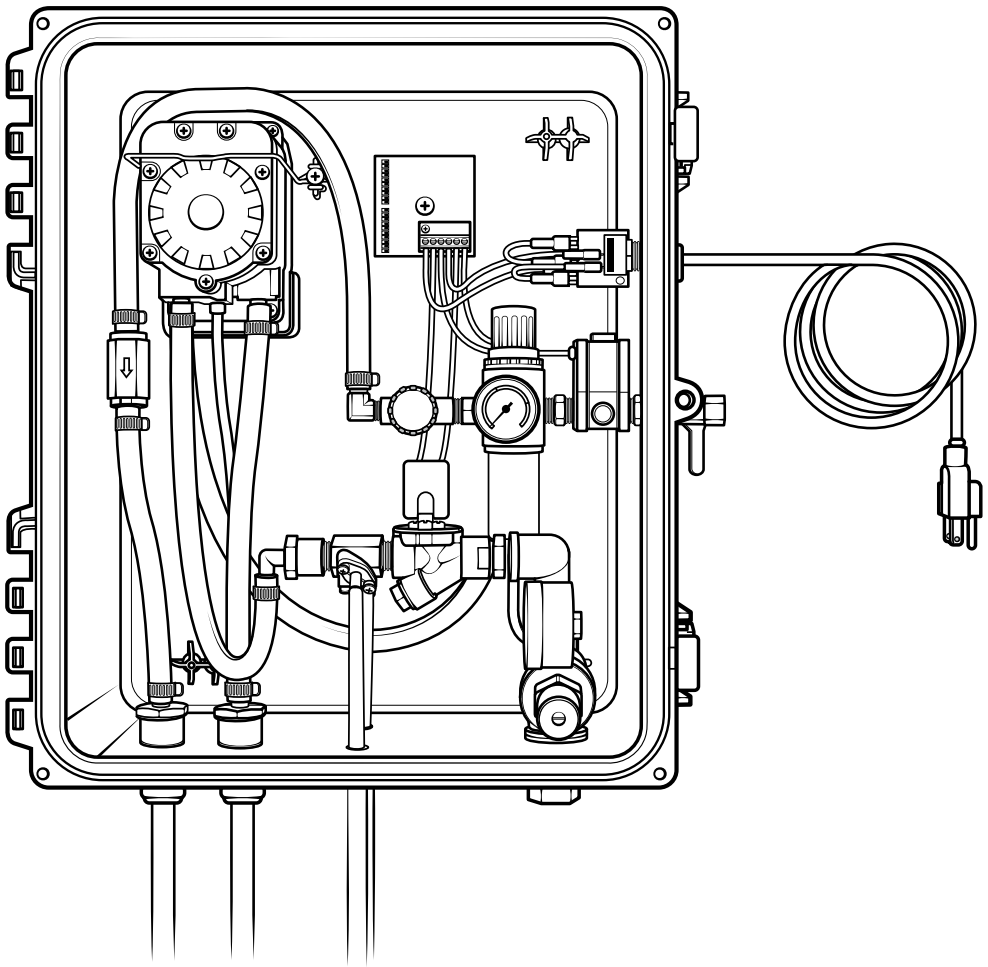
Twin-Line Concentrate Doorway Foam Unit for 2-Part Products

User Manual

DS4-2P



READ ALL INSTRUCTIONS BEFORE USING OR SERVICING THIS UNIT. KEEP THIS MANUAL IN A LOCATION THAT IS READILY AVAILABLE TO USERS AND SERVICE TECHNICIANS.

English (Original Instructions)

Scan this code for user manual

Safety

⚠ WARNING

PEOPLE OR OBJECTS CAN BE HURT OR DAMAGED IF THIS UNIT IS NOT USED CORRECTLY!

Failure to read all the instructions before operating the unit may result in personal injury or death from the improper use or the chemical solution. Anyone handling, operating or using the unit must read, and understand, the instructions in the manual. The buyer assumes all responsibility for safety and proper use in accordance with the instructions.

Using, or servicing, the unit without proper protective clothing, gloves, and eye wear may result in serious injury such as burns, rashes, eye, throat or lung damage and death. Always wear protective clothing, gloves, and eye wear when using, or servicing, the unit. Protect eyes, skin, and lungs against drifting spray.

Chemical solutions may pose a health risk and death if they contact the skin or eyes, are inhaled or swallowed. Always read, and follow, all chemical safety precautions and handling instructions provided by the chemical manufacturer and the Safety Data Sheet (SDS) associated with the chemical solution being used before using the unit.

Pressure within the equipment may cause an unexpected release of the chemical solution and cause serious injury such as burns, rashes, eye damage, throat or lung damage and death. Always depressurize and clean the unit after each use. Release any remaining air pressure by twisting the pressure relief valve to the right ½ turn. Never leave the unit unattended while pressurized.

Using the unit with fluid temperatures above 100°F (37.8°C) may result in scalding, burns, serious injury or death. DO NOT use a solution with a temperature above 100°F (37.8°C).

Operating the unit when damaged or leaking may result in exposure to chemical solutions, serious injury or death. Never use the unit if it is damaged or leaking.

Using incoming air pressure exceeding 100 psi (6.9 bar) may result in pressure buildup, explosion, serious injury or death. DO NOT exceed 100 psi (6.9 bar) incoming air pressure when operating unit.

Use of hydrocarbons and flammable products may result in explosions, fire and serious injury or death. Never use hydrocarbons or flammable products with the unit.

Performing any maintenance with the unit turned ON, plugged into an electrical power source or connected to the air and water supply may serious injury or death. Always ensure that the unit has been turned OFF, unplugged from the electrical power source, and disconnected from the air/water supply before conducting any maintenance.

Mixing an alkaline with an acid may result in a chemical reaction. Overheating of the mixture may cause it to splatter caustic compounds or release hazardous fumes, gas and vapors. Always flush the unit with fresh water thoroughly when switching from an alkaline to an acid or an acid to an alkaline.

NOTICE

Servicing, or modification, of this unit with parts not listed in this manual may cause the unit to operate improperly. Do not use unauthorized parts when servicing the unit.

Use of an air lubricator before the unit may result in diminished performance and damage to the unit. Do not use an air lubricator before the unit.

Moisture in the air lines will damage the pump and diminish the pumps life. The air must be filtered, clean, dry and free of moisture. If needed, install an air dryer before the unit.

PROTECT THE ENVIRONMENT

Please dispose of packaging materials, old machine components, and hazardous fluids in an environmentally safe way according to local waste disposal regulations

Product Overview

System Overview

The DS4-2P series of Twin-Line Concentrate Doorway Foam Units has multiple configurations. One control box can support up to three nozzle assemblies. **Note:** The combined distance between the control box and the nozzle(s) must equal 100 ft. (30.5 m) or less. The following tables provide information regarding model configuration, model hardware, system requirements and specifications.

Item number builder

Default options shown in italics. Other options require addition of option codes, as shown.

Item no.	Pump seal material	—	2-Part Products	—	Number of nozzles
	Santoprene		*2P*		*One (Standard)*
DS4	Viton (V)		2P		Two (2)
	Kalrez (K)		2P		Three (3)

Model configurations are denoted by the model (i.e.: DS4), pump seal material (i.e.: Viton) and the number of nozzles (i.e.: 3). The option codes denote the pump seal material and number of nozzles. For example:

- Model DS4-2P: is a standard 2-part product unit with Santoprene pump seals and one nozzle.
- Model DS4-2P-2: is a 2-part product unit with Santoprene pump seals and two nozzles
- Model DS4V-2P-2: is a 2-part product unit with Viton pump seals and two nozzles

Model hardware

Items included	DS4-2P	DS4-2P-2	DS4-2P-3
Number of nozzle assemblies	Control box and one nozzle assembly	Control box and two nozzle assemblies	Control box and three nozzle assemblies
Type of spray tip	80° fan pattern, 20 GPM flow rate	80° fan pattern, 10 GPM flow rate	80° fan pattern, 6 GPM flow rate
Length of tubing ½ in. OD tubing	50 ft. (15.2 m)	100 ft. (30.4 m)	150 ft. (45.7 m)
½ in. union tee fittings	0	2	4

Requirements

Compressed air requirements	40-80 psi (2.8-5.5 bar) with 5-10 cfm (141.6-283.2 l/min)
Water requirements	30-100 psi (2.1-6.9 bar) Backflow prevention is required. Consult local plumbing ordinances for more information.
Liquid temperature range	40-100˚F (4.4-37.8˚C)
Electrical requirements	120 VAC at 60 Hz, 2 amps (GFCI protected outlet)
Operating voltage	120 VAC
Chemical compatibility	Chemical products used with this equipment must be formulated for this type of application and compatible with unit materials and pump seals. For more information on chemical compatibility, consult the manufacturer or SDS for your product or contact our customer service department.

Specifications

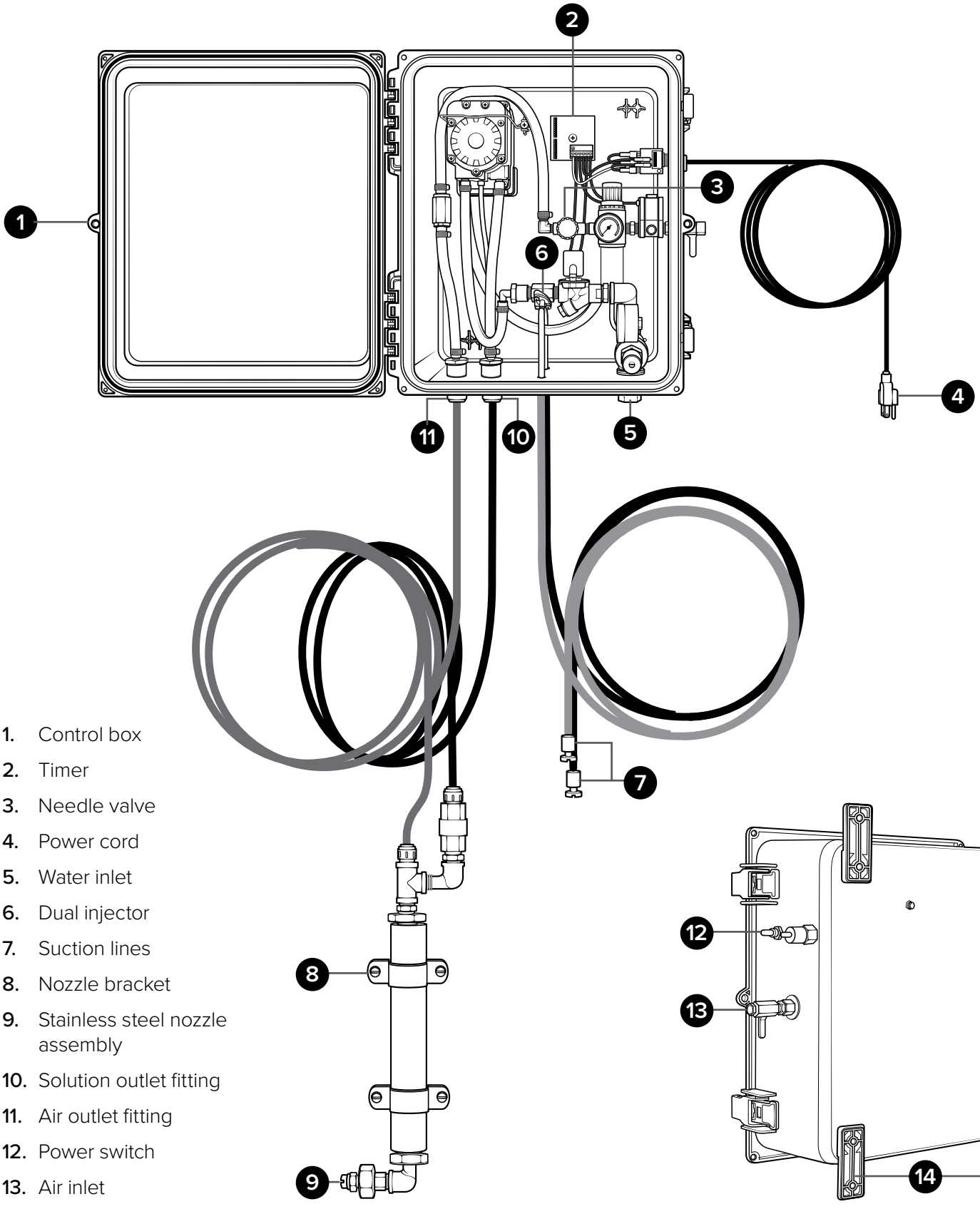
Power type	Compressed air, electricity
Chemical pickup type	Draws from concentrated product
Dilution ratio range (water:chemical)*	7:1 to 125:1 **Note:** Dilution rate can be set independently for each product
Number of products unit can draw from	Two products, simultaneously
Suction line length/diameter	Two 8 ft. (2.4 m) clear hose with 1/4 in. (6.4 mm) inside diameter
Flow rate*	2 gal/min (7.6 l/min)
Pump seals	Santoprene, Viton, or Kalrez
Timer operation type	Repeat cycle
Coverage area	• One nozzle: up to 9x5 ft. (2.7x1.5 m) • Two nozzles: up to 8x4 ft. (2.4x1.2 m) at each nozzle • Three nozzles: up to 6x3 ft. (1.8x0.9 m) at each nozzle
Fan tip	• One nozzle: ST80200SS • Two nozzles: ST80100SS • Three nozzles: ST8060-12SS
Nozzle type	Twin-line stainless steel nozzle assembly
Number of nozzles	One control box can support up to three nozzle assemblies
Distance from nozzles to control box	The combined distance between the control box and the nozzle(s) must equal 100 ft. (30.5 m) or less
Tubing/fitting sizes	Designed for use with 1/2 in. (12.7 mm) outside diameter tubing between control box and nozzle(s)

* Dilution rates and flow rates given are based on chemical with viscosity of water and factory air pressure settings.

** Area covered and run time may vary based on humidity, air flow, and product used.

Component Overview

Before you begin get to know the DS4-2P components that you will need to use, adjust or assemble.



1. Control box
2. Timer
3. Needle valve
4. Power cord
5. Water inlet
6. Dual injector
7. Suction lines
8. Nozzle bracket
9. Stainless steel nozzle assembly
10. Solution outlet fitting
11. Air outlet fitting
12. Power switch
13. Air inlet
14. Control box mounting feet

DS4-2P Side/Back View

Installation

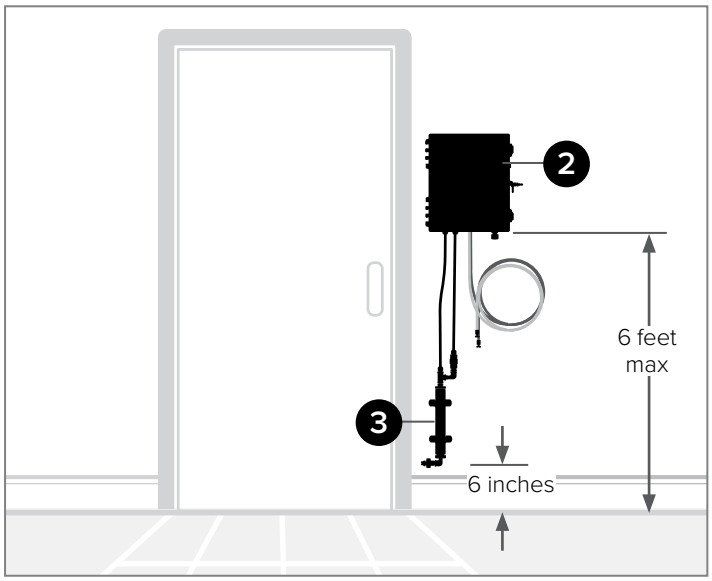
Preparation

1. Remove all DS4-2P components from packaging.
2. Select an area to mount the control box.

   Note: The control box should be mounted to a vertical wall. We recommend mounting the control box at a height of **6 feet or less.**

   The chemical suction line must reach the bottom of the chemical container. The bottom of the chemical container should not be positioned higher than the bottom of the control box.
3. Select the area where the stainless steel nozzle assembly will be mounted.

   Note: Consider the foam pattern when selecting the number of nozzles and location. The foam pattern dimensions provided in this manual were measured with nozzle assemblies mounted 6 inches (15 cm) above the floor.



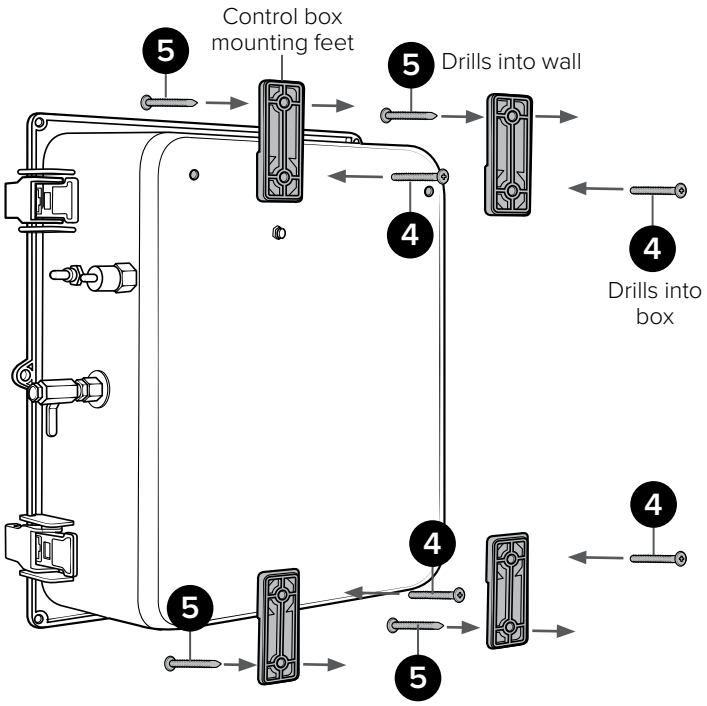
Assembly

4. Attach the control box mounting feet to the back of the control box, using the four screws provided in the parts package.
5. Mount the control box to the wall using four of the screws and plastic anchors provided in the parts package.

   Note: Use a 5⁄16 inch drill bit to drill holes for the plastic anchors.

Area of coverage

	DS4-2P	DS4-2P-2	DS4-2P-3
Area of coverage	Up to 9 x 5 ft. (2.7 x 1.5 m)	Up to 8 x 4 ft. (2.4 x 1.2 m) at each nozzle	Up to 6 x 3 ft. (1.8 x 0.9 m) at each nozzle



6. Mount the stainless steel nozzle assembly in the desired location.

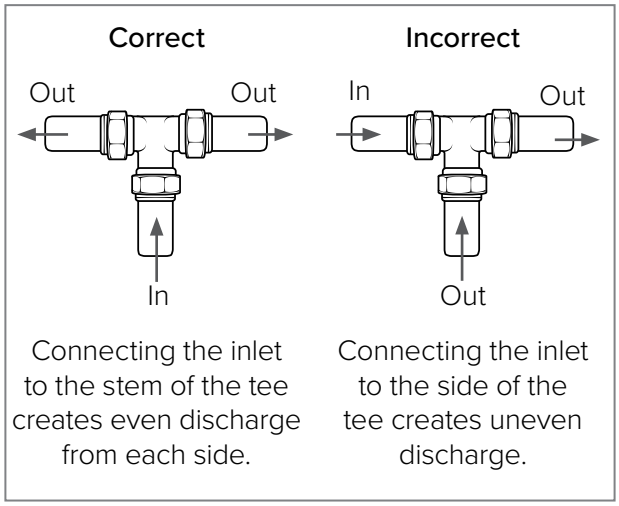
   Fasten the two stainless steel brackets using the screws and plastic anchors provided in the parts package. Repeat this step if multiple nozzles are needed.

7. Connect the tubing from the solution outlet fitting on the control box to the solution inlet fitting on the nozzle assembly.

8. Connect the tubing from the air outlet fitting on the control box to the air inlet fitting on the nozzle assembly.

   Note: For multiple nozzles, run the tubing from the control box into a tee fitting, as shown in the Tee Fitting diagram below. Then, run tubing from the tee fitting to the nozzle assemblies. For systems with three nozzles, use a second tee fitting to split the line again.

1/2 in. Union tee fitting diagram



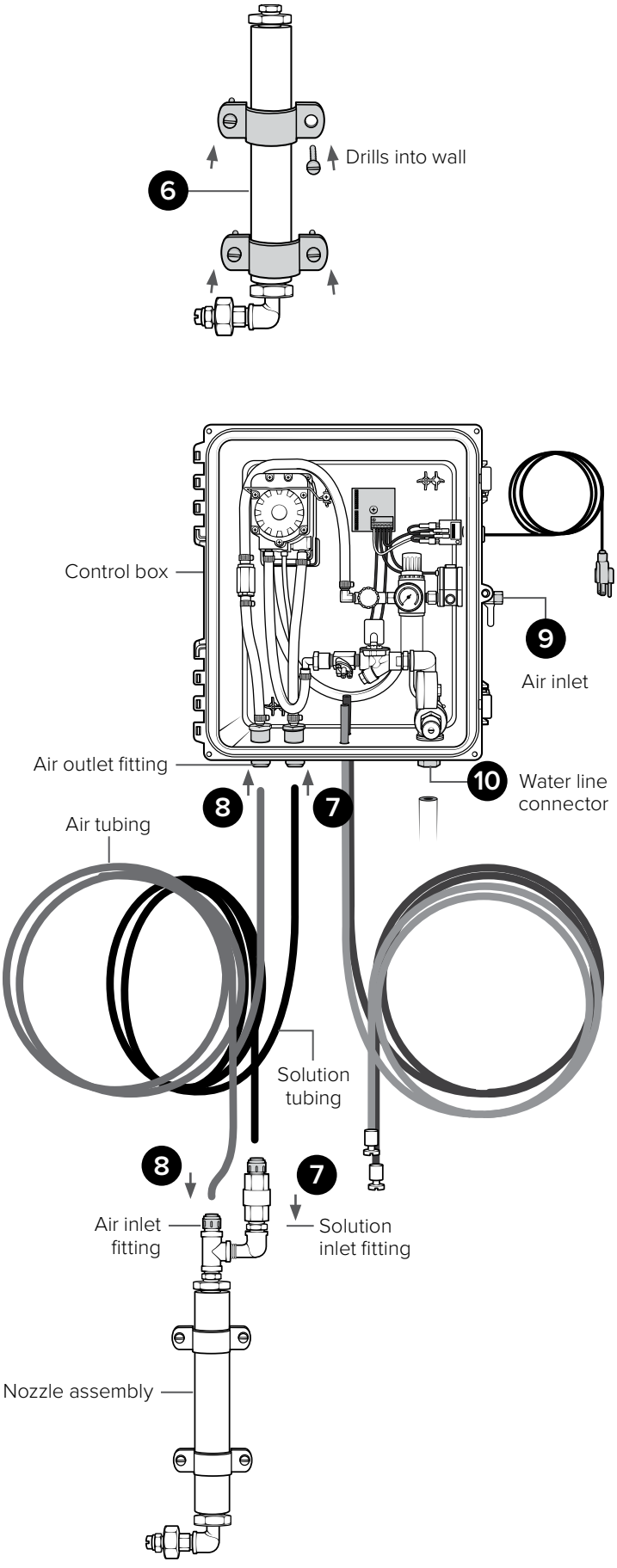
Important! The air and solution lines must be routed to the appropriate fittings or the foam quality of the unit will be negatively impacted. Make sure to insert the tubing all the way into the fittings to ensure proper connection.

9. Connect the air inlet hose barb provided in the parts package to the air inlet valve located on the side of the control box.

   Then attach a ⅜ inch I.D. air line from your air compressor to the air inlet hose barb, and secure it with the smaller hose clamp provided in the parts package.

10. Connect a water line to the unit. The control box has a ½ inch FPT fitting.

    Important! A back-flow preventer must be installed in the water line. Check your local plumbing codes to ensure proper installation.



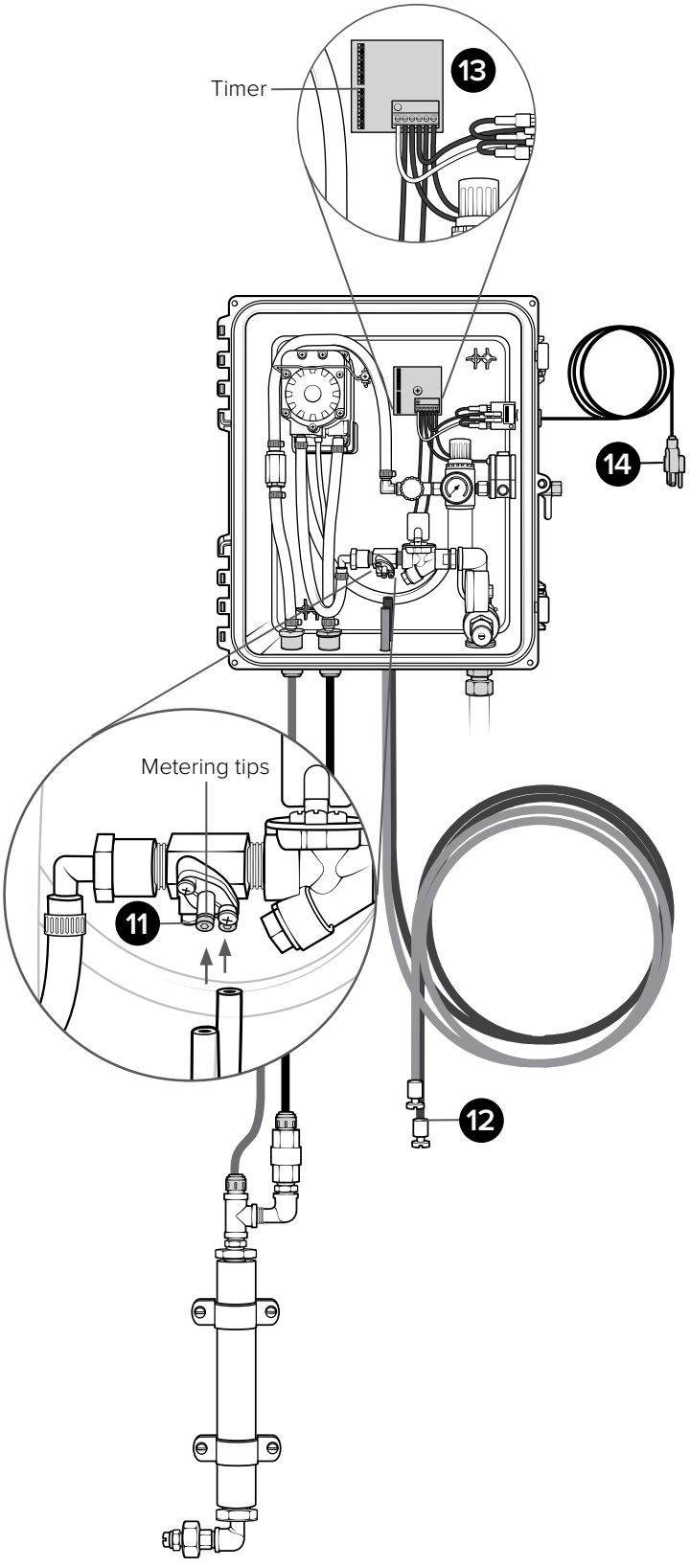
11. Insert the proper metering tips and connect the chemical intake lines to the injector inlet barb.

Note: Use the metering tip color chart (below) to determine the appropriate metering tip based on the product and dilution rate. The model DS4-2P has two metering tips and two chemical intake lines.

Metering tip color chart

Metering tip color	Oz. / Gal.	Ratio*
Tan	1.03	125:1
Orange	1.2	108:1
Turquoise	1.4	90:1
Pink	1.8	70:1
Light Blue	2.3	54:1
Brown	2.5	50:1
Red	3.2	40:1
White	3.5	37:1
Green	3.8	34:1
Blue	4.6	28:1
Yellow	6.6	19:1
Black	8.3	15:1
Purple	14	9:1
Gray	16.5	8:1
None	18.9	7:1

* Injection rates will vary based on chemical viscosity, air pressure, and many other factors. We recommend testing unit output to verify injection rate prior to use.



12. Place the other end of the chemical intake line into a chemical container.

Note: The chemical suction line must reach the bottom of the chemical container. A strainer must be used on the chemical intake line.

13. Set the Timer for the desired ON and OFF time (see Operation - Timer Setup for instructions).

14. With the power switch in the OFF position, plug the unit into a GFCI protected 120 VAC power outlet.

Using your unit

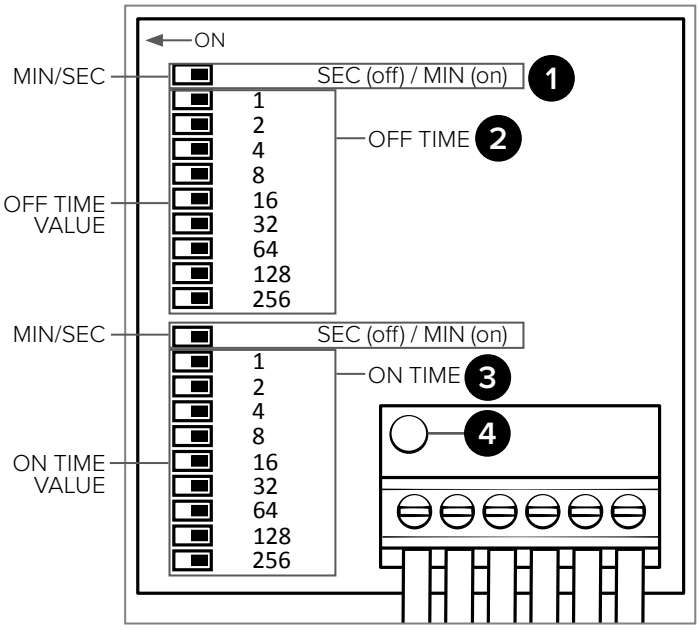
Timer Setup

The timer is an adjustable repeat cycle timer with the ON time operating first. ON and OFF times can range from 1 second to 511 minutes.

To set the timer:

1. Starting with the OFF TIME, move the top dip switch to the left for MIN (minutes) or to the right for SEC (seconds) to select the desired time interval.
2. The next 9 dip switches will be used to control the total active time. To the left is active and to the right is inactive.

   Combine the numbers of active dip switches to achieve the desired time. The increments are 1, 2, 4, 8, 16, 32, 64, 128, 256.
3. Repeat the above steps for the ON TIME setting.
4. Timer indicator light will appear red when unit output is off. The indicator turns green when output is on.



Operating Instructions

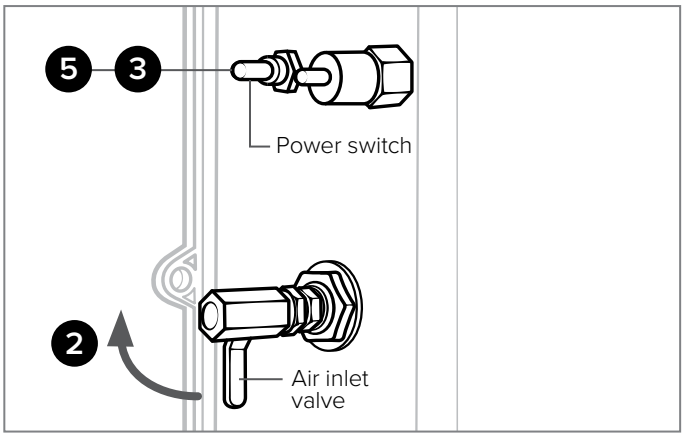
1. Verify that the unit is connected to compressed air, water, power, and chemical.
2. Open the compressed air inlet valve.
3. To activate the unit, turn the power switch ON.

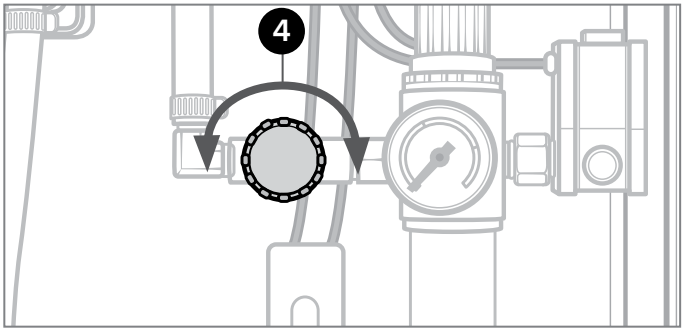
   The unit will begin cycling through the ON time and OFF time intervals set on the Timer, beginning with the ON time.
4. While the unit is running and discharging product, adjust the needle valve, as needed to regulate the wetness or dryness of the foam following the steps below:

   a. Close needle valve completely in clockwise direction.

   b. Open needle valve in counter-clockwise direction two (2) complete turns.

   c. Continue to open needle valve in ¼ turn increments, allowing 30 seconds between adjustments, until desired consistency of foam is achieved.
5. To deactivate the unit, turn the power switch OFF.





Service Guide

⚠ WARNING

Performing any maintenance with the unit turned ON, plugged into an electrical power source and connected to the air and water supply may serious injury or death. Always ensure that the unit has been turned OFF, unplugged from the electrical power source, and disconnected from the air/water supply before conducting any maintenance.

Servicing, or modification, of this unit with parts not listed in this manual may cause the unit to operate improperly. Do not use unauthorized parts when servicing the unit.

Maintaining Your Unit

To keep your foam unit operating properly, periodically perform the following maintenance procedures:

- Inspect the pump for wear and leaks.
- Inspect all hoses for leaks or excessive wear. Make sure all hose clamps are in good condition and properly secured.
- Replace the filter located within the air regulator as needed. Clean by unthreading the air regulator bowl from the air regulator.
- Check the chemical metering tip, suction line and strainer for debris and clean as needed.
- Drain your air compressor tank on a regular basis to help extend pump life. An air source with a high moisture content will accelerate pump wear. **Note:** If your air source has a high moisture content, install a water separator (sold separately) before the unit.

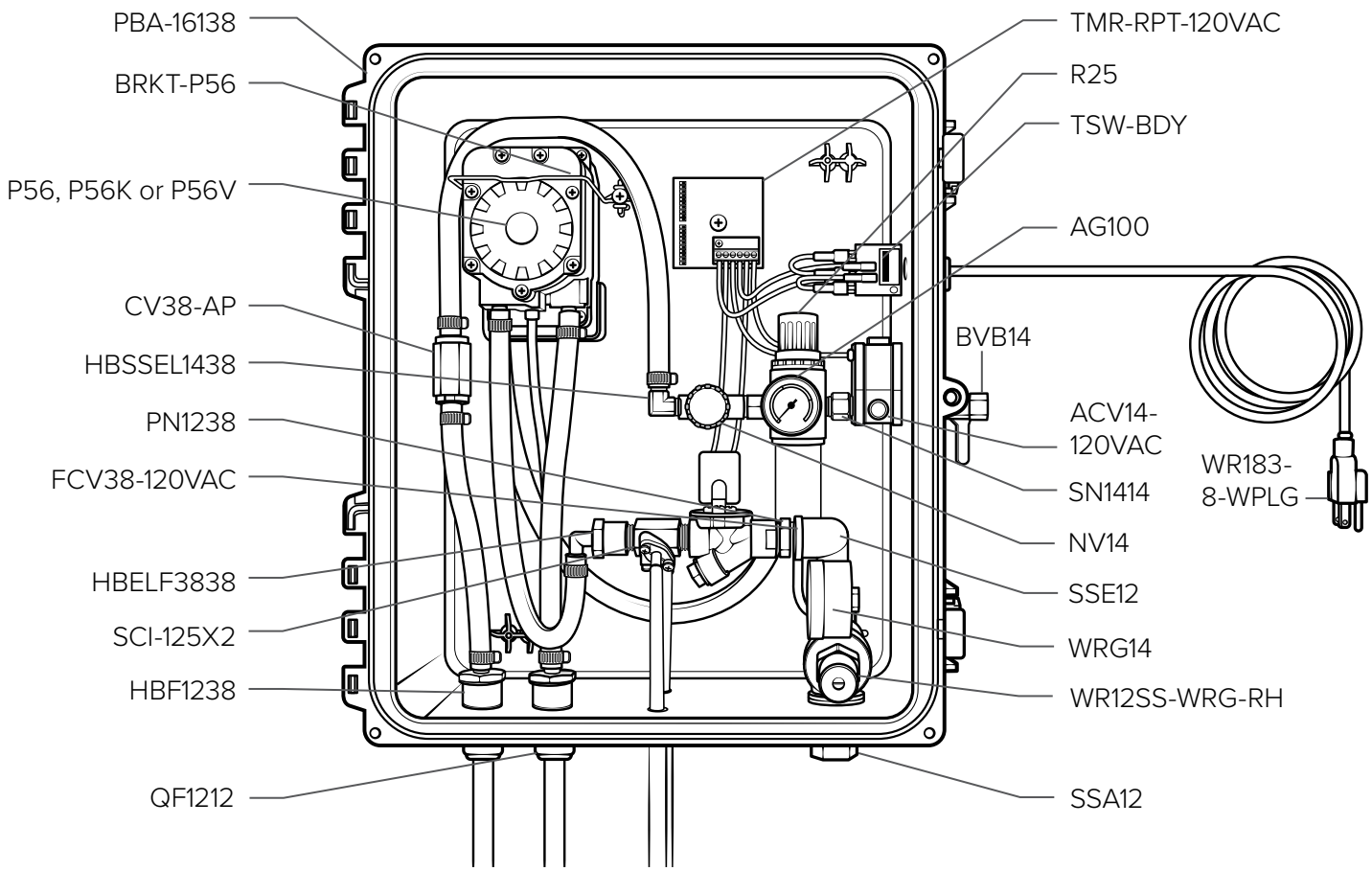
Troubleshooting Your Unit

If your unit is not operating properly, try using these troubleshooting tips:

Issue	Solution
Air Regulator Bowl or Air Filter has debris such as water, oil, or rust particles	• Clean by unthreading the air regulator bowl from the air regulator.
Pump is cycling improperly due to lack of air pressure	• The needle valve is open too far. Close and readjust the needle valve by opening the compressed air inlet valve. • Ensure proper foaming chemical and concentration are being used.
The solution backs up into the air regulator bowl.	• The check valve needs to be replaced.
Foam comes out wet, no matter where the needle valve is positioned	• Check for proper air pressure on the air gauge. The air regulator is factory set at 50 psi (3.4 bar). Operating range is 40 to 80 psi (2.8 to 5.5 bar) with 3.5 to 8 CFM (99.1 to 226.5 l/min). • The check valve may need to be replaced.
The unit operates at a reduced pressure	• Check the chemical metering tip, suction line and strainer for debris or damage. Clean or replace as needed. To prevent damage to the unit, the strainer must always be used. • Check the air compressor supplying the unit. If the pressure is less than 40 psi, (2.8 bar) turn the unit off until the compressor can catch up. • If the air supply is 50 psi (3.4 bar) or above, check the air gauge, which should read near 50 psi (3.4 bar). If the air gauge reads more or less than 50 psi (3.4 bar), adjust the pressure by turning the knob on the top of the air regulator. • Check for proper water pressure on the water pressure gauge. To check the pressure: **1.** Activate the unit and allow it to run through an on time cycle. **2.** During the subsequent off time cycle, check the water pressure gauge. The pressure should read 30 psi (2.1 bar) during the off time cycle or when dead-headed. **3.** If necessary, adjust the water regulator using the flathead screw on the regulator body. The water pressure should be set at 30 psi (2.1 bar) when dead-headed. Setting the pressure higher or lower may damage the unit or cause it to malfunction.

Parts

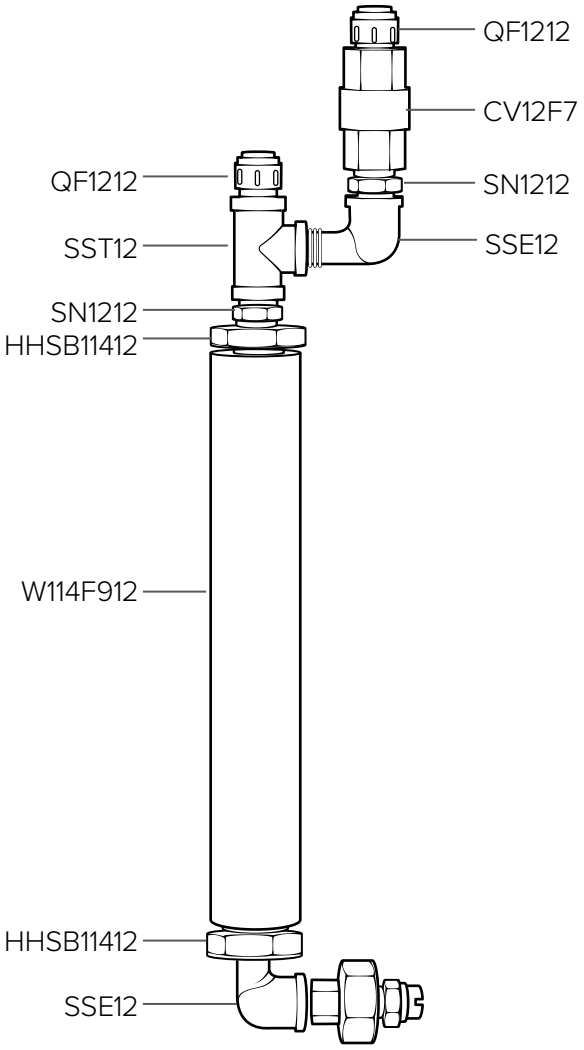
Control Box Assembly



Item number	Description
ACV14-120VAC	Air control valve - MAC - ¼ in. FPT in - 2x ¼ in. FPT out - aluminum body - 120 VAC solenoid - normally closed - 18 in. 18 AWG flying leads
AG100	Air gauge - ⅛ in. NPT - 0-100 PSI markings - dry model
BVB14	Ball valve - brass - nickel plated - air inlet valve - ¼ in. FPT x ¼ in. FPT
CV38-AP	Check valve - ⅜ in. barbs - PVC body - Hastelloy spring - Teflon ball - white
FCV38-120VAC	Fluid control valve - DEMA - ⅜ in. FPT - 7 GPM - polypropylene body - Viton diaphragm - 120 VAC solenoid - normally closed - 18 in. 18 AWG flying leads
NV14	Needle valve - ¼ in. NPT - includes black knob
P56	Pump with Santoprene seals - includes hose barbs, air fitting, exhaust barb
P56K	Pump with Kalrez seals - includes hose barbs, air fitting, exhaust barb
P56V	Pump with Viton seals - includes hose barbs, air fitting, exhaust barb

Item number	Description
PBA-16138	Poly box assembly - 16 in. x 13 in. x 8 in. - gray polypropylene - includes brand label and mounting hardware
QF1212	Quick fit - ½ MPT x ½ od tube - polypropylene
R25	Regulator - air - 2x ¼ in. FPT and 2x ⅛ in. FPT ports with bowl and filter - no gauge
SCI-125X2	Stainless chemical injector - 2 product - 2x ⅜ in. MPT - ¼ in. hose barbs - DEMA rocket series - 2x 0.125 in. orifice - dark green - 3.7 GPM @ 100 PSI - accepts MT832 metering tips
TMR-RPT-120VAC	Timer - repeat cycle - seconds and minutes adjustable digi-set - 120 VAC - screw terminal block - includes instructions
TSW-BDY	Toggle switch - body - single pole single throw - nickel-plated brass - ¼ in. spade terminals - ½ in. mounting hole - 15/32-32 keyed Threaded bushing
WR12SS-WRG-RH	Water pressure regulator - stainless steel - FKM seals - ½ in. FPT - assembled with gauge facing left - for use on right side of box
WR183-8-WPLG	Wire cord with us standard unpolarized grounded plug - 18awg 3 conductor - 8ft long - black rubber jacket - epdm insulation - type SJOOW - 10A rating

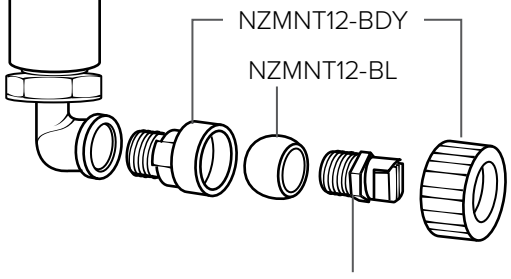
Nozzle Assembly



Item number	Description
BRKT-W114	Bracket - stainless steel - for mounting 1 ¼ in. discharge wand
CV12F7	½ Check valve 7 lb. spring - Hastelloy spring - EP seals - acid proof - blk/wht chk
HHSB11412	Hex head stainless bushing 1-¼ MPT x ½ FPT
NZMNT12-BDY	Nozzle mount body - ½ in. MPT - black and gray polypropylene - accepts nozzle mount ball
NZMNT12-BL	Nozzle mount ball - ½ in. FPT - black polypropylene - for nozzle mount body
PRCH-MXSS-MSH	Mixing media - stainless - ball - as purchased
QF1212	Quick fit - ½ MPT x ½ od tube - polypropylene
SN1212	Stainless hex nipple ½ MPT x ½ MPT
SSE12	Stainless street elbow - 304 stainless steel - ½ in. FPT x ½ in. MPT
STRD114	Strainer - 316 stainless disc - 1 ¼ in. dia - #20 mesh
SST12	Stainless tee ½ FPT
ST80100SS	Spray tip - 80 degree - 10.0 GPM - stainless - ½ MPT
ST80200SS	Spray tip - 80 degree - 20.0 GPM - stainless - ½ MPT
ST8060-12SS	Spray tip - 80 degree - 6.0 GPM - stainless - ½ MPT
TB12N-PE	½ in. od natural tube - polyethylene - available per ft.
W114F912	1 ¼ in. FNPT and 1 ¼ in. FNPT foam tube - polished stainless - 9 ½ in. long

Adjustable nozzle detail

This unit includes an adjustable ball-type nozzle that may be installed to hold the spray tip as shown.



ST80200SS, ST80100SS or ST8060-12SS
Note: Spray tip size varies based on number of nozzle assemblies used - see specifications chart for more information.