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BB4 Blueberry Sprayer

Covered Hose-fed Sprayer



Assembly, Parts and Operator's Manual

Table of Contents

SAFETY	2
Operational Safety	2
GENERAL SPRAYING INFORMATION	2
Application Tips.....	2
Nozzles.....	3
Diaphragm Check Valve Nozzle Bodies	3
Calibration	3
Application Rate Tables	4
GENERAL MAINTENANCE	5
Cleaning.....	5
Sunshine.....	6
Winterizing.....	6
OPERATION	6
MAINTENANCE	6
DRAWING AND REPLACEMENT PARTS	7
ORC Parts	7
Replacement Parts	8

Safety

Many people die or suffer serious injury in job related accidents every year due to carelessness. Know your machinery and be aware of potential hazards. Put safety first in all your operations.

Review all instructions and procedures outlined in this manual annually. Every operator must familiarize himself with the operating instructions of the sprayer.

Operational Safety

Shut down sprayer and power unit and wait for all parts to stop before adjusting, cleaning, or lubricating the power unit or sprayer.

Before spraying a field familiarize yourself with any rocks, debris, trees, ditches or gullies that may be potentially dangerous. Plan the spraying route to avoid these hazards.

Minimize Chemical Drift

The *WINDFOIL* sprayer was designed in a wind tunnel to control air flow around and behind the sprayer minimizing drift to allow safer spraying in windy conditions.

Drift can blow off a field after it has been sprayed, especially in high winds. Reasonable caution should be taken in order to spray effectively and safely.

For maximum drift control, keep curtain in contact with the ground to ensure a seal to it. Drift control of the *WINDFOIL* is less effective when the wind blows the curtain off the crop canopy breaking the seal between the curtain and the crop.

General Spraying Information

Application Tips

Always use clean filtered water in the sprayer tank.

Your *Windfoil* Drift Containment Spray System (DCSS) comes standard with AlbuZ ceramic insert tips. These tips are considered by most to be the best in the industry for wear resistance and spray pattern coefficient of variation. Please contact your manufacturer for various sizes of tips available for your machine.

Ensure that the pressure on the supply end of the hose used on hose reels is sufficient to deliver the proper pressure at the hand unit on the delivery end of the hose.

Check the flow rate from all nozzles using the capacity calibration technique; see the Calibration section for tables and instructions. Adjust the sprayer pressure to get the proper flow rate. The flow meters are not accurate enough in absolute terms to be used as a flow meter. In relative terms they are very accurate.

Nozzles

Despite being the most important component for accurate uniform spraying application, nozzles are often neglected and abused.

Nozzle flow rate depends on effective orifice size and pressure. Spray tip manufacturers have supplied tables of nozzle application rates at various pressures, for the best results it is recommended that you follow these guidelines.

The rule of thumb is that as you increase the pressure to your unit the average droplet size decreases. Normally with conventional open boom sprayers large droplets are used to control drift but large droplets can roll off plants without sticking. With the *Windfoil* covered spray system you will be able spray with smaller droplets, increase coverage and not worry about drift.

The spray patterns must overlap for even coverage but should not interfere with one another. Nozzles are set at a 10° angle so that one edge of its pattern will be just behind the edge of its adjacent spray pattern, evading interference with each other.

Typically as a tip wears the spray pattern distorts output volumes usually increase and the droplet characteristics change. Recalibration may correct for output changes, but cannot correct for spray pattern changes or the drop size generated.

Caution: When spraying next to a flower bed, do not spray over the turf edge as the spray will go under the curtain and onto the flowers.

Diaphragm Check Valve Nozzle Bodies

Diaphragm check valves close at 15 psi to prevent excessive dripping. Should the cap on the valve loosen or the check valve diaphragm become misaligned, the body may leak. Stop the leak by, tightening the check valve cap or remove the cap and inspect the seal for damage or improper assembly.

Nozzle caps are attached by engaging the cap and turning clockwise about a third of a turn. Self-aligning caps have a slot to align the tips. Ensure that the tips fit down into the slotted hole before installing caps on the diaphragm nozzle body assembly with the tip screens.

Non-aligning caps are also available for special tips.

Calibration

As a tip wears recalibration may be required. Collect the output from each nozzle for 60 seconds, using an accurate measuring cup. Record the output from each nozzle. Replace nozzles that are more than 5% above or below the average reading, or has a visibly distorted pattern.

**American Application Rates at 15" Nozzle Spacing
80 Deg. Tips**

Rogers Part #	Tip Num- ber	Tip Mfg	Liquid Press psi	Liquid Press bars	Capac- ity 1 noz- zle gpm	U. S. GALLONS PER ACRE					U. S. GALLONS PER 1000 SQ. FT.				
						2.5	3	4	5	7	2.5	3	4	5	7
						mph	mph	mph	mph	mph	mph	mph	mph	mph	mph
05872	800067 SS (200 mesh)	Teejet	30	2.07	0.058	9.2	7.7	5.7	4.6	3.3	0.21	0.18	0.13	0.11	0.08
			40	2.76	0.067	10.6	8.8	6.6	5.3	3.8	0.24	0.20	0.15	0.12	0.09
			50	3.45	0.075	11.9	9.9	7.4	5.9	4.2	0.27	0.23	0.17	0.14	0.10
			60	4.14	0.082	13.0	10.8	8.1	6.5	4.6	0.30	0.25	0.19	0.15	0.11
01369	8001VS (100 mesh)	Teejet	30	2.07	0.087	13.7	11.4	8.6	6.9	4.9	0.31	0.26	0.20	0.16	0.11
			40	2.76	0.100	15.8	13.2	9.9	7.9	5.7	0.36	0.30	0.23	0.18	0.13
			50	3.45	0.112	17.7	14.8	11.1	8.9	6.3	0.41	0.34	0.25	0.20	0.14
			60	4.14	0.122	19.4	16.2	12.1	9.7	6.9	0.44	0.37	0.28	0.22	0.16
00827 13351	80015V S or API- 80015 (100 mesh)	Teejet	30	2.07	0.130	20.6	17.1	12.9	10.3	7.3	0.47	0.39	0.29	0.24	0.17
			40	2.76	0.150	23.8	19.8	14.9	11.9	8.5	0.54	0.45	0.34	0.27	0.19
		Albuz	50	3.45	0.168	26.6	22.1	16.6	13.3	9.5	0.61	0.51	0.38	0.30	0.22
			60	4.14	0.184	29.1	24.2	18.2	14.5	10.4	0.67	0.56	0.42	0.33	0.24
05876 14384	8002VS or AXI- 8002 (50 mesh)	Teejet	30	2.07	0.173	27.4	22.9	17.1	13.7	9.8	0.63	0.52	0.39	0.31	0.22
			40	2.76	0.200	31.7	26.4	19.8	15.8	11.3	0.73	0.60	0.45	0.36	0.26
		Albuz	50	3.45	0.224	35.4	29.5	22.1	17.7	12.6	0.81	0.68	0.51	0.41	0.29
			60	4.14	0.245	38.8	32.3	24.2	19.4	13.9	0.89	0.74	0.56	0.44	0.32
05877 14385	8003VS or AXI- 8003 (50 mesh)	Teejet	30	2.07	0.260	41.2	34.3	25.7	20.6	14.7	0.94	0.79	0.59	0.47	0.34
			40	2.76	0.300	47.5	39.6	29.7	23.8	17.0	1.09	0.91	0.68	0.54	0.39
		Albuz	50	3.45	0.335	53.1	44.3	33.2	26.6	19.0	1.22	1.01	0.76	0.61	0.43
			60	4.14	0.367	58.2	48.5	36.4	29.1	20.8	1.33	1.11	0.83	0.67	0.48
05878 14061	8004VS or AXI- 8004 (50 mesh)	Teejet	30	2.07	0.346	54.9	45.7	34.3	27.4	19.6	1.26	1.05	0.79	0.63	0.45
			40	2.76	0.400	63.4	52.8	39.6	31.7	22.6	1.45	1.21	0.91	0.73	0.52
		Albuz	50	3.45	0.447	70.8	59.0	44.3	35.4	25.3	1.62	1.35	1.01	0.81	0.58
			60	4.14	0.490	77.6	64.7	48.5	38.8	27.7	1.78	1.48	1.11	0.89	0.63
05879 14386	8005VS or AXI- 8005 (50 mesh)	Teejet	30	2.07	0.433	68.6	57.2	42.9	34.3	24.5	1.57	1.31	0.98	0.79	0.56
			40	2.76	0.500	79.2	66.0	49.5	39.6	28.3	1.81	1.51	1.13	0.91	0.65
		Albuz	50	3.45	0.559	88.5	73.8	55.3	44.3	31.6	2.03	1.69	1.27	1.01	0.72
			60	4.14	0.612	97.0	80.8	60.6	48.5	34.6	2.22	1.85	1.39	1.11	0.79
05880 14387	8006VS or AXI- (50 mesh)	Teejet	30	2.07	0.520	82.3	68.6	51.4	41.2	29.4	1.88	1.57	1.18	0.94	0.67
			40	2.76	0.600	95.0	79.2	59.4	47.5	33.9	2.18	1.81	1.36	1.09	0.78
		Albuz	50	3.45	0.671	106.3	88.5	66.4	53.1	37.9	2.43	2.03	1.52	1.22	0.87
			60	4.14	0.735	116.4	97.0	72.7	58.2	41.6	2.67	2.22	1.67	1.33	0.95
05881	8008VS (50 mesh)	Teejet	30	2.07	0.693	109.7	91.5	68.6	54.9	39.2	2.51	2.09	1.57	1.26	0.90
			40	2.76	0.800	126.7	105.6	79.2	63.4	45.3	2.90	2.42	1.81	1.45	1.04
			50	3.45	0.894	141.7	118.1	88.5	70.8	50.6	3.24	2.70	2.03	1.62	1.16
			60	4.14	0.980	155.2	129.3	97.0	77.6	55.4	3.55	2.96	2.22	1.78	1.27

Run a speed test in the area to be sprayed. The sprayer must be up to speed before starting the test run. To determine the speed mark off a distance as found on one of the tables. Push the sprayer over this distance carefully noting and recording the time to cover the distance. The speed traveled can be found for the specific distance and time to travel using the tables below.

After the nozzles have been individually checked and matched, the sprayer should be calibrated to determine the correct speed for the desired application volume.

Table 3: Time in Seconds to Travel Distance of:

	10	25	50	100	200
mph	(ft)	(ft)	(ft)	(ft)	(ft)
1	6.8	17.0	34.1	68.2	136.0
1.5	4.5	11.4	22.7	45.5	90.9
2	3.4	8.5	17.0	34.1	68.2
2.5	2.7	6.8	13.6	27.3	54.5
3	2.3	5.7	11.4	22.7	45.5
4	1.7	4.3	8.5	17.0	34.1
5	1.4	3.4	6.8	13.6	27.3
6	1.1	2.8	5.7	11.4	22.7

Table 4: Time in Seconds to Travel a Distance of:

	10	25	50	100	200
Km/h	(m)	(m)	(m)	(m)	(m)
1	36.0	90.0	180.0	360.0	720.0
1.5	24.0	60.0	120.0	240.0	480.0
2	18.0	45.0	90.0	180.0	360.0
2.5	14.4	36.0	72.0	144.0	288.0
3	12.0	30.0	60.0	120.0	240.0
4	9.0	22.5	45.0	90.0	180.0
5	7.2	18.0	36.0	72.0	144.0
6	6.0	15.0	30.0	60.0	120.0

Note: Tip pressure is usually less than the pressure at the pump. Losses occur in valves, hoses, etc. Always check the flow by the above calibration method. There is a pressure loss of approximately 40 psi. for every 100 feet of hose.

General Maintenance

Cleaning

Sprayers need to be cleaned to prevent corrosion and cross contamination of chemicals. Trace amounts of one chemical can react with another or carry over to the next spraying and cause crop damage, especially with pesticides. Long exposures with even small amounts of some chemicals can damage sprayer components either by corrosion or gum deposits. If you spray crops that are very susceptible to injury from the last chemical used (ie vegetables, turf, and ornamentals) clean the unit especially well.

Always try to end the day with an empty tank; avoid contamination of water supplies and injury to plants or animals. Do not make puddles that might be accessible to children, pets, farm animals, or wildlife. Flush with clean water preferably after each day's operation. If you plan to use the same material over several days most chemicals may be kept in the tank overnight, labels on the chemical usually indicates which may not. Rinse the outside of the sprayer. Surfactants combined with chemicals, when they are compatible, will provide some cleaning action in the sprayer.

Some chemical combinations (especially if oil is used) may produce a putty type paste (buttering out) in the sprayer tank and components; flushing with water after each load may prevent an accumulation. If water alone does not dissolve and remove the buildup, add solvent, kerosene, or other low flammable solvent; allow paste to dissolve, then agitate and flush. Next, flush with detergent and finally with clean water. Check with your chemical agent.

Whenever pesticides are changed, or before sprayer storage, clean sprayers thoroughly with a cleaning solution. The solution used depends on the chemical to be removed from the sprayer. Check the chemical label for cleaning instructions.

First flush with water, then add the cleaning solution to the tank and thoroughly agitate before flushing. Always flush with clean water to remove the cleaning solution. Remove nozzle tips and screens; clean them in a strong detergent solution or kerosene, using a soft brush such as an old toothbrush. Never use a metal probe to clean the orifice of a spray tip!

Follow the same safety precautions during cleaning as for applications. Use a respirator, rubber gloves, or other protective gear as may be directed by label instructions.

Sunshine

Many plastic sprayer parts are degraded by ultra violet light, especially the nozzle flow indicators. Store the sprayer in the shade to extend the length of service.

Winterizing

After the sprayer is thoroughly cleaned, put 2-5 gallons of rust inhibitor or antifreeze in the tank prior to the final flushing to help prevent corrosion. As the water is pumped from the sprayer, the antifreeze will leave a protective coating on the inside of the tank, pump, and plumbing. Remove nozzle tips, screens and no-drip valves (if used) and store them in a can of light oil such as diesel fuel or kerosene to prevent corrosion. Close nozzle openings with tape to prevent dirt, insects, mice, or other contaminants from entering.

During the final cleaning, completely check the sprayer. Look at the hoses, clamps, connections, nozzle tips, and screens for needed replacements. Store the sprayer in a reasonably clean and dry building.

Operation

The *Windfoil* has four 80° Flat Fan spray tips. API tips are supplied with the *Windfoil*; it can also use Spraying Systems TP800XVS tips that give an actual 80° spray pattern.

Attach a supply hose to the garden hose fitting on the control valve, located on the sprayer handle. The supply pressure of the fluid should be between 40 and 60 psi. A rough estimate due to losses in the system is that when you have 45psi at the handle, you probably have 40psi at the tips. Each of the balls in the spray monitor should raise to an equal level as the flow increases. If they are not equal the lower ball(s) indicated tips that are plugged or partially plugged. Check and clean the appropriate tip(s). If the balls are right at the top, the flow rate is too high for them. Replace them with the required balls for the tips. (see the flow monitor page).

Test the unit using clear water on a firm surface such as asphalt or concrete before using spray solution. This will illustrate the effectiveness of the individual spray patterns.

Maintenance

Cleaning and Flushing with clear water after using.

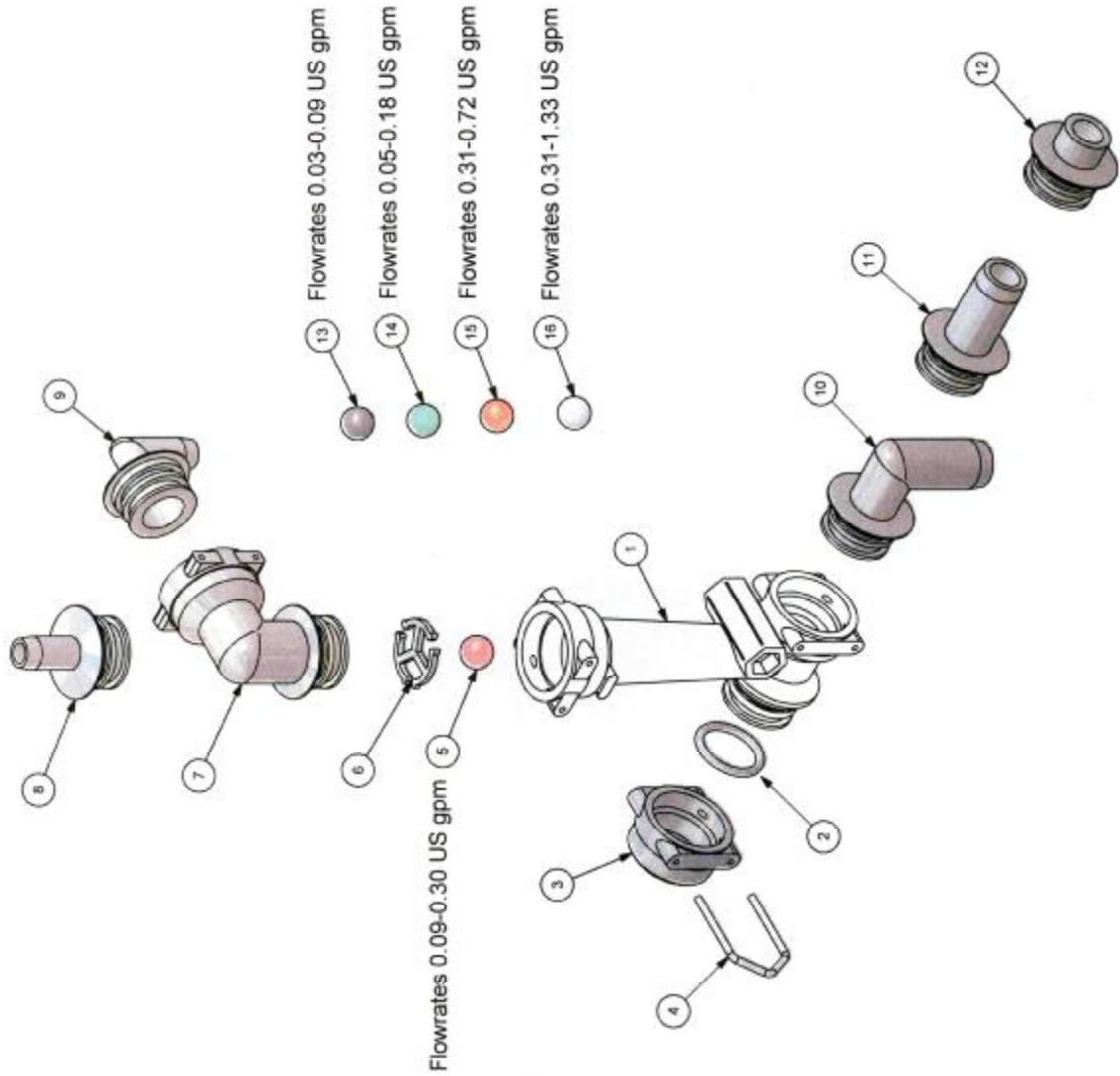
Do not leave water in the unit at freezing temperatures. When storing the sprayer at freezing temperatures, run some windshield washer antifreeze through to prevent ice damage in the plastic parts.

Avoid prolonged storage of the *Windfoil* in direct sunlight for prolonged periods. Certain plastic parts on the *Windfoil* are not UV resistant.

Keep the unit covered or stored indoors.

See the following pages for a parts breakdown for your unit.

ORC Parts



ITEM	QTY	PART#	DESCRIPTION
1	1	00888	FLOWMONITOR ORC BODY
2	1	11984	O-RING ORC
3	1	00909	FTG POLY ORC CAP
4	1	11976a	ORC CLIP
5	1	11990	BALL FI CELCOM 0.09-0.3 USGPM
6	1	11989	ORC BALL RETAINER
7	1	01115	FTG POLY ELB. ST. MORC x FORC
8	1	11975	FTG POLY ADPT. MORC x 1/2"HB
9	1	00906	FTG POLY ELB. MORC x 1/2"HB
10	1	00905	FTG POLY ELB. MORC x 3/4"HB
11	1	00903	FTG POLY ADPT. MORC x 1/4"FNPT
12	1	12727	FTG POLY ADPT. MORC x 1/4"FNPT
13	1	01116	BALL FI POLY 0.03-0.09 USGPM
14	1	01119	BALL FI POLY 0.05-0.18 USGPM
15	1	11985	BALL FI GLASS 0.31-0.72 USGPM
16	1	11991	BALL FI SS 1/2" 0.31-1.3 USGPM

DRAWN: BL/BNH		ROGERS SPRAYERS INC.	
DATE: 05/2008		TITLE: ORC ROTOMETER PARTS	
LOCATION: PLUMBING		DWG NO: 11982	
REVISION#:		SCALE: BEST FIT	
		MATERIAL: SS	
		SIZE: A	

Replacement Parts

14281	Nozzle Body Right 15psi CV
14282	Nozzle Body Left 15psi CV
00889	Flowmonitor Body ORC
00906	Ftg Poly Elb MORCx1/2HB
00909	Ftg Poly End Cap
01115	Ftg Poly Elb ST MORCxFORC
01386	Flexi-Shield Hanger Bulk
14284	Seal Nozzle Cap TeeJet
14288	Cap TeeJet Nozzle Body, Red
14241	Flexi-Shield 9.625Wx165"
04720	Screen Tip 50 Mesh Red
11965	Ball Flow Indicator Glass, Red/Blue
11975	Ftg Poly Adpt MORCx1/2HB
11976A	Clip ORC, A-style
11984	O-Ring ORC Flowmonitor
11989	Ball Retainer ORC Flowmonitor
11990	Ball Flow Indicator Plastic, Red/Blue
12422	Tip API-8002 Yellow
13478	Airfoil Standoff Back
13479	Airfoil Standoff Front
14274	Frame LP4
00859J	Shroud
14006	Hitch
14475	Wheel Poly Assy 5/8ID



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