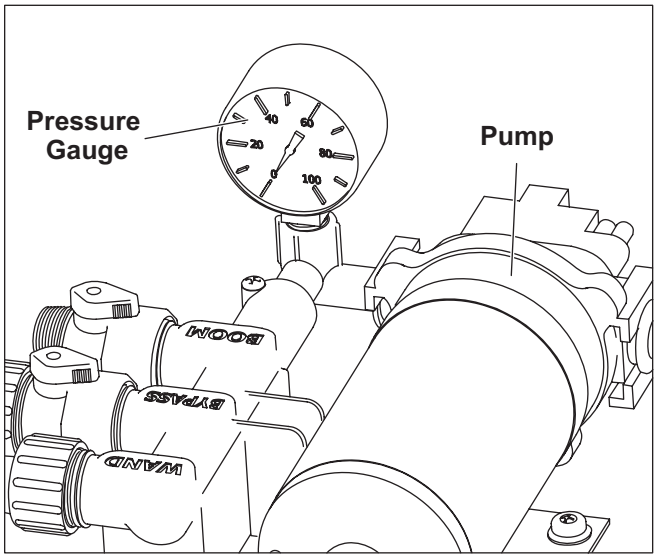
7. Insert the check valve/strainers into the fittings, followed by the spray tips. Make sure the spray tips are oriented so the spray pattern will be aimed downward. Install the supplied swivel nuts and hand tighten.

8. Connect the boom hose assembly to the "BOOM" outlet on the pump manifold.



INSTALL GAUGE AND LEAD WIRES

1. Install the pressure gauge into the elbow fitting between the pump and the manifold. Use a good quality thread sealant and be careful not to overtighten.



⚠ WARNING

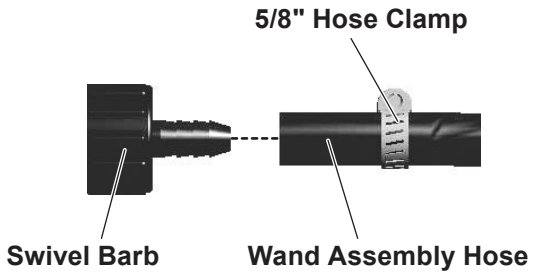
Do not allow the lead wires to become pinched or damaged, which could damage the pump or cause the lead wires to overheat, resulting in a meltdown or fire.

2. Connect the lead wire assembly plug to the plug at the rear of the pump.

3. Connect the Red POSITIVE (+) wire of the lead wire assembly to a 12V source. Connect the Black wire to ground or to the NEGATIVE (–) battery post.

INSTALL WAND HOSE

1. Slide the supplied 5/8" hose clamp onto the open end of the wand assembly hose. Press the end of the hose onto the swivel barb labeled "WAND" on the pump manifold and tighten the hose clamp.



OVERVIEW

The pumping system draws solution from the tank, through the suction hose, and into the pump. The pump forces the solution under pressure through the pump manifold, where it is directed to the spray wand and (if equipped) the optional spray boom.

Regularly inspect the suction hose strainer on the inside of the tank. Flush with water to clear any accumulated debris.

⚠ CAUTION

Read and adhere to manufacturer's material package labeling, including Safety Data Sheet requirements.

⚠ CAUTION

Always use appropriate personal protective equipment, including gloves and safety goggles, when filling sprayer.

⚠ CAUTION

When using spray wand, never point it at objects (i.e., humans, vehicles, etc.). Keep at least 10 feet away from objects while using the spray nozzle.

- Current weather and terrain conditions must be considered when setting up the sprayer.
- Do not spray when wind speed exceeds 11 mph.
- Protective clothing must be worn when applying some products. Be sure to read the chemical label carefully.

SPRAY APPLICATION

Spray Wand: Maximum range 35'.

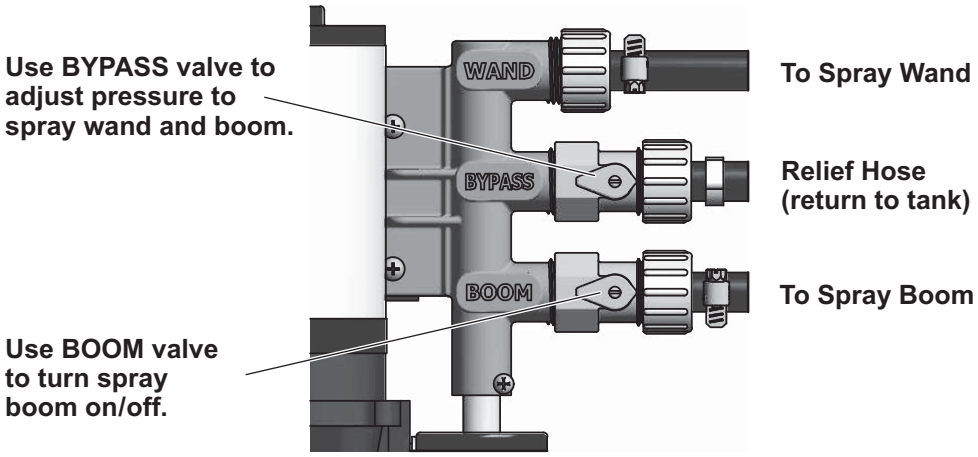
Spray Boom: 7-Nozzle Boom, 140" spray width. For application rates, refer to the Spray Boom Calibration section of this manual.

OPERATING PRESSURE

Optimal operating pressure is 40 psi. The pump has a pressure switch that will shut off the pump when pressure reaches 60 psi.

Typically the spray wand will be operated between 20 and 40 psi. Refer to the Spray Boom Calibration section for data on boom operating pressures.

To adjust the system pressure, make sure the wand (and spray boom, if equipped) are turned OFF. Turn the pump ON and adjust the BYPASS valve until the gauge reads 40 psi. The pump will run continuously. Once the spray wand or boom is activated, the pressure will drop slightly.



AFTER USE / CLEAN OUT

⚠ 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 manufacturer's instructions on disposal of all waste water from the sprayer.

⚠ WARNING

Do not operate a sprayer in need of maintenance.

⚠ CAUTION

Always use appropriate personal protective equipment, including gloves and safety goggles, when filling or emptying sprayer.

1. Fill the sprayer partway with water. Start the sprayer and allow clear water to be pumped through the sprayer plumbing system and out the spray wand and the boom nozzles (if equipped).

2. Refill the tank about half full with plain water and add a chemical neutralizer such as Nutra-Sol® or equivalent. Pump the cleaning solution through the sprayer plumbing system, spray wand, and boom nozzles (if equipped). Flush the entire sprayer with the neutralizing agent.

3. Follow the chemical manufacturer’s disposal instructions for all wash or rinsing water.

Cleaning Spray Boom Nozzles (If Equipped)

1. Remove the spray tips and screens from the boom. Wash the tips thoroughly with water or cleaning solution (appropriate for the chemical just sprayed). Blow out the orifice; clean and dry.

2. If the orifice remains clogged, clean it with a fine bristle brush (not a wire brush) or a toothpick, taking care not to damage the orifice. Rinse the tips with water and dry them before storing.

MAINTENANCE

Fuse Replacement

The lead wire assembly includes an inline fuse. When necessary, replace with a new 7A fuse.

WINTER STORAGE

Proper care and maintenance will prolong the life of the sprayer.

1. Drain all water and chemical out of the sprayer and clean as described in the "After Use/Clean Out" section of this manual. Pay special attention to pump and valves, as these items are especially prone to damage from chemicals and freezing temperatures.

2. The sprayer should be winterized before storage by pumping a solution of RV antifreeze through the entire plumbing system.

Nutra-Sol® is a registered trademark of BASF.

SPRAY & PUMP FAQs

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

  This is a demand pump and only runs with flow through the spray wand, by-pass valve, or spray boom nozzles.

- **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 this, slightly open the bypass valve on the pump manifold.

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

  Operating pressure should be adjusted by regulating the bypass valve. See full instructions in the Operation section of this manual.

  To adjust the pump OFF pressure setting, see full instructions under "Adjusting the Pressure Switch" in the Pump Specifications & Information section of this manual.

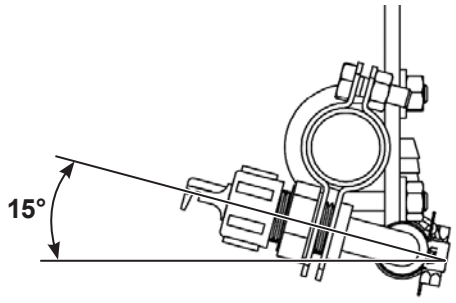
- **Can the spray tip on the wand be replaced with a different type of tip?**

  Your wand comes with a #18 tip. It may be replaced by other types of tip. Brass tips generally produce better spray patterns than plastic.

Chemical product labels may show application rates in gallons per acre, per 1000 ft^2, or per 100 ft^2. The Spray Coverage tables show all three rates.

After determining how much mixed solution you are going to spray for your job, select the spraying pressure (psi) and spraying speed (mph) needed. You will find optimal spraying in the 20 to 30 psi range.

For the best spray pattern coverage, the nozzles may be rotated rearward 15°.



To determine the ground speed of your sprayer, measure and mark driving distances of 100, 200, or 300 feet. The table below indicates the number of seconds needed to travel these distances. Set the throttle and, with a rolling start, drive the measured distance of your choice.

Adjust the throttle until you can match the number of driving seconds needed. Mark the throttle setting and note the gear range so you can use them while spraying.

(mph)	Time (sec) Required to Travel a Distance of:		
	100 ft	200 ft	300 ft
1.0	68.0	136	205
2.0	34.0	68	102
3.0	23.0	45	68
4.0	17.0	34	51
5.0	14.0	27	41
6.0	11.0	23	34
7.0	9.7	19	29
8.0	8.5	17	26
9.0	7.6	15	23
10.0	6.8	14	20

⚠ CAUTION

Always use appropriate personal protective equipment, including gloves and safety goggles, when filling sprayer.

Add water and chemicals in the proper amounts in the spray tank and drive to your starting point. When you are ready to spray, turn the boom control valve OFF.

Once the pump is turned ON, the unit will begin spraying. The system pressure will decrease slightly as fluid begins flowing from the spray nozzles. This is normal; the pressure will recover when the control valve is turned OFF.

SPRAY COVERAGE TABLE: 2-NOZZLE BOOM (#3 Tip, Spray Height 18")								
Pressure	Capacity	Speed						
		1 mph 88 ft/min	2 mph 176 ft/min	3 mph 264 ft/min	4 mph 352 ft/min	5 mph 440 ft/min	7.5 mph 660 ft/min	10 mph 880 ft/min
(psi)	(gal/min)	Gallons per Acre – Based on Water						
10.0	0.30	44.0	22.0	14.9	11.1	8.9	5.9	4.5
20.0	0.42	63.0	31.5	20.9	15.7	12.6	8.4	6.3
30.0	0.52	76.0	38.0	26.0	19.3	15.4	10.3	7.7
40.0	0.60	90.0	45.0	30.0	22.0	17.8	11.8	8.9
(psi)	(gal/min)	Gallons per 1000 ft^2 – Based on Water						
10.0	0.30	1.01	0.50	0.340	0.254	0.204	0.135	0.103
20.0	0.42	1.40	0.72	0.480	0.360	0.290	0.190	0.140
30.0	0.52	1.74	0.87	0.596	0.440	0.350	0.236	0.176
40.0	0.60	2.06	1.00	0.688	0.500	0.408	0.270	0.200
(psi)	(gal/min)	Gallons per 100 ft^2 – Based on Water						
10.0	0.30	0.100	0.050	0.034	0.025	0.020	0.013	0.010
20.0	0.42	0.140	0.072	0.048	0.036	0.029	0.019	0.014
30.0	0.52	0.174	0.087	0.059	0.044	0.035	0.024	0.017
40.0	0.60	0.206	0.100	0.068	0.050	0.040	0.027	0.020

Converting gal/acre to gal/1000 ft^2

Most chemical labels indicate a chemical application rate in 1,000 ft^2.

If the rate on the chemical label is indicated in gallons per acre, divide the per acre rate by 43.56 to convert to gallons per 1,000 ft^2.

1 acre = 43,560 ft^2
1 gallon per 1000 ft^2 = 43.56 gallons per acre

Other Conversion Factors

1 fl oz = 2 Tbl
1 cup = 8 fl oz
1 pint = 2 cups = 16 fl oz
1 quart = 2 pints = 32 fl oz
1 gallon = 4 quarts = 8 pints = 128 fl oz

PowerFLO™ 7800 Series

12V DC Motor-Driven Diaphragm Pumps

Model 7802
2.2 gal/min

Motor

Type: 12V DC, permanent magnet, totally enclosed, nonventilated

Leads: 16 AWG, 12" long

Temperature Limits: 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)).

Pump

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

Certifications: NSF Standard 58

Maximum Liquid Temperature: 140°F (60°C)

Priming Capabilities: 14 feet (4 m)

Maximum Pressure: 60 psi

Inlet/Outlet Ports: Quick Attach (7802 model)

Materials of Construction
Housing: polypropylene
Diaphragm: Santoprene
Valves: Viton
Fasteners: stainless steel

Weight: 6 lb (2.7 kg)

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 downstream 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.

These pressure settings may vary 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. Therefore, variation in pressure setting is expected with use and over time.

Adjusting the Pressure Switch

Should the pressure sensing demand switch OFF setting vary with use and time to an unsuitable value, it may be adjusted for optimum performance. Turn the set screw clockwise to increase the OFF pressure setting and counterclockwise to decrease the setting.

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.

Installation and Operation Precautions

⚠ CAUTION

Do not operate pump in an explosive environment. Arcing from the motor brushes or switch, or excessive heat from an improperly cycled motor, may cause an explosion.

⚠ CAUTION

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.

- Always consider electrical shock hazard when working with and handling electrical equipment. Electrical wiring should only be done by a qualified electrician per local and state electrical codes.
- Do not pump gasoline or other flammable liquids. Pump head materials are designed for use with water only. Do not use with petroleum products.
- 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).
- Never subject the pump to pressures above 125 psi (8.5 bars).
- The pump is equipped with a pressure sensing demand switch that controls the maximum operating pressure.
- 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 a positive means of shutting off the water supply.
- Do not assume fluid compatibility. If the fluid is improperly matched to the pumps' elastomers, a leak may occur.

Servicing

Every Year: Check the system against operating standards.

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

Important Warranty Return Safety Instructions

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

- Flush chemical residue from the pump (best done in the field).
- Attach a tag to the pump identifying the type of chemicals sprayed with that pump.
- Include complete description of the 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

Your local TurfEx® dealer knows the sprayer best. Take the unit to the local dealer for any maintenance or service needs. If this is not possible, the troubleshooting table below may assist in identifying the problem.

Preliminary Checks

Before proceeding with the Troubleshooting Guide steps, confirm that:

- **All electrical connections are tight and clean.**
- **Pump switch is in "ON" position.**
- **Nothing is obstructing the wand spray tip (or accessory boom nozzles).**

⚠ WARNING

Do not operate a sprayer in need of maintenance.

⚠ WARNING

Always wear safety glasses with side shields when servicing the sprayer. Failure to do this could result in serious injury to the eyes.

⚠ WARNING

Read all Warning and Caution statements and instructions before servicing the sprayer.

TROUBLESHOOTING GUIDE	
Issue	**Check For**
Pump will not start.	Correct voltage (12V ±10%) Blown fuse Pressure switch operating; correct voltage at switch Open or grounded circuit at rectifier or motor Locked drive assembly
Pump will not prime (no discharge w/ motor running).	Debris in strainer Restriction (kinks) in inlet/outlet hoses Debris or swelling in inlet/outlet valves
Pump will not shut off.	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 operation; adjustment required?
Pump quit and will not restart.	Check in-line fuse and/or fuse in car adapter end. Correct voltage (12V ±10%)
Pump continues to run and surge when not spraying.	Leaks in system Bypass valve not completely closed Fluid flowing through bypass hose when valve is closed: replace valve.
Low flow or no flow.	Clogged suction hose and/or suction strainer Correct voltage (12V ±10%)
Fuse blows whenever pump is switched on.	Excessive voltage Damaged wiring Improper adjustment of pump pressure sensing demand switch
Leaking from pump head or switch.	Loose screws at switch or pump head Switch diaphragm ruptured or pinched Punctured diaphragm, if fluid is present

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