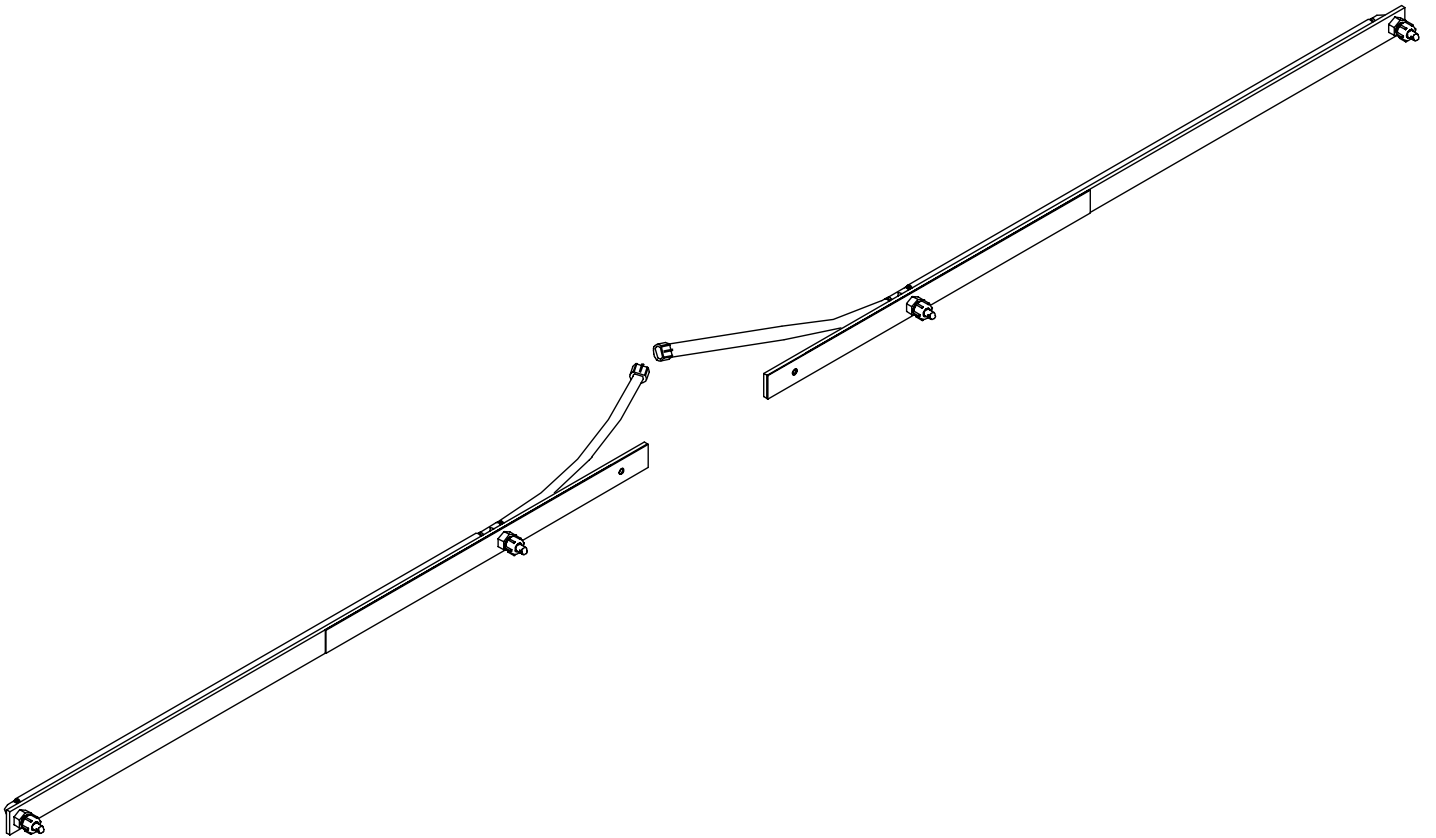




**16 GALLON  
EXTENDED BOOM KIT  
ITEM # 2820**

M2820E

**OWNER'S MANUAL**



00989

*Any Questions, Comments or Problems  
Call NorthStar Product Support 1-800-270-0810  
Hours: Monday - Friday 7:00 AM to 5:00 PM CST  
Saturday 7:30 AM to 11:30 AM*

# THANK YOU

Thank you for purchasing the North Star, 15 Gallon Extended Boom Kit. This boom kit is designed for long life, dependability, and the top performance you demand. Please take time now to read through this manual so you can better understand the machine's operation, maintenance and safety precautions. Everyone who operates this sprayer with this boom kit must read and understand this manual. The time you take now will prolong your sprayer's life and prepare you for it's safe operation. Enjoy the exceptional performance of your North Star 15 Gallon Extended Boom Kit.

## NOTICE

Northern Tool + Equipment Co., Inc. reserves the right to make improvements in design and/or changes in specifications at any time without incurring any obligation to install them on units previously sold.



This symbol means **CAUTION, WARNING, or DANGER**. Pay particular attention to this symbol throughout the manual. Failure to comply with these instructions may result in personal injury or product damage.

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# PART LIST - 2820



Flat Seat Hose Barb  
Qty - 2



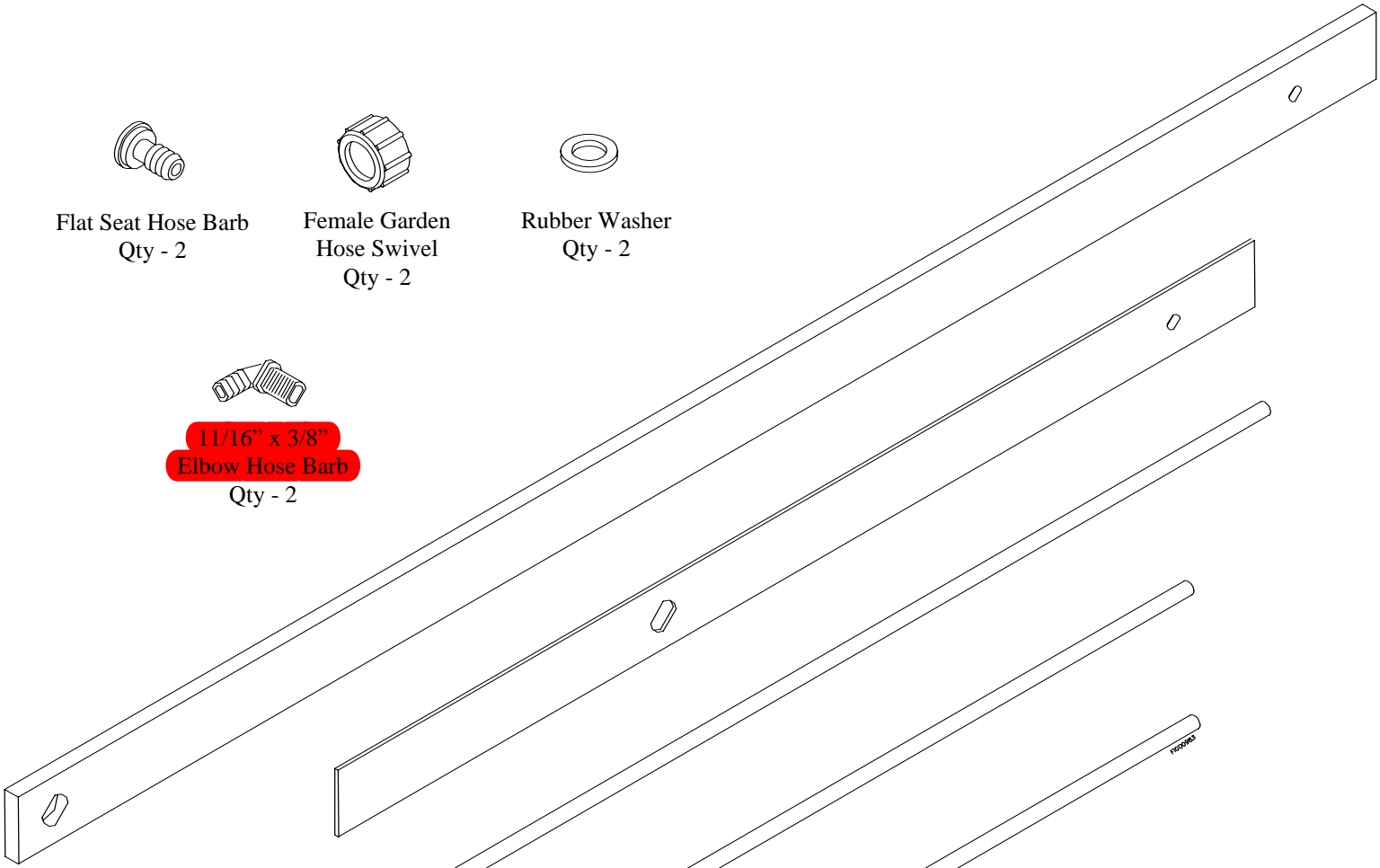
Female Garden  
Hose Swivel  
Qty - 2



Rubber Washer  
Qty - 2



**11/16\" x 3/8\"  
Elbow Hose Barb**  
Qty - 2



**47.5\" Extended  
Boom Arm**  
Qty - 2

**Boom Arm  
Support**  
Qty - 2

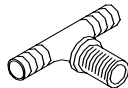
35\" Hose  
Qty - 2

21.5\" Hose  
Qty - 1

11.5\" Hose  
Qty - 1



Small Hose Clamp  
Qty - 8



**11/16\" x 3/8\"  
Tee Hose Barb**  
Qty - 2



**Nozzle Nut**  
Qty - 4



**Swivel Nut**  
Qty - 4



**Nozzle Strainer**  
Qty - 4



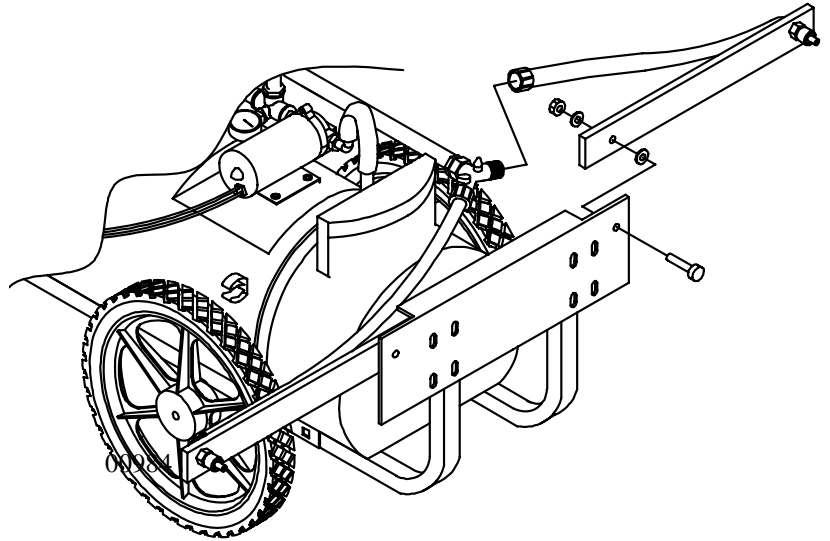
**#1.5 Spray Nozzle**  
Qty - 4

# ASSEMBLY INSTRUCTIONS

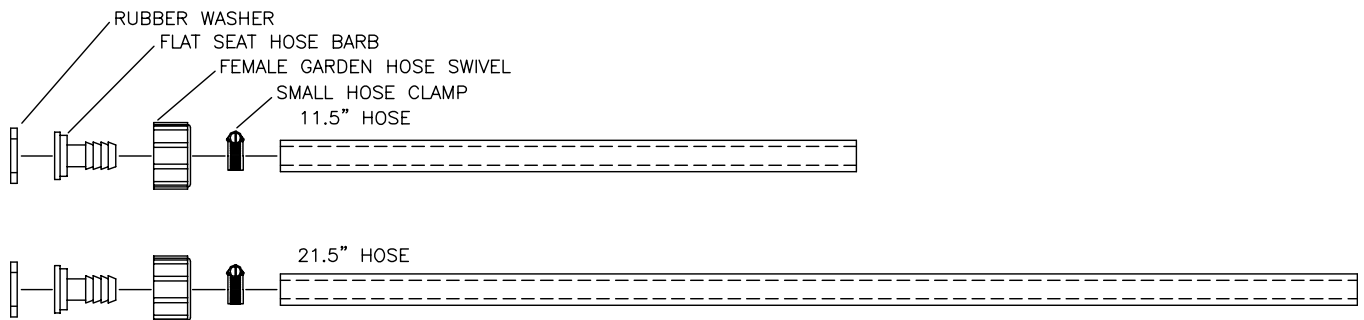
## UNPACKING

1. Closely inspect all the contents of the carton.
2. If there are damaged components:  
Contact the freight company that delivered your unit and file a claim.
3. If components are missing:  
Contact our Product Support department at 1-800-270-0810.

**STEP 1:** Disconnect the two FEMALE GARDEN HOSE CONNECTORS from the 3-WAY VALVE. Disassemble the existing boom arms by removing the (2) 5/16 x 1" hex bolts, (2) 5/16 nyloc nuts, and (4) 5/16" flat washers as shown. Do not discard these fasteners, you will need them in step 5.



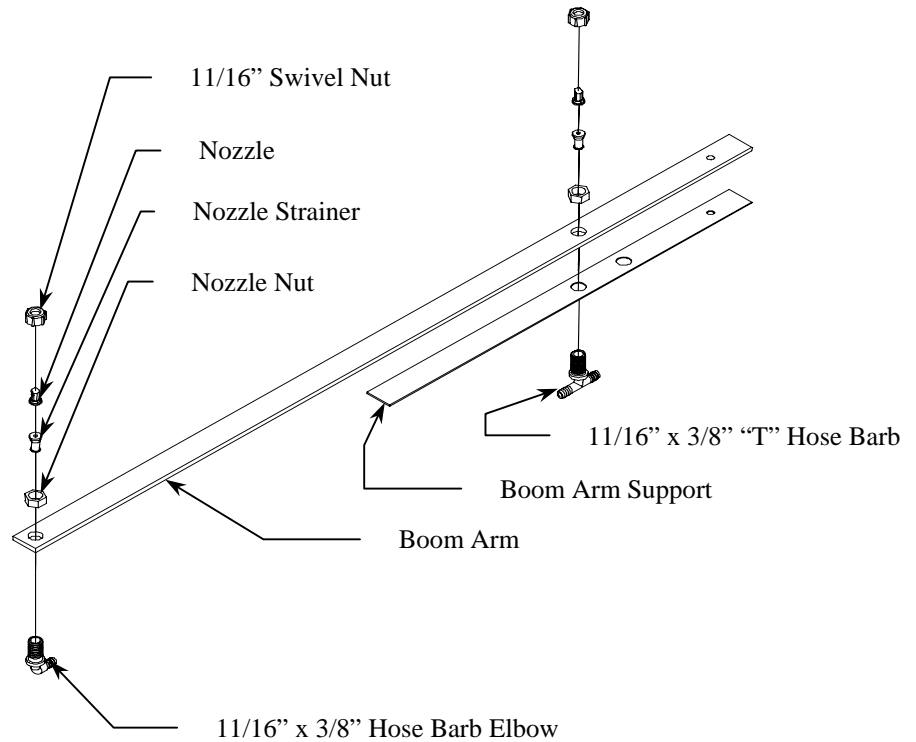
**STEP 2:** Assemble the 11.5" and 21.5" HOSE ASSEMBLY. Insert the FLAT SEAT HOSE BARB into the FEMALE GARDEN HOSE SWIVEL. Insert the RUBBER WASHER into the FEMALE GARDEN HOSE SWIVEL. Slide one SMALL HOSE CLAMP over one end of the 11.5" HOSE and insert FLAT SEAT HOSE BARB into one end of the hose and tighten the clamp. Repeat this step with the 21.5" HOSE.



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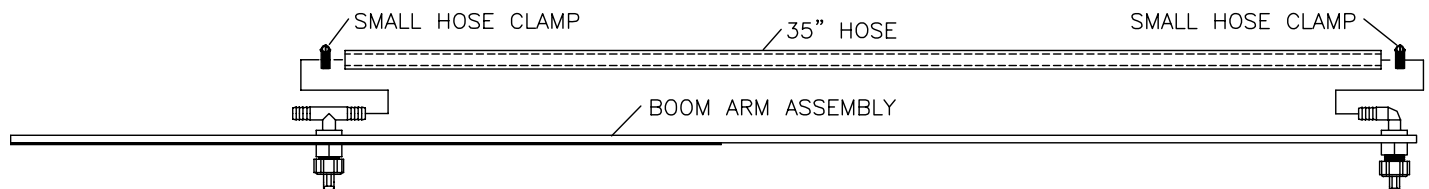
# ASSEMBLY INSTRUCTIONS CONTINUED

**STEP 3:** Insert the elbow hose barb into the boom arm as shown. Fasten to the boom arm using the nozzle nut. Insert the nozzle strainer into the hose barb. Place the nozzle on top of the strainer. Be sure that the opening on the nozzle is positioned so that when the unit is assembled, the opening points at the ground. Tighten the nozzle and nozzle strainer into the hose barb using the swivel nut. Insert the "T" hose barb into the holes in the boom arm and the boom arm support as shown. Install the nozzle nut, nozzle strainer, nozzle and swivel nut. Make sure that both nozzles point in the same direction. Repeat this step for the other boom arm switching the direction of the nozzles so it doesn't point to the ground.



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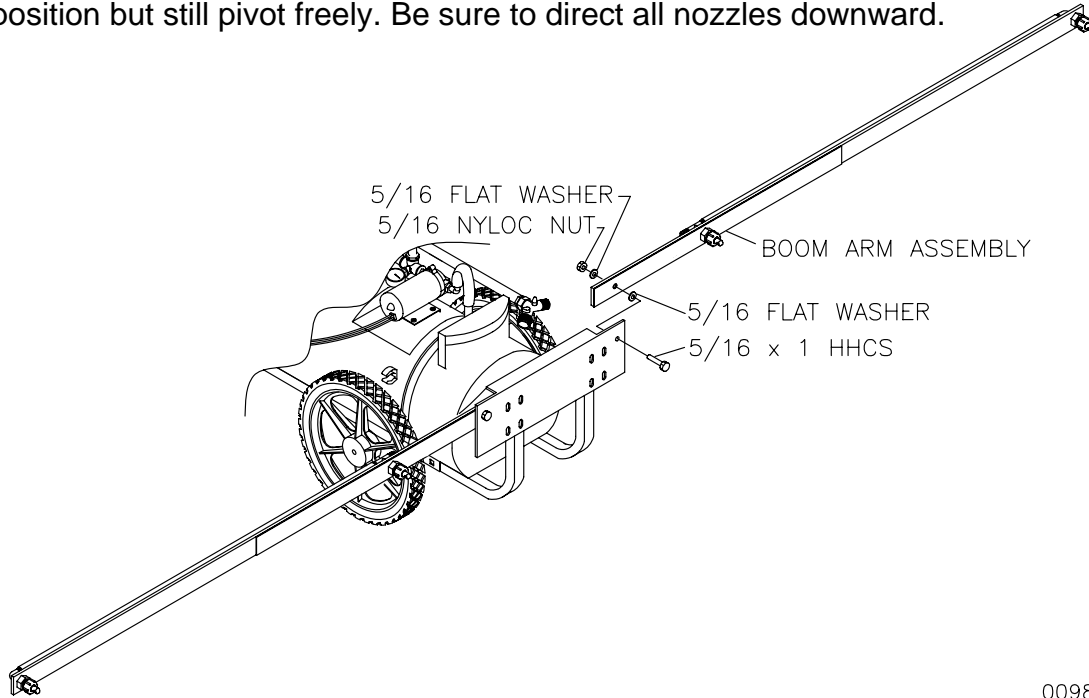
**STEP 4:** Assemble the 35" HOSE to the BOOM ARM ASSEMBLY. Slide a SMALL HOSE CLAMP on each end of the 35" HOSE. Push the 35" HOSE on one of the hose bars of the BOOM ARM ASSEMBLY, tighten the SMALL HOSE CLAMP. Push the other end of the 35" HOSE onto the other hose barb of the BOOM ARM ASSEMBLY, tighten the SMALL HOSE CLAMP. Repeat this step with the other BOOM ARM ASSEMBLY.



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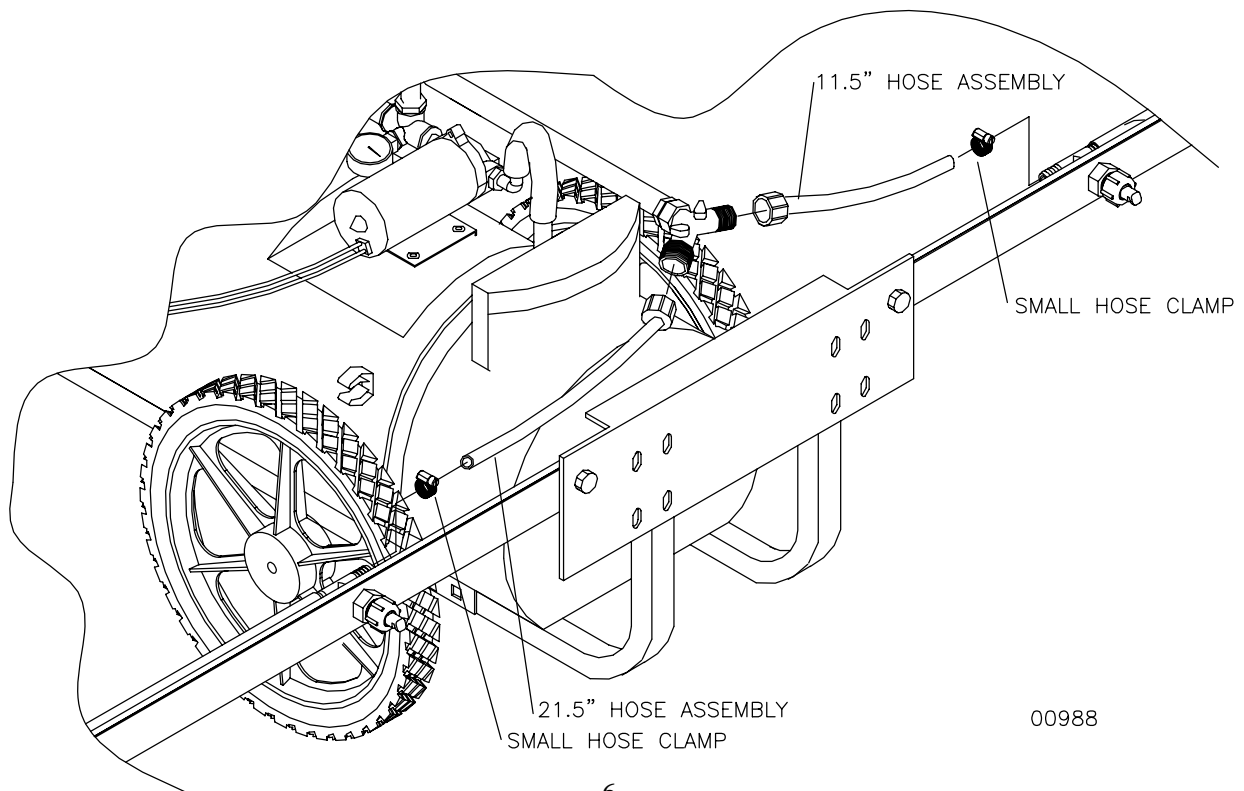
# ASSEMBLY INSTRUCTIONS CONTINUED

**STEP 5:** Attach BOOM ARM ASSEMBLY to BOOM BRACKET with existing (2) 5/16 x 1" hex bolts, (2) 5/16 nyloc nuts, and (4) 5/16" flat washers as shown. Tighten the nuts until the arms will hold their position but still pivot freely. Be sure to direct all nozzles downward.



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**STEP 6:** Connect the 11.5" and 21.5" HOSE ASSEMBLIES assembled in step 2 to the BOOM ARM ASSEMBLIES. Slide a SMALL HOSE CLAMP on the 11.5" HOSE ASSEMBLY then push the hose onto the hose barb of the right BOOM ARM ASSEMBLY, tighten the SMALL HOSE CLAMP. Thread the FEMALE GARDEN HOSE SWIVEL onto the 3-WAY VALVE. Repeat this step with the 21.5" HOSE ASSEMBLY and the left BOOM ARM ASSEMBLY.



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# SAFETY INSTRUCTIONS

- 1. Never** spray flammable liquids.
- 2. Never** use an undersized discharge nozzle.
- 3. Never** operate the unit with broken or missing parts.
- 4. Always** wear safety glasses or goggles and appropriate clothing when filling the tank with chemicals.
- 5. Always** follow the chemical manufacturer's recommendations when using chemicals with this sprayer.
- 6. Always** spray on calm days. Wind can cause the sprayed chemicals to drift into areas not intended for the spray.
- 7. Always** use water that is clear and free from debris.
- 8. Always** Protect the sprayer from freeze damage during storage.
- 9. Never** point the spray gun at people or animals, the sprayed chemical can be very dangerous.
- 10. Never** leave the spray gun unattended while the unit has power to it.
- 11. Always** flush the sprayer immediately after use, especially before storing for extended periods. Storing with chemical residue will slowly degrade all parts in the system.
- 12. Always** wear eye protection when spraying chemicals.
- 13. Always** seek emergency medical care immediately if: ***any chemical penetrates your skin.***
- 14. Never** use the unit when under the influence of drugs, alcohol or medication.
- 15. Never** use the sprayer for anything other than it's intended use
- 16. Never** attempt to clean nozzles when there is power to the sprayer
- 17. Always** follow all other guidelines and safety instructions described in this manual.
- 18. Always** tow the sprayer on flat or level ground. If absolutely necessary, traverse slopes up and down only!. **Never** tow the sprayer sideways across a slope, you may tip the sprayer or the tow vehicle.



## CHEMICAL INSTRUCTIONS

1. Pay strict attention to all labels on the chemicals you are using.
  2. Measure all chemicals carefully and follow all directions exactly.
  3. Emulsion-type liquid sprays can be added directly to the tank.
  4. Mix wettable powder herbicides properly. Be sure to allow for the proper concentration as stated in the directions for the chemical you are using.
    - a. Pre-mix herbicide, with water, in a pail
    - b. Fill the tank half way with water.
    - c. Pour the premixed herbicide slowly in to the tank.
    - d. Finish filling the tank to the desired height and begin spraying.
- \* Don't leave powdered chemicals in the tank over night, or vigorous mixing will be required to remix the solution.
- \* Wash all body parts, clothing, and other materials that may have come in contact with any chemicals.
- \* Clean the sprayer with the chemical manufacturer's recommended cleaning agent. Proper care of the sprayer will prepare the machine for safe operation and prolong it's useful life.

# OPERATION INSTRUCTIONS

Before operating the sprayer, thoroughly read all safety and operation instructions.

## TESTING FOR LEAKS

Before operating the sprayer with chemicals, read all of the chemical safety instructions and test for leaks.

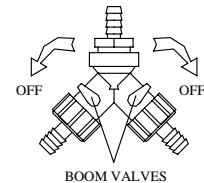
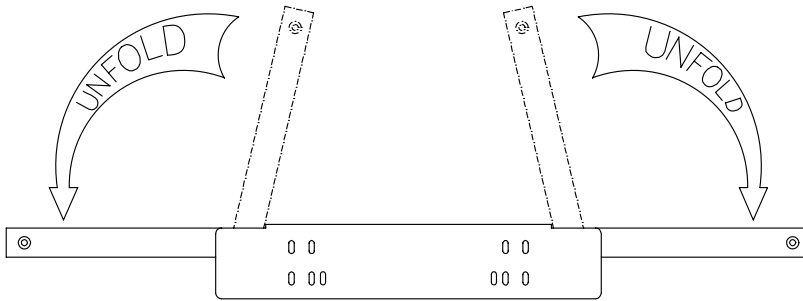
1. Fill the tank with water.
2. Close the boom valves.
3. Turn on the pump with the remote switch. The pump is an “on-demand” pump. This means when turned on the pump will pump until a preset pressure is reached (60 psi) then it will shut itself off. When the boom valves are opened or a gun trigger is squeezed the pump will automatically start again...*unless the remote switch is turned OFF.*
4. Run the Boom as instructed in the BOOM OPERATION section. Run the gun as instructed in the GUN OPERATION section.

## GUN OPERATION

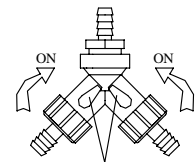
1. Turn both boom valves to the OFF position.
2. Turn on the sprayer.
3. Squeeze the gun trigger to turn on the pump and begin spraying.

## BOOM OPERATION

1. Make sure the gun trigger is not locked open.
2. Open the boom valves as desired.
3. Unfold one or both of the boom arms as necessary for use of the desired nozzle.
4. Make sure both boom nozzles are directed towards the ground.



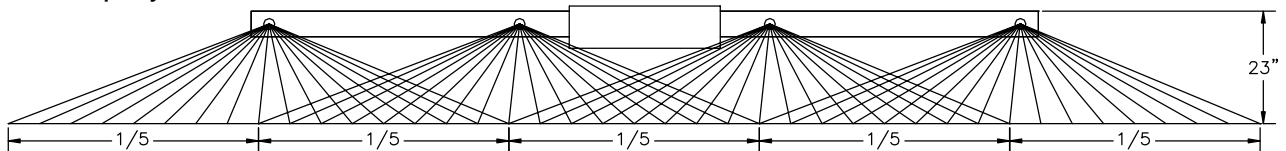
BOOM VALVES



BOOM VALVES

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5. The height of the unfolded boom nozzles should be about 23” from the ground. The sprayer must be level with the ground to get this height. This will give the correct double overlap spray pattern between the four nozzles. However, 1/5 of the spray pattern must be overlapped each pass to get equal coverage throughout the spray area.



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Use the tables on the next page to determine what speed to tow the sprayer at for the desired application rate.

# BOOM CALIBRATION

Below are some guidelines to calibrate a North Star boom sprayer with DT1.5 (253421) spray nozzles. This is a very important step in operating the boom sprayer so the right amount of chemical is applied.

1. Use the suggested application rate from the chemical manufacturer (i.e. gallons per Acre, 1000 sq.ft., or 100 sq.ft.)
2. Using **Table 1**, find the application rate that most closely matches the chemical manufacturers suggested application rate, and pressure at which the sprayer is operating.
3. Follow this application rate up the chart to find the speed at which to drive the vehicle.

**TABLE 1**

Spray Height	Tip #	Pressure (PSI)	Flow (GPM)	GALLONS PER ACRE - <i>Based on water</i>						
				1 MPH	2 MPH	3 MPH	4 MPH	5 MPH	7 MPH	10 MPH
23"	1.5	15	.18	29.7	14.9	9.9	7.4	5.9	4.2	3.0
23"	1.5	25	.24	39.6	19.8	13.2	9.9	7.9	5.7	4.0
23"	1.5	35	.28	46.2	23.1	15.4	11.6	9.2	6.7	4.6

Spray Height	Tip #	Pressure (PSI)	Flow (GPM)	GALLONS PER 1000 SQ.FT. - <i>Based on water</i>						
				1 MPH	2 MPH	3 MPH	4 MPH	5 MPH	7 MPH	10 MPH
23"	1.5	15	.18	.68	.34	.23	.17	.14	.10	.07
23"	1.5	25	.24	.91	.46	.30	.23	.18	.13	.09
23"	1.5	35	.28	1.06	.53	.35	.27	.21	.15	.11

Spray Height	Tip #	Pressure (PSI)	Flow (GPM)	GALLONS PER 100 SQ.FT. - <i>Based on water</i>						
				1 MPH	2 MPH	3 MPH	4 MPH	5 MPH	7 MPH	10 MPH
23"	1.5	15	.18	.068	.034	.023	.017	.014	.010	.007
23"	1.5	25	.24	.091	.046	.030	.023	.018	.013	.009
23"	1.5	35	.28	.106	.053	.035	.027	.021	.015	.011

\* **Approximate flow from one nozzle**

4. Use **Table 2** to choose the throttle setting on the vehicle.

**TABLE 2**

Speed (MPH)	Time required in seconds to travel a distance of:		
	100 ft.	200 ft.	300 ft.
1	68	136	205
2	34	68	102
3	23	45	68
4	17	34	51
5	14	28	41
7	9.5	19	29
10	7	14	20

5. The coverage area can be found by dividing a full tank (ie; 15 gals) by the application rate.

**Example:** 15 gallons divided by 30 gallons/acre = 1/2 acre of coverage per tank.

## STORAGE

Prepare the sprayer for storage by running a permanent type of antifreeze through the system. This will keep internal parts lubricated, protect against corrosion, and keep the unit from freezing.

### FOLLOW THESE STEPS

1. Pour about 1/2 gallon of regular antifreeze and 1/2 gallon of water, or 1 gallon of RV antifreeze (do not dilute) into the tank.

2. Turn on the pump motor, place containers under the nozzles to capture the antifreeze when it comes out. **Open boom valves** briefly until antifreeze begins to exit the nozzles. **Squeeze the gun trigger** briefly until fluid begins to exit.

• **When removing:** from storage drain the antifreeze left in the tank into a container. Fill the tank with fresh water and run through the system, opening boom lines until the system is completely flushed. Be sure to set up containers to capture the expelled fluid if necessary.



### Important

**Most standard antifreeze is hazardous to people, animals and the environment. Follow the containment and disposal instructions for your particular type of antifreeze.**

## TROUBLESHOOTING

Problem	Possible Cause	Solution
Pump will not turn on.	Bad electrical connection.	Check all connections and check condition of wires.
Pump cycling (turning on and off repeatedly)	Clogged nozzles / strainer, Clogged Discharge hose.	Clear nozzle / strainer, hose Remove obstructions.
Low pressure	Worn nozzles	Replace nozzles.
Low flow	Clogged intake	Remove obstructions.
Poor spray distribution	Worn nozzles, Clogged nozzle / strainer.	Replace nozzles Clear nozzle / strainer.

# WARRANTY REGISTRATION INFORMATION

Take time now to fill out your warranty registration card included with this product. It is extremely important that you return the registration card. Furthermore, your comments and suggestions on the warranty card or the survey card are very valuable to us, and help us to design better products.

**Your Customer #** \_\_\_\_\_

*Your **Customer #** is on your invoice if you bought this unit through mail order. If you purchased this unit in a retail store, write in the city where the store is located.*

**NorthStar Serial #** \_\_\_\_\_

*The **NorthStar Serial #** is printed on the silver North Star label, usually placed on the pump motor. It consists of two numbers. Write down both numbers on the line.*

**Engine Serial #** \_\_\_\_\_

**(If applicable)**

*The **Engine Serial #** is usually located on the side of the engine near the oil fill cap. See the component identification section in the engine owners manual.*

**Pump Serial #** \_\_\_\_\_

*For the **Pump Serial #** write down the pump model number written on the pump label*

*Any Questions, Comments or Problems  
Call NorthStar Product Support 1-800-270-0810  
Hours: Monday - Friday 7:00 AM to 5:00 PM CST  
Saturday 7:30 AM to 11:30 AM*