
USER MANUAL

**MODEL NUMBER:
FI-20N-SM
FI-20NK-SM
FI-20NV-SM
AND RELATED UNITS**

20 Gallon Smart Foam Unit

English (Original Instructions)

U.S. Patent No. 10,076,760

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.
- Never point the discharge wand at yourself, another person, or any object you do not want covered in chemical.
- Always keep the air trigger port clean and free of blockages or debris. If the port becomes dirty or blocked, disconnect the compressed air source from the unit immediately and clean out the port before proceeding.
- Always keep the discharge hose free of kinks or obstructions.
- Always rinse and drain unit after use (as described in the After Use Instructions). Always store unit disconnected from the compressed air source.
- Do not exceed an incoming air pressure of 100 psi (7 bar).
- Do not exceed a fluid temperature of 100°F (37°C).
- Always flush the unit with fresh water thoroughly when switching from an alkaline to an acid or an acid to an alkaline.
- Only use clean and dry air. Air must be filtered and free of moisture or pump life will be diminished. If needed, install a water separator before the unit.
- Do not use an air lubricator 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.



Always remember to recycle.

*Specifications and parts are subject to change without notice.

OPTIONS		
	Pump Seal Material	
FI-20N	Santoprene (standard)	-SM
	Viton (V)	
	Kalrez (K)	

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

Examples:

- FI-20N-SM (standard unit with Santoprene pump seals)
- FI-20NV-SM (unit with Viton pump seals)

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REQUIREMENTS	
Compressed air requirements	40-80 psi (3-5 bar) with 5-10 cfm (141-283 l/min)
Liquid temperature range	40-100°F (4.4-37°C)
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
Chemical pickup type	Draws from pre-mixed solution
Number of products unit can draw from	One product
Capacity	20 gallons (75.7 liters)
Discharge hose diameter/length	30 ft. (9.1 m) bonded hose, with 5/8 in. (15.9 mm) and 1/4 in. (6.4 mm) inside diameter
Discharge wand/tip type	Ultra high molecular weight (UHMW) polyethylene handle and wand extension, with 65 fan tip and built-in zero tip
Output distance	With zero tip: 8-12 feet (2.4-3.7 m) With fan tip: 8-12 feet (2.4-3.7 m)
Output volume	With zero tip: 20-32 gal/min (75.7-121.1 l/min) of foam With fan tip: 20-32 gal/min (75.7-121 l/min) of foam
Flow rate*	2 gal/min (7.6 l/min)
Pump seals	Santoprene, Viton, or Kalrez
Wheel type	Two 10 (25.4 cm) inch non-marking wheels

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

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Operation Instructions:

1. Verify that the drain plug is securely closed.
2. Follow all instructions from the chemical manufacturer. Fill the tank with water and the advised percentage of chemical concentrate.
3. Verify that the valve at the base of the suction line is open, to allow fluid into the suction line.
4. Verify that the air trigger port is clean and free of blockages or debris, and the discharge hose is not kinked or obstructed.
5. With the wand pointed in a safe direction, connect an air line to the air inlet fitting.
Note: When you connect the air line, listen for any sound from the unit. If you hear the pump activate and begin to cycle, disconnect the air line immediately. This indicates that there is a blockage or other problem somewhere in the system, which could cause the unit to activate spontaneously. The problem must be addressed before proceeding (see "Troubleshooting Instructions").
6. Place thumb over the air trigger to activate the unit and begin foaming.
7. 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 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.
8. Release the air trigger to stop foaming.

Note: When you release the air trigger, the unit will shut off and depressurize. Foam that is already in the discharge hose may seep out, but no more foam will be created until you cover the air trigger again.

After Use Instructions:

1. Open the drain plug and drain the unit tank.
2. Rinse the unit tank thoroughly with fresh water. Then replace the drain plug and fill the tank with fresh water.
3. Activate the unit and allow it to run until all chemical has been flushed from the system.
4. Open the drain plug and drain any water remaining in the unit tank. Then replace and secure the drain plug.
5. Disconnect the air line from the air fitting.
6. Allow any liquid remaining in the discharge hose to drain out through the discharge wand before storing the unit.

Maintenance Instructions:

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

Note: Before performing any maintenance, ensure that the unit has been disconnected from the air supply according to the "After Use Instructions." Also ensure that the unit tank is empty, and/or close the valve at the base of the suction line to shut off the flow of liquid from the tank. Reopen the valve after maintenance is complete.

- Inspect the air 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.
- Check the air trigger port on the handle for debris and clean as needed. When cleaning, be careful not to push debris into the port, as it may become lodged inside and create a blockage.
- Clean and replace the filter located within the air regulator as needed. Access the filter by unthreading the air regulator bowl from the air regulator.
- Check the suction line and strainer for debris or blockages, 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 before the unit.

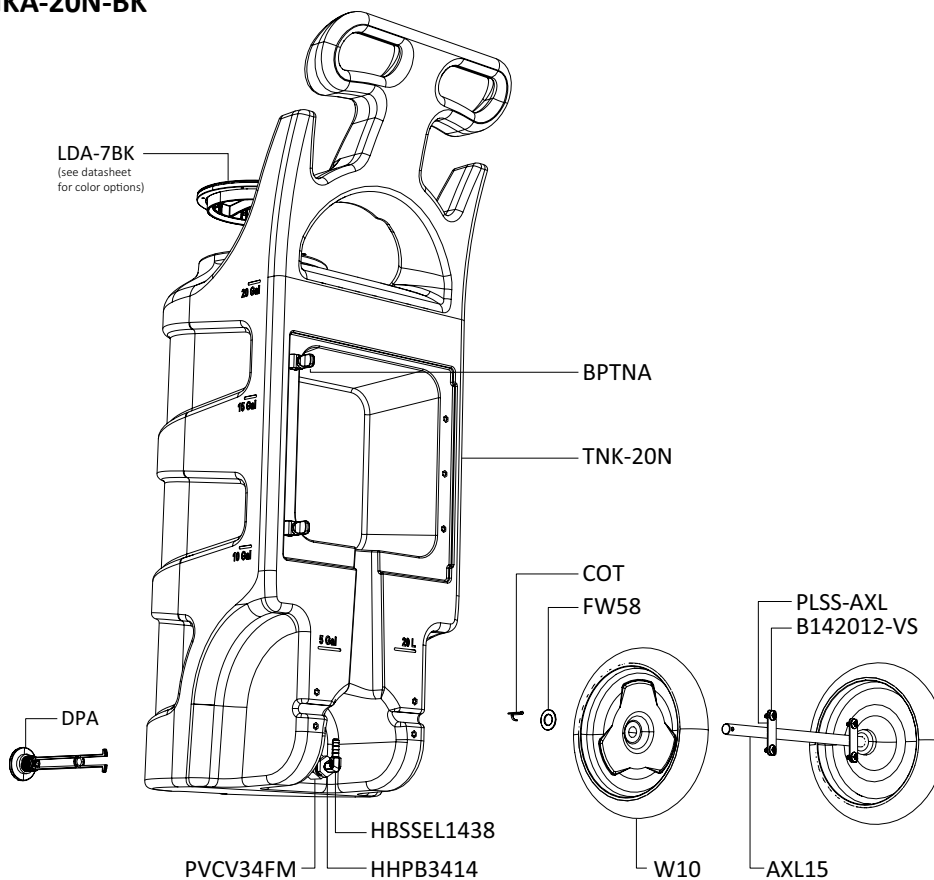
READ ALL INSTRUCTIONS BEFORE OPERATING EQUIPMENT

Troubleshooting Instructions:

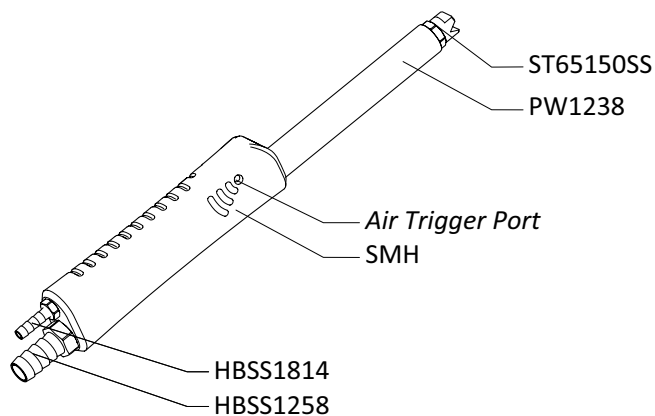
- Check to ensure that the discharge hose is uncoiled properly, and that there are no kinks that could obstruct fluid flow.
- Check the suction line and strainer for debris or damage. Clean or replace as needed. To prevent damage to the unit, the strainer must always be used.
- If the pump is cycling but will not pull product, and the suction line is clear, make sure the valve at the base of the suction line is open.
- 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 the Operation Instructions.
- 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 (3 to 5 bar) with 5 to 10 CFM (141.6 to 283.3 l/min).
- If the unit activates when the air trigger port is not covered:
 1. Verify that the air trigger port is clean and free of blockages or debris, and the discharge hose is not kinked or obstructed.
 2. If the problem persists, try bypassing the air trigger. To do this, disconnect the ¼ inch hose from the wand. Point the wand in a safe direction and connect an air line to the unit. Then, use your thumb or finger to seal the open port of the ¼ inch hose at the wand.
 - a. If the unit activates when you connect the air line, the valve block may need to be replaced.
 - b. If the unit does not activate when you connect the air line, the hose or wand assembly may need to be replaced.
- If the unit does not activate when the air trigger port is covered:
 1. Confirm the incoming air supply is consistently 50 psi (3.4 bar) on the air gauge.
 2. If the problem persists, the valve block may need to be replaced.
- If the unit operates at a reduced pressure:
 3. Check the air compressor supplying the unit. If the pressure is less than 40 psi, turn the unit off until the compressor can catch up.
 4. 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.
 5. If the problem persists, the stainless steel mixing mesh inside the tee fitting could be plugged. Remove and clean the mesh following the instructions below:
 - a. Ensure that the unit has been flushed and disconnected from the air supply according to the "After Use Instructions." Also ensure that the unit tank is empty, and/or that the valve at the base of the suction line is closed.
 - b. Remove the stainless hose barb from the tee fitting.
 - c. The stainless steel mixing mesh is located inside the tee fitting. Remove the old mesh and the screen that holds it in place. If the mesh and screen are in good condition, they can be cleaned and re-used. If not, they should be replaced with new parts.
 - d. Insert the new mesh.
 - e. Insert the new screen. Make sure it is seated securely, but not bent or deformed.
 - f. Reconnect the hose barb to the tee fitting. Attach the ¾ inch hose to the hose barb and secure it with the screw band clamp.
 - g. If you found a lot of particles or blockages inside the mesh, check the suction line strainer to make sure it is in place and operating correctly.

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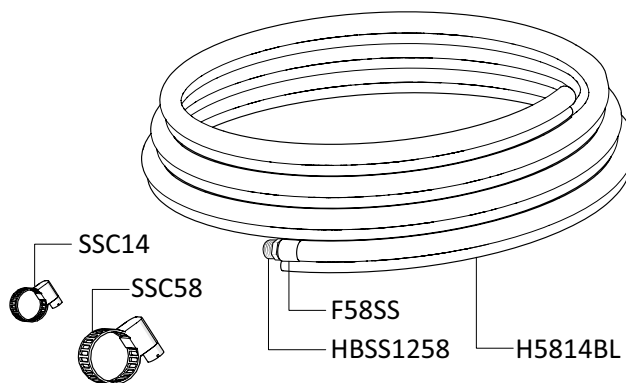
TANK ASSEMBLY ITEM NUMBER: TNKA-20N-BK



WAND ASSEMBLY ITEM NUMBER: SMWA



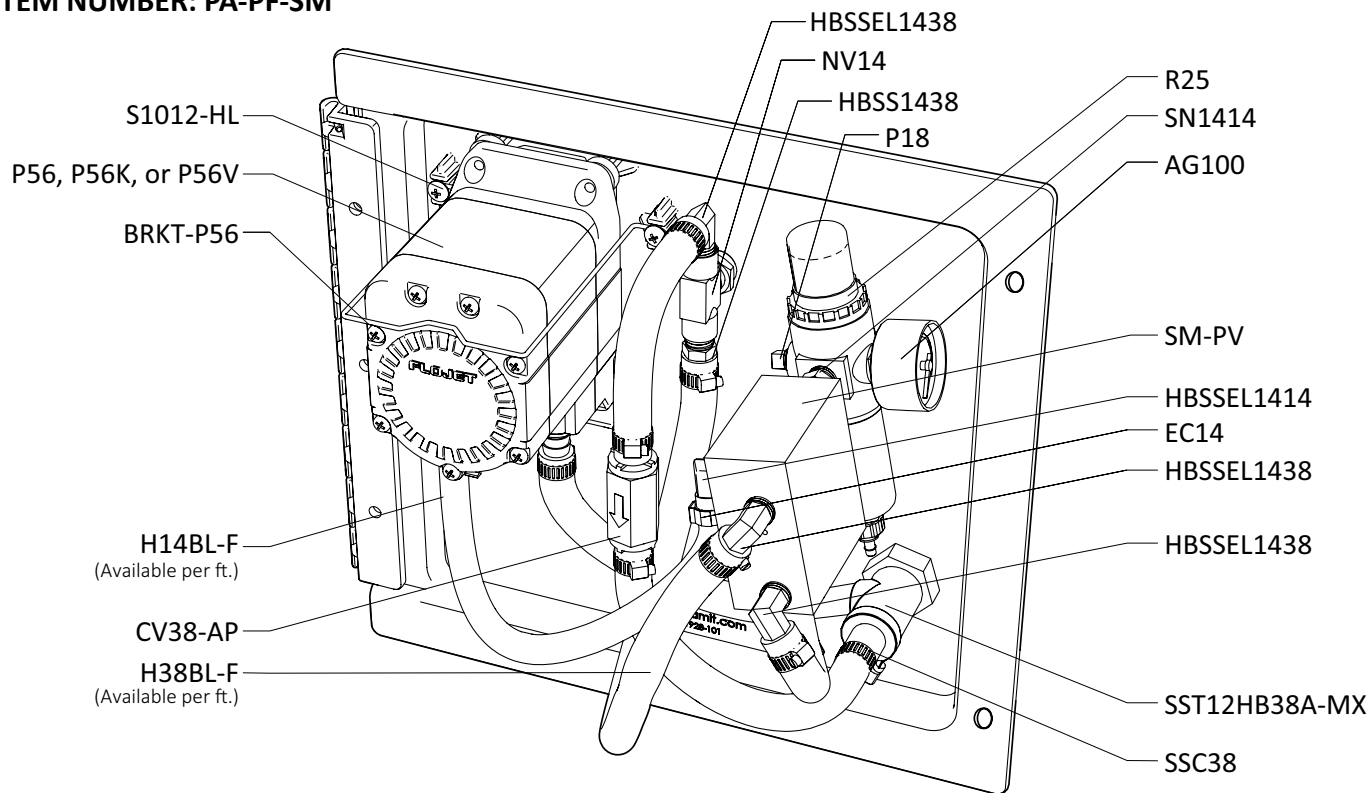
DISCHARGE HOSE ASSEMBLY ITEM NUMBER: H5814BL-20



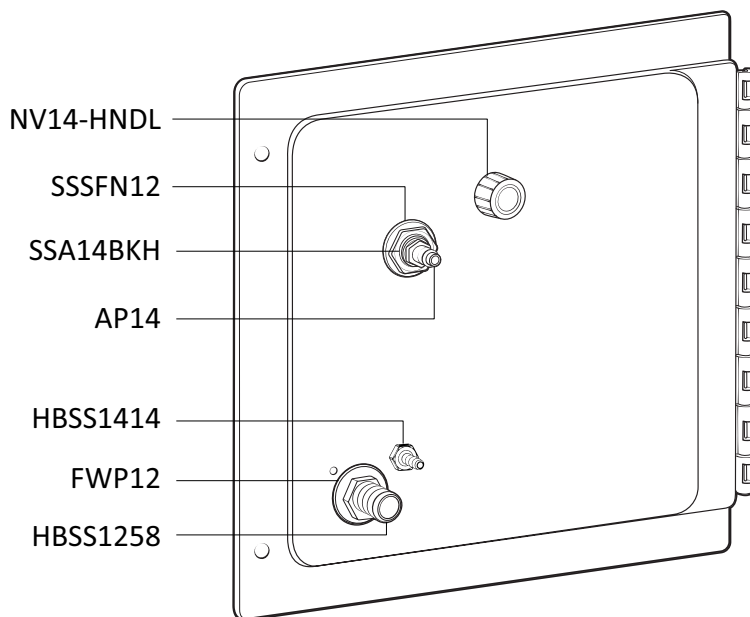
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BACK PLATE

ITEM NUMBER: PA-PF-SM

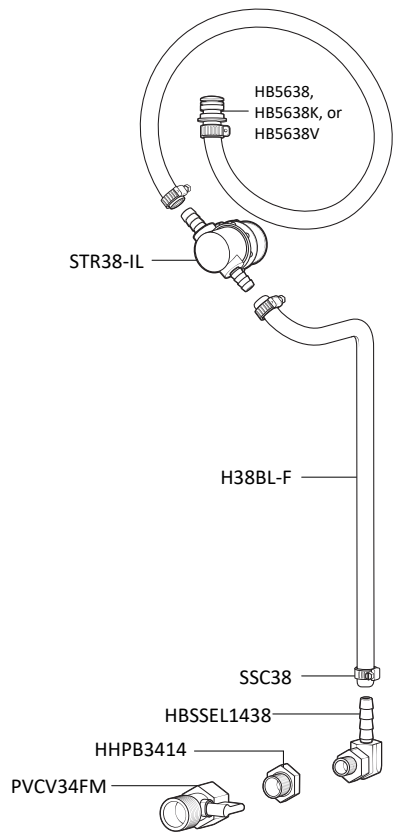


BACK PLATE Outside View



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SUCTION ASSEMBLY
ITEM NUMBER: SCTNA-PF

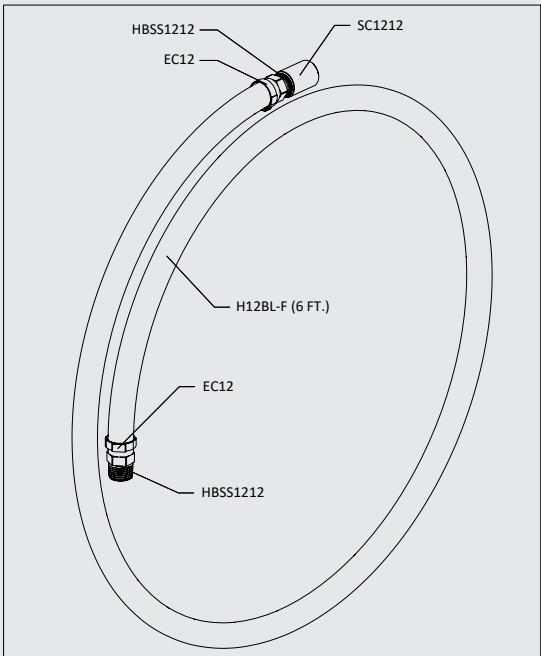


OPTIONAL HOSE ATTACHMENT (INCLUDED)

Installation Instructions

- 1. Remove wand (PW1238) from handle (SMH)
- 2. Thread HBSS1212 from hose attachment into handle (SMH)
- 3. Thread wand (PW1238) onto coupler (SC1212) at the end of hose attachment.

ITEM NUMBER	
EC12	1/2 INCH OETIKER CLAMP
H12BL-F (6 FT.)	6 FT. OF 1/2 INCH BLUE HOSE
HBSS1212	STAINLESS STEEL HOSE BARB 1/2 MPT BY 1/2 INCH BARB
SC1212	S.S. COUPLER 1/2 INCH BY 1/2 INCH



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ITEM NUMBER	DESCRIPTION
AG100	AIR GAUGE - ½ IN. NPT - 100 PSI DRY MODEL
AKSS12	STAINLESS ANTI-KINK SPRING FOR ½ IN. HOSE
AP14	AIR FITTING ¼ MPT X PLUG-NICKEL-PLATED BRASS
AXL15	AXLE-STAINLESS-0.625 DIA. X 15.45 IN.
B142012-VS	¼-20 X ½ IN. BOLT - STAINLESS - TRUSS HEAD PHILLIPS - VIBRA-SEAL
BPTNA	BACK PLATE THUMB NUT ASSEMBLY - INCLUDES BOLT, THUMB NUT, AND TETHER
<i>BST14201125-VS</i>	¼-20 SET BOLT - 1.125 IN. LONG - VIBRA-SEAL
<i>TN1420</i>	¼-20 THUMB NUT - BRASS INSERT - ASSEMBLED WITH TETHER
BVB14	AIR INLET VALVE - VA BRS 025-4F4F-BT, NICKEL
BRKT-P56	PUMP BRACKET- STAINLESS STEEL
BX-10N	18-1/2 x 16 x 42 Glued Inside Joint ECT 48
COT	1/8 X 1 COTTER PIN 18-8 S/S
CV38-AP	CHECK VALVE - ¾ IN. BARBS - PVC BODY - HASTELLOY SPRING - TEFLON BALL - WHITE
LDA-7BK	LID ASSEMBLY - INCLUDES 7 IN. BLACK LID, LID FLANGE, HINGE PIN, AND MOUNTING SCREWS
<i>LD-7BK-LID</i>	7 IN. CAP - POLYETHYLENE - BLACK
<i>LD-7BK-FLNG</i>	7 IN. LID FLANGE - POLYETHYLENE - BLACK
<i>LD-PIN</i>	HINGE PIN FOR 7 IN. LID AND FLANGE
DPA	DRAIN PLUG ASSEMBLY - INCLUDES GASKET
EC14	OETIKER EAR CLAMP FOR ¼ IN. HOSE
EC58	OETIKER EAR CLAMP FOR ½ IN. HOSE
FW58	FLAT WASHER FOR ¾ IN. PIPE - STAINLESS - 0.687 ID X 1.5 OD X 0.07 THK
FWP12	¾ ID X 1.5 OD X 0.05 THK SSFW
FWP14	C-816 ½ IN. SS WASHER
H14BL-F	¼ INCH BLUE HOSE-HYBRID TPE-AVAILABLE PER FT.
H38BL-F	¾ INCH BLUE HOSE-HYBRID TPE-AVAILABLE PER FT.
H5814BL	¾ IN AND ¼ IN BONDED BLUE HOSE- AVAILABLE PER FT
H58-6	6 FT. OF 5/8 INCH BLUE HOSE
HBSS1414	STAINLESS HOSE BARB ¼ MPT X ¼ BARB ELBOW
HBSS1258	STAINLESS HOSE BARB ½ MPT BY ¼ BARB
HBSS1414	HOSE BARB STAINLESS ¼ MPT X ¼ BARB
HBSS1438	STAINLESS HOSE BARB ¼ MPT X ¾ BARB
HBSS1814	1/8 MPT X 1/4 STAINLESS HOSE BARB
HBSS1438	STAINLESS HOSE BARB ¼ MPT X ¾ BARB ELBOW
HHPB3414	HEX HEAD POLY REDUCER BUSHING ¾ X ¼
NV14	NEEDLE VALVE - ¼ IN. NPT - INCLUDES BLACK KNOB
<i>NV14-HNDL</i>	BLACK KNOB FOR NEEDLE VALVE
P18	PLUG ¼ MPT HEX HEAD 304 SS
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
<i>20756103B</i>	Polypro G57 Air Port x HB Straight, w/ Viton o-ring
<i>HB5638</i>	HOSE BARB FOR P56 PUMP - EPDM O-RING
<i>HB5638K</i>	HOSE BARB FOR P56K PUMP - KALREZ O-RING
<i>HB5638V</i>	HOSE BARB FOR P56V PUMP - VITON O-RING
PLPF	PORTABLE FOAMER BACK PLATE W/ HINGE AND HOLES
PLPF-PIN	302 STAINLESS PORTABLE PLATE HINGE PIN
PLSS-AXL	AXLE PLATE - STAINLESS - 2.5 IN. X 1 IN. - 2 HOLES
PVCV34FM	PVC VALVE ¾ IN. FPT X ¾ IN. MPT
PW1238	POLY WAND - 1/2 MPT X 3/8 FPT - UHMW
R25	AIR REGULATOR - TWO ¼ IN. FPT PORTS - TWO ¾ IN. FPT PORTS - INCLUDES FILTER AND BOWL
<i>AFR25</i>	AIR FILTER FOR R25
<i>ABR25</i>	METAL AIR BOWL FOR R25
S1012-HL	10-16 X ½ IN. SCREW-STAINLESS-HI LO
SC1212	S.S. COUPLER 1/2IN BY 1/2IN
SM-PV	PNEUMATIC VALVE FOR SMART TECHNOLOGY UNITS
SMH	HANDLE FOR BONDED HOSE - 1/2in FPT AND 1/8in FPT - UHMW
SN1414	STAINLESS HEX NIPPLE ¼ MPT X ¼ MPT
SSC14	WORM GEAR CLAMP, SS 1/4IN
SSC38	WORM GEAR CLAMP, S/S (.25-.63)
SSC58	WORM GEAR CLAMP, SS 5/8IN
SSP12	STAINLESS STEEL AXLE PLATE - 2.5 inch X 1 inch - 2 HOLE
SST12HB38A-MX	STAINLESS TEE ASSEMBLY - ½ IN. FPT X ¾ IN. BARB - INCLUDES MIXING MATERIAL AND SCREEN
<i>SST12HB38</i>	STAINLESS TEE ½ FPT ¾ BARB - NO MIXING MATERIAL
<i>MXA- PF</i>	MIXING MATERIAL ASSEMBLY-INCLUDES STAINLESS MESH, SCREEN
ST65150SS	SPRAY TIP-65 DEGREE-15.0 GPM-STAINLESS-3/8 MPT
STR38-IL	IN LINE STRAINER 3/8 BARB 20 MESH 304 STAINLESS EDPM GSKT
TNK-20N	20 GALLON NATURAL TANK
W10	NONMARKING WHEEL FOR PORTABLE UNITS
WS-20CFM	WATER SEPARATOR - 20 CFM - ¼ IN. FPT PORTS

NOTE: All products covered by this patent made for you under any license, should be marked with the notice “U.S. Patent No. 10,076,760”