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# USER MANUAL

## MODEL NUMBER:

**DS3**

**DS3K**

**DS3V**

**AND RELATED UNITS**

**Single-Line Concentrate Doorway Foam  
Unit**

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**English (Original Instructions)**

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## READ ALL INSTRUCTIONS BEFORE OPERATING EQUIPMENT



# WARNING



### Read this manual completely and understand the machine before operating or servicing it.

- Read all instructions before installing or operating unit.
- Always wear appropriate personal protective equipment (PPE) when operating or servicing unit.
- Always follow all chemical safety precautions and handling instructions provided by the chemical manufacturer and Safety Data Sheet (SDS).
- If this unit is modified or serviced with parts not listed in this manual, the unit may not operate correctly.
- Do not exceed an incoming air pressure of 100 psi (6.9 bar).
- Do not exceed a fluid temperature of 100°F (37.8°C).
- Always flush the unit with fresh water thoroughly when switching from an alkaline to an acid or an acid to an alkaline.
- Never use unit with hydrocarbons or flammable products.
- Only use clean and dry air. Air must be filtered and free of moisture or pump life will be diminished. If needed, install an air dryer before unit.
- Do not use an air lubricator before the unit.
- Never use unit if it is damaged or leaking.
- Disconnect unit from electrical power source before servicing.

### 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.



Always remember to recycle.

\*Specifications and parts are subject to change without notice.

### OPTIONS

	Pump Seal Material
DS3	Santoprene ( <b>standard</b> )
	Viton ( <b>V</b> )
	Kalrez ( <b>K</b> )

Add bold option codes to item number as shown. For standard options, no option code is needed.

Examples:

- DS3 (standard unit with Santoprene pump seals and one nozzle)
- DS3K (unit with Kalrez pump seals and one nozzle)
- DS3V (unit with Viton pump seals and one nozzle)

## READ ALL INSTRUCTIONS BEFORE OPERATING EQUIPMENT

REQUIREMENTS	
Compressed air requirements	40-80 psi (2.8-5.5 bar) with 5-10 cfm (141.6-283.2 l/min)
Water requirements	10-100 psi (0.7-6.9 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.

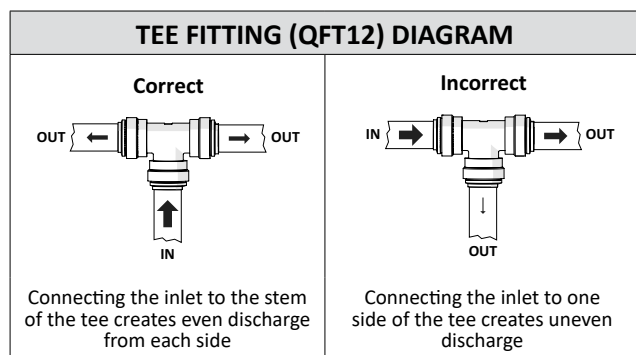
SPECIFICATIONS	
Power type	Compressed air, electricity
Chemical pickup type	Draws from concentrated product
Dilution ratio range (water:chemical)*	38:1 to 183:1
Number of products unit can draw from (and whether it draws simultaneously or one at a time)	One product
Suction line length/diameter	8 ft. (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	With one nozzle: up to 9x4 ft. (2.7x1.5 m); With two nozzles: up to 5x3 ft. (2.4x1.2 m) at each nozzle
Fan tip	ST8070SS
Nozzle type	Single-line nozzle assembly (NZA-DS-SL)
Number of nozzles	One control box can support up to two nozzle assemblies
Distance from nozzles to control box	The combined distance between the control box and nozzle(s) must equal 25 ft. (7.62 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.

## READ ALL INSTRUCTIONS BEFORE OPERATING EQUIPMENT

### Installation Instructions:

1. Remove all 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. Attach the control box mounting feet to the back of the control box, using the four screws provided in the parts package.
4. Mount the control box to the wall using four of the screws and plastic anchors provided in the parts package.  
**Note:** To drill holes for the plastic anchors, use a  $\frac{5}{16}$  inch drill bit.
5. Mount the nozzle assembly in the desired location, using the stainless steel bracket, four of the screws, and plastic anchors provided in the parts package. Repeat as needed for multiple nozzles.  
**Note:** The foam pattern dimensions provided in this manual were measured with nozzle assemblies mounted 6 in. (15 cm) above the floor.
6. Run tubing from the solution outlet fitting on the control box to the solution inlet fitting on the nozzle assembly. For multiple nozzles, run the tubing from the control box into a tee fitting (QFT12), as shown in the diagram. Then, run tubing from the tee fitting to the nozzle assemblies.



7. 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  $\frac{3}{8}$  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.

8. Connect a water line to the unit. The control box has a  $\frac{1}{2}$  inch FPT water inlet fitting.  
**Note:** A back-flow preventer must be installed in the water line – check local plumbing codes to ensure proper installation.
9. Open the cover of the control box. Insert the proper metering tip and connect the chemical intake line to the injector inlet barb.  
**Note:** Use the included metering tip color chart to determine the appropriate metering tip based on the product and dilution rate you will be using.

INJECTION RATES		
METERING TIP COLOR	OZ./GAL.	RATIO*
TAN	0.70	183-1
ORANGE	0.90	142-1
TURQUOISE	1.15	111-1
PINK	1.55	83-1
LIGHT BLUE	1.80	71-1
BROWN	1.85	69-1
RED	2.65	48-1
WHITE	3.40	38-1
* 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.		

10. 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.
11. Set the timer for the desired on time and off time, as described in the Timer Adjustment Instructions on the next page.
12. With the power switch in the OFF position, plug the unit into a GFCI protected 120 VAC power outlet.

## READ ALL INSTRUCTIONS BEFORE OPERATING EQUIPMENT

### Operation Instructions:

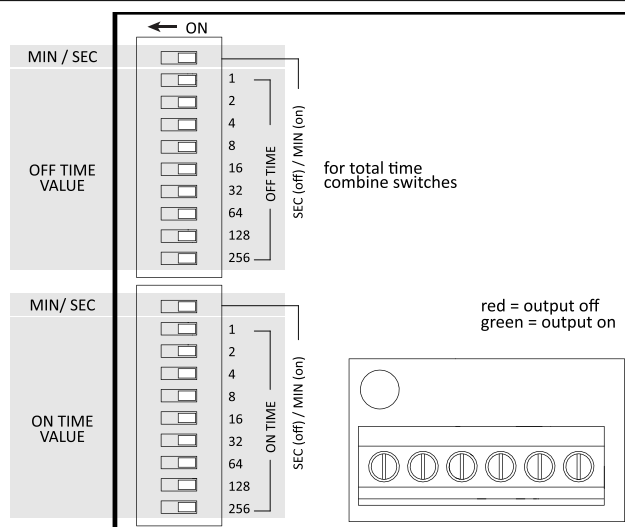
1. Verify that the unit is connected to compressed air, water, power, and chemical.
2. Open the compressed air inlet valve.
3. To activate the unit, turn the power switch ON. The unit will begin cycling through the on time and off time intervals set on the timer, beginning with the on time.
4. While the unit is running and discharging product, adjust the needle valve, located inside the control box, 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 2 complete turns.
  - c. Continue to open needle valve in  $\frac{1}{4}$  turn increments, allowing 30 seconds between adjustments, until desired consistency of foam is achieved.
5. To deactivate the unit, turn the power switch OFF.

### TIMER ADJUSTMENT INSTRUCTIONS

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.



## READ ALL INSTRUCTIONS BEFORE OPERATING EQUIPMENT

### Maintenance Instructions:

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

**Note:** Before performing any maintenance, ensure that the unit has been turned OFF, unplugged from the electrical power source, and disconnected from the air/water supply.

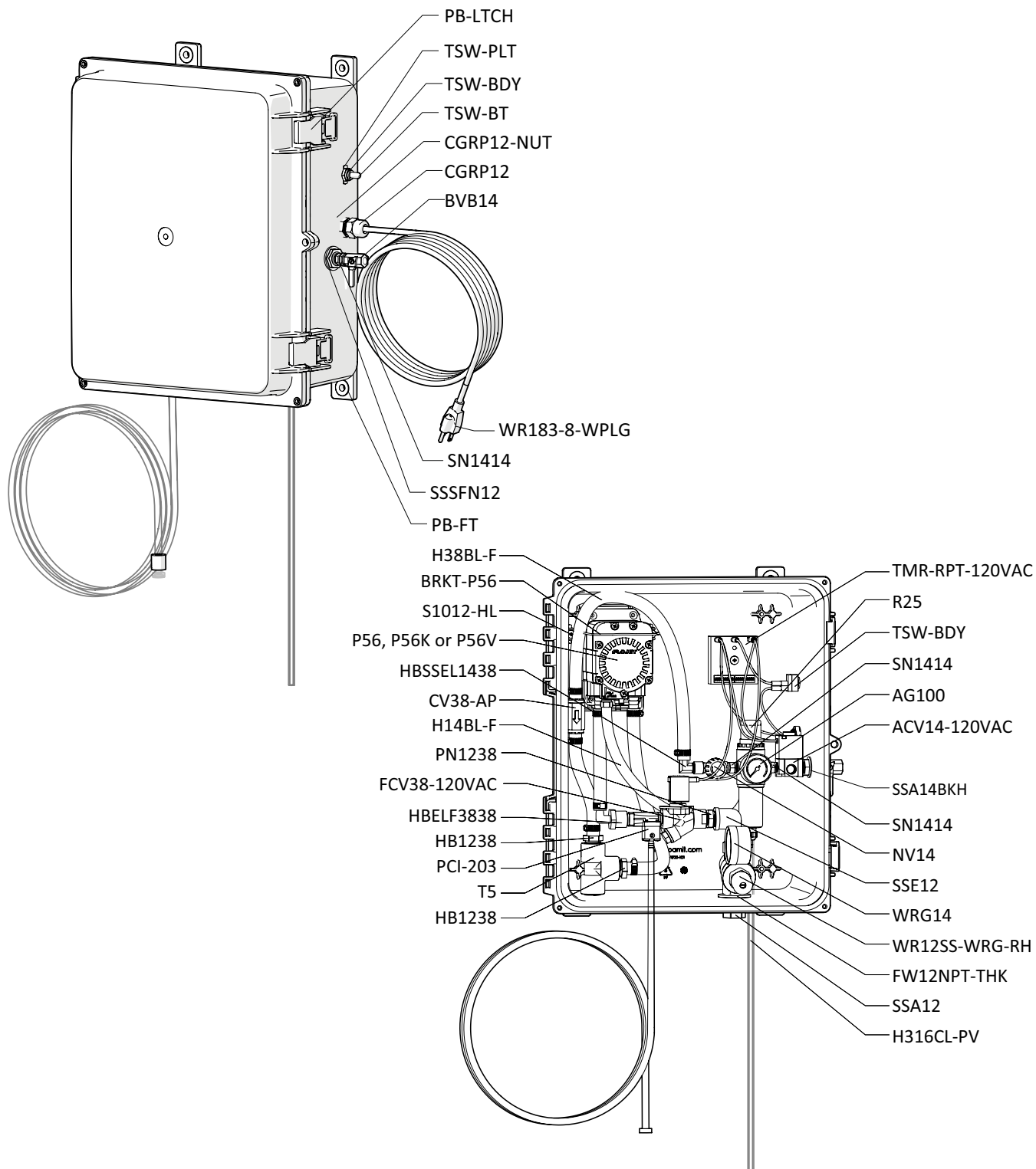
- Inspect the pump for wear and leaks.
- Inspect all hoses for leaks or excessive wear. Make sure all hose clamps and push-fittings are in good condition and properly secured.
- Replace the filter located within the air regulator as needed. Clean by unthreading the air regulator bowl from the air regulator.
- Inspect mixing material in foam nozzle for chemical build up or material breakdown. Remove mixing material by unthreading the solution inlet fitting on the nozzle. Replace with new mixing material if necessary.
- 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, you may wish to install a water separator (sold separately) before the unit.

### Troubleshooting Instructions:

- Check the air regulator bowl and air filter for debris such as water, oil, or rust particles. Clean by unthreading the air regulator bowl from the air regulator.
- If the needle valve is open too far, the pump may cycle improperly due to lack of air pressure. If this occurs, close and readjust the needle valve as described in *Operation Instruction #2*.
- Make sure proper foaming chemical and concentration are being used.
- If air passes through the pump without cycling, the pump needs to be replaced.
- If solution backs up into the air regulator bowl, the check valve needs to be replaced.
- If foam comes out wet, no matter where the needle valve is positioned, the check valve may need to be replaced.
- 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).
- If the unit operates at a reduced pressure:
  - o 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.
  - o 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 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 for proper water pressure on the water pressure gauge. To check the pressure:
  - o Activate the unit and allow it to run through an on time cycle.
  - o 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 deadheaded.
  - o 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 deadheaded. Setting the pressure higher or lower may damage the unit or cause it to malfunction.

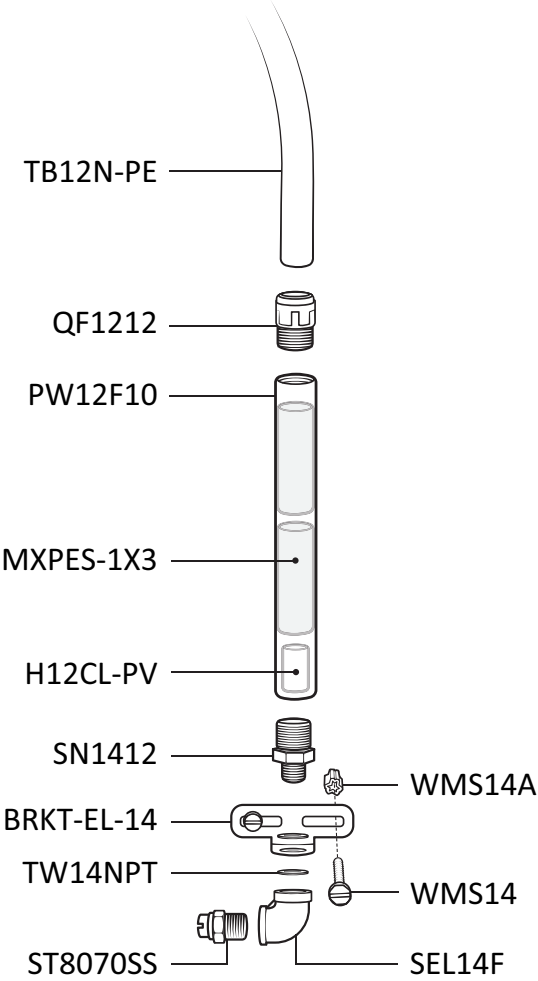
## READ ALL INSTRUCTIONS BEFORE OPERATING EQUIPMENT

### CONTROL BOX ASSEMBLY



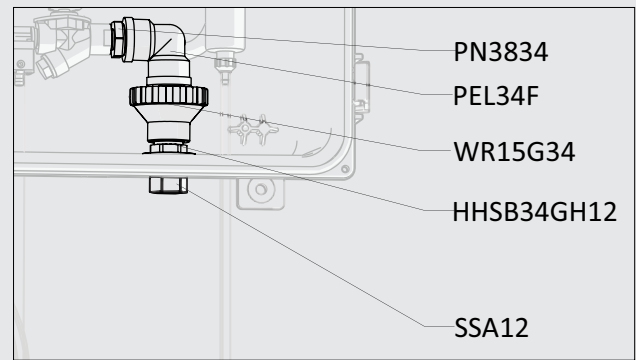
READ ALL INSTRUCTIONS BEFORE OPERATING EQUIPMENT

NOZZLE ASSEMBLY  
ITEM NUMBER: NZA-DS-SL



PARTS INFORMATION - LEGACY/DISCONTINUED COMPONENTS

LEGACY WATER REGULATOR ASSEMBLY  
LEGACY PARTS DIAGRAM



LEGACY PARTS LIST

ITEM NUMBER	DESCRIPTION
HHSB34GH12	STAINLESS HEX HEAD BUSHING 3/4in MGH BY 1/2 FPT
PEL34F	3/4in FEMALE POLY PIPE ELBOW 90
PN3834	POLY REDUCER NIPPLE 3/8in MPT X 3/4in MPT
WR15G34	WATER PRESSURE REGULATOR - 3/4in FGH BY 3/4in MPT Body ABS, internal parts, SS, PP and Santo

Conversion kit to upgrade to current water inlet: CK-WR12SS.



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ITEM NUMBER	DESCRIPTION
ACV14-120VAC	AIR CONTROL VALVE - MAC - 1/4IN FPT IN - 2X 1/4IN FPT OUT - ALUMINUM BODY - 120VAC SOLENOID - NORMALLY CLOSED - 18IN 18AWG FLYING LEADS
FCV38-120VAC	FLUID CONTROL VALVE - DEMA - 3/8IN FPT - 7 GPM - POLYPROPYLENE BODY - VITON DIAPHRAGM - 120VAC SOLENOID - NORMALLY CLOSED - 18IN 18AWG FLYING LEADS
AG100	AIR GAUGE - 1/8IN NPT - 0-100 PSI MARKINGS - DRY MODEL
B1032114	BOLT - 10-32 X 1 1/4IN - STAINLESS STEEL - TRUSS HEAD PHILLIPS
BRKT-P56	PUMP BRACKET- STAINLESS STEEL
BRKT-EL-14	BRACKET - L-SHAPED MOUNTING - FOR 14NPT FITTINGS - STAINLESS STEEL
BVB14	BALL VALVE - BRASS - NICKEL PLATED - AIR INLET VALVE - 1/4IN FPT X 1/4IN FPT
CB-5	CIRCUIT BREAKER ASSEMBLY - 5 AMP - INCLUDES CLEAR BOOT
CB-BT	CLEAR BOOT FOR CIRCUIT BREAKER
CGRP12	CORD GRIP - 1/2IN MPT - BLACK NYLON - CORD RANGE 0.17IN TO 0.45IN - WATER RESISTANT - FOR 7/8IN HOLE - NO NUT INCLUDED
CGRP12-NUT	NUT - 1/2NPT - BLACK NYLON
CV38-AP	CHECK VALVE-3/8IN BARBS-PVC BODY-HASTELLOY SPRING-TEFLON BALL-WHITE
EC14	EAR CLAMP - OETIKER - STAINLESS STEEL - FOR 1/4IN HOSE
FW12NPT	FLAT WASHER FOR 1/2IN NPT - STAINLESS - 0.88IN ID X 1.5IN OD X 0.05IN THK
FW12NPT-THK	FLAT WASHER FOR 1/2IN NPT - THICK - STAINLESS - 0.88IN ID X 1.5IN OD X 0.12IN THK
H12CL-PV	1/2IN ID 5/8IN OD CLEAR HOSE - PVC - AVAILABLE PER FT
H14BL-F	1/4IN ID BLUE HOSE-HYBRID TPE-AVAILABLE PER FT
H316CL-PV	3/16IN ID 5/16IN OD CLEAR HOSE - PVC - AVAILABLE PER FT
H38BL-F	3/8IN ID BLUE HOSE-HYBRID TPE-AVAILABLE PER FT
HB1238	HOSE BARB - POLYPROPYLENE - 1/2IN MPT X 3/8IN BARB
HBELF3838	HOSE BARB ELBOW 3/8IN BY FPT 3/8IN
HBSS1438	HOSE BARB - STAINLESS STEEL - 1/4IN MPT X 3/8IN BARB
HBSS1438	HOSE BARB - STAINLESS STEEL - ELBOW - 1/4IN MPT X 3/8IN BARB
HBSS1814	HOSE BARB - STAINLESS STEEL - ELBOW - 1/8IN MPT X 1/4IN BARB
MPES-1X3	MIXING MEDIA - BROWN POLYESTER - WAD - MEDIUM POROSITY - 1IN X 7/8IN X 3IN TALL
NV14	NEEDLE VALVE-1/4IN NPT-INCLUDES BLACK KNOB
NV14-HNDL	BLACK KNOB FOR NEEDLE VALVE
PCI-203	PLASTIC CHEMICAL INJECTOR KIT - 1 PRODUCT - 2X 3/8IN MPT - 1/4IN HOSE BARB - POLYPROPYLENE BODY - DEMA C SERIES P203CT - INCLUDES MTK832 METERING TIP KIT, TUBE, WEIGHT, STRAINER
P56	PUMP WITH SANTOPRENE SEALS - INCLUDES HOSE BARBS, AIR FITTING, AND EXHAUST BARB
P56K	PUMP WITH KALREZ SEALS - INCLUDES HOSE BARBS, AIR FITTING, AND EXHAUST BARB
P56V	PUMP WITH VITON SEALS - INCLUDES HOSE BARBS, AIR FITTING, AND EXHAUST BARB
HB814P	1/4IN HOSE BARB-BRASS-FOR G57/P56 AIR FITTING WITH O-RING
HB5638	HOSE BARB FOR P56 PUMP
HB5638K	HOSE BARB FOR P56K PUMP
HB5638V	HOSE BARB FOR P56V PUMP

ITEM NUMBER	DESCRIPTION
PBA-16138	POLY BOX ASSEMBLY - 16IN X 13IN X 8IN - GRAY POLYPROPYLENE - INCLUDES BRAND LABEL AND MOUNTING HARDWARE
PB16138-BOX	POLY BOX - GRAY POLYPROPYLENE - FOR PBA-16138
PB16138-LID	POLY BOX LID - GRAY POLYPROPYLENE - FOR PBA-16138 - INCLUDES PB-GSKT ROPE SEAL AND BRAND LABEL
PB-FT	POLY BOX FOOT - GRAY POLYPROPYLENE - FOR PBA-12117 AND PBA-16138
PB-LTCH	POLY BOX LATCH - GRAY POLYPROPYLENE - TWO PIECES ASSEMBLED - FOR PBA-12117 AND PBA-16138
PB-PIN	STAINLESS STEEL HINGE PIN FOR PB16138 AND PB12117
PN1238	1/2in MPT X 3/8 in MPT POLY NIPPLE
PW12F10	1/2IN FNPT AND 1/2IN FNPT WAND - BLACK POLYPROPYLENE - 10IN LONG
QF1212	QUICK FIT-1/2 MPT X 1/2 OD TUBE-POLYPROPYLENE
R25	REGULATOR - AIR - 2X 1/4IN FPT AND 2X 1/8IN FPT PORTS WITH BOWL AND FILTER - NO GAUGE
S1012-HL	SCREW - #10 X 1/2IN - STAINLESS STEEL - ROUND HEAD PHILLIPS - HILO THREAD
S1034-FH-HL	SCREW - #10 X 3/4IN - STAINLESS STEEL - FLAT HEAD PHILLIPS - HILO THREAD
SEL14F	S.S. ELBOW 1/4in FPT X 1/4in FPT
SN1412	1/4IN X 1/2IN MPT STAINLESS NIPPLE
SN1414	STAINLESS HEX NIPPLE 1/4 MPT X 1/4 MPT
SSA12	STAINLESS ADAPTOR 1/2 MPT X 1/2 FPT
SSA14BKH	BULKHEAD ADAPTER - STAINLESS STEEL - 1/4 IN. NPT X 1/4 IN. NPSM
SSC38	SCREW BAND CLAMP - STAINLESS STEEL - FOR 3/8IN HOSE
SSE12	STAINLESS STREET ELBOW - 304 STAINLESS STEEL - 1/2IN FPT X 1/2IN MPT
SSSFN12	SERRATED STAINLESS STEEL FLANGE NUT - 1/2 IN.
ST8070SS	SPRAY TIP-80 DEGREE-7.0 GPM-STAINLESS-1/4 MPT
T5	1/2 POLY TEE
TB12N-PE	1/2IN OD NATURAL TUBE - POLYETHYLENE - AVAILABLE PER FT
TMR-RPT-120VAC	TIMER - REPEAT CYCLE - SECONDS AND MINUTES ADJUSTABLE DIGI-SET - 120VAC - SCREW TERMINAL BLOCK - INCLUDES INSTRUCTIONS
TSW-BDY	TOGGLE SWITCH - BODY - SINGLE POLE SINGLE THROW - NICKEL-PLATED BRASS - 1/4IN SPADE TERMINALS - 1/2IN MOUNTING HOLE - 15/32-32 KEYED THREADED BUSHING
TSW-PLT	TOGGLE SWITCH - ON/OFF PLATE - NICKEL-PLATED STEEL - MOUNTING HOLE FOR 15/32 KEYED BUSHING
TSW-BT	TOGGLE SWITCH - MOUNTING BOOT - BLACK SILICONE RUBBER - 15/32-32 INTEGRATED NUT
TW14NPT	TOOTH LOCK WASHER FOR 1/4IN NPT - STAINLESS - 0.56IN ID X 0.96IN OD X 0.06IN THK
WMS14	WALL MOUNT SCREW - #14 X 1 1/4IN - STAINLESS STEEL - HEX HEAD SLOTTED
WMS14A	WALL MOUNT SCREW ANCHOR -#14 X 1 1/4IN - PLASTIC - 5/16IN DRILL SIZE
WR12SS-WRG-RH	WATER PRESSURE REGULATOR - STAINLESS STEEL - FKM SEALS - 1/2IN FPT - ASSEMBLED WITH GAUGE FACING LEFT - FOR USE ON RIGHT SIDE OF BOX
WR183-8-WPLG	18/3 POWER CORD WITH GROUNDED PLUG-9FT LONG-BLACK
WRG14	WATER PRESSURE REGULATOR GAUGE FOR WR12SS