USER MANUAL

MODEL NUMBER:

FI-DOF
FI-DOFK
FI-DOFV
AND RELATED UNITS

Drive Over Foam Unit

English (Original Instructions)

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).
- Always disconnect or shut off any compressed air, water, or electricity being supplied to the unit before servicing the unit.
- Never use unit if it is damaged or leaking.
- 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 (7 bar).
- Do not exceed a fluid temperature of 100˚F (37˚C).
- 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.
- Do not use an air lubricator before the unit.
- Protect unit from freezing.
- Use equipment only when air is calm to prevent blowing or drifting chemical.
- Use equipment only for its intended purpose.
- Sensor detects moving iron-based metal within a 12 ft. (3.6 m) radius, and may be activated by an individual carrying or wearing iron-based metal or by traffic passing within the sensor's radius.
- Turn unit off before making any adjustments to ramp or nozzles.
- Do not allow foot traffic to pass within sensor range when system is active.

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-DOF	Santoprene (**standard**)
	Viton **(V)**
	Kalrez **(K)**

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

Examples:

- FI-DOF (standard unit with Santoprene pump seals)
- FI-DOFV (unit with Viton pump seals)

READ ALL INSTRUCTIONS BEFORE OPERATING EQUIPMENT

REQUIREMENTS	
Compressed air requirements	50 psi (3.4 bar) with 20 cfm (566.3 l/min)
Water requirements	25-100 psi (1.7-6.9 bar) Backflow prevention is required – consult local plumbing ordinances for more information.
Liquid temperature range	40-100˚F (4.4-37˚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 and electricity
Chemical pickup type	Draws from concentrated product (includes proportioning tank)
Dilution ratio range (water:chemical)*	4:1 to 530:1
Number of products unit can draw from	One product
Suction line length/diameter	From proportioning tank to chemical source: one suction line, 9 ft. (2.7 m) of clear hose with 1/2 in. (12.7 mm) inside diameter From pump box to proportioning tank: six suction lines, each 10 ft. (3.1 m) of blue hose with 3/8 in. (9.5 mm) inside diameter
Capacity	Proportioning tank: 55 gallons (208.2 liters)
Flow rate**	13 gal/min (49.2 l/min)
Pump seals	Santoprene, Viton, or Kalrez
Number of nozzles	Includes five ramp nozzle assemblies and two side nozzle assemblies
Distance from ramp to control box panel	Minimum: 30 ft. (9.1 m) Maximum: approximately 50 ft. (15.2 m)
Tubing/fitting sizes	Designed for use with 1/2 in. (12.7 mm) inside diameter hose between control panel and nozzles
Vehicle ground clearance	7-49 in. (17.8-124.5 cm)
Coverage area	At 7 in. (17.8 cm) vehicle ground clearance, coverage area will be up to 65 in. (165.1 cm) wide. At 49 in. (124.5 cm) vehicle ground clearance, coverage area will be up to 102 in. (259.1 cm) wide.
Vehicle weight	Up to 40,000 pounds (18.14 metric tons) per axle
Ramp width	12 ft. (3.6 m)
Traffic flow direction	Suitable for traffic moving in one or both directions
Sensor type	Detects moving iron-based metal within a 12 ft. (3.6 m) radius

*Approximate dilutions at 40 psi (2.6 bar) water pressure for water-thin products at 1.0 cP.

**Flow rate based on chemical with viscosity of water and factory air settings.

READ ALL INSTRUCTIONS BEFORE OPERATING EQUIPMENT

Installation Instructions:

1. Remove all components from packaging.
2. Select a location for the ramp.
3. Assemble the ramp by matching up the letters on the ramp sections (AA, BB, CC). The AA ramps should be positioned closest to the control panel.
4. Place one side nozzle assembly at each end of the ramp. The connection barbs at the base of the nozzles should point towards the control panel.
5. Select a location for the control panel and proportioning tank (see mounting options listed below).
   Note: Distance from control panel to ramp must be no less than 30 ft. (9.1 m) and no more than 50 ft. (15.2 m). Proportioning tank must be protected from weather and direct sun (suction holes are not watertight).
6. Select a method for mounting the control panel (see Control Panel Installation Options diagram).

   If mounting control panel to proportioning tank:

   a. Refer to steps 7-11 to fill the tank with solution.

   b. Once the tank is full, center the control panel against the tank and connect the bungee cord to the eye hooks, securing the panel in place.
   Note: The proportioning tank must be filled with solution prior to mounting the control panel. The weight of the panel may tip over an empty tank.

   If standing control panel against a wall:

   a. Position control panel against wall. Connect the standoff bracket to the top of the panel, and secure it to the wall.

   If hanging control panel on a wall:

   a. Remove legs from control panel.

   b. Mount one leg to the wall and one leg to the top of the control panel to form a Z bar bracket. Hang the panel on the wall using this bracket.

   c. Connect the standoff bracket to the bottom of the panel, and secure it to the wall.
7. Install float inside proportioning tank.
8. Run the six suction hoses from pump boxes to proportioning tank, and feed three hoses through each suction hole.
9. Remove proportioning tank cap. Pull the ends of the suction hoses out through the opening. Install a weight (SHW3) and strainer (STR14) on the end of each hose, and drop hoses back into tank. Replace cap on tank.
10. Select metering tip for proportioning tank (see Metering Tip Color Chart). Install tip in proportioner, connect chemical pickup tube, and place foot valve into chemical container.
    Note: The chemical pickup tube must reach the bottom of the chemical container. A foot valve or strainer must always be used on the chemical pickup line.
11. Connect a water line to the proportioning tank. The unit has a garden hose thread water inlet fitting. Turn water on to begin filling the tank with product.
    Note: A back-flow preventer must be installed in the water line – check local plumbing codes to ensure proper installation.
12. Place the five ramp nozzle assemblies into the brackets mounted inside the ramp channels. See Installation Diagram for correct nozzle placement.
13. Run discharge hoses from pump boxes to nozzles. See Installation Diagram for connection guide.

    a. Secure hose (H12B-H) to pump box discharge barb #1 with a screw band clamp (SSC12). Run hose to side nozzle #1. Cut hose to length and secure to nozzle inlet barb with a screw band clamp (SSC12).

    b. Secure hose to pump box discharge barb #2. Run the hose toward the ramp and cut when it reaches side nozzle #1. Install a tee fitting (SST12) at the end of the hose and secure with a screw band clamp.
    Note: Connect the hose to the stem of the tee fitting to ensure even discharge from each side of the tee.

    c. Secure hose to one side of the tee fitting and run to ramp nozzle #2A. Cut hose to length and secure with screw band clamps. Repeat on the other side of the tee for ramp nozzle #2B.

    d. Secure hose to pump box discharge barb #3. Run hose to ramp nozzle #3. Cut hose to length and secure to nozzle inlet barb. Repeat for discharge barbs/ramp nozzles #4 and #5.

    e. Secure hose to pump box discharge barb #6. Run hose to side nozzle #6. Cut hose to length and secure to nozzle inlet barb.
14. Place the sensor (VMS) into the ramp channel near the center of the ramp (see Installation Diagram). Close the ramp covers.
15. Supply compressed air to the unit.
16. With the power switch in the OFF position, plug the unit into a GFCI protected 120 VAC power outlet.

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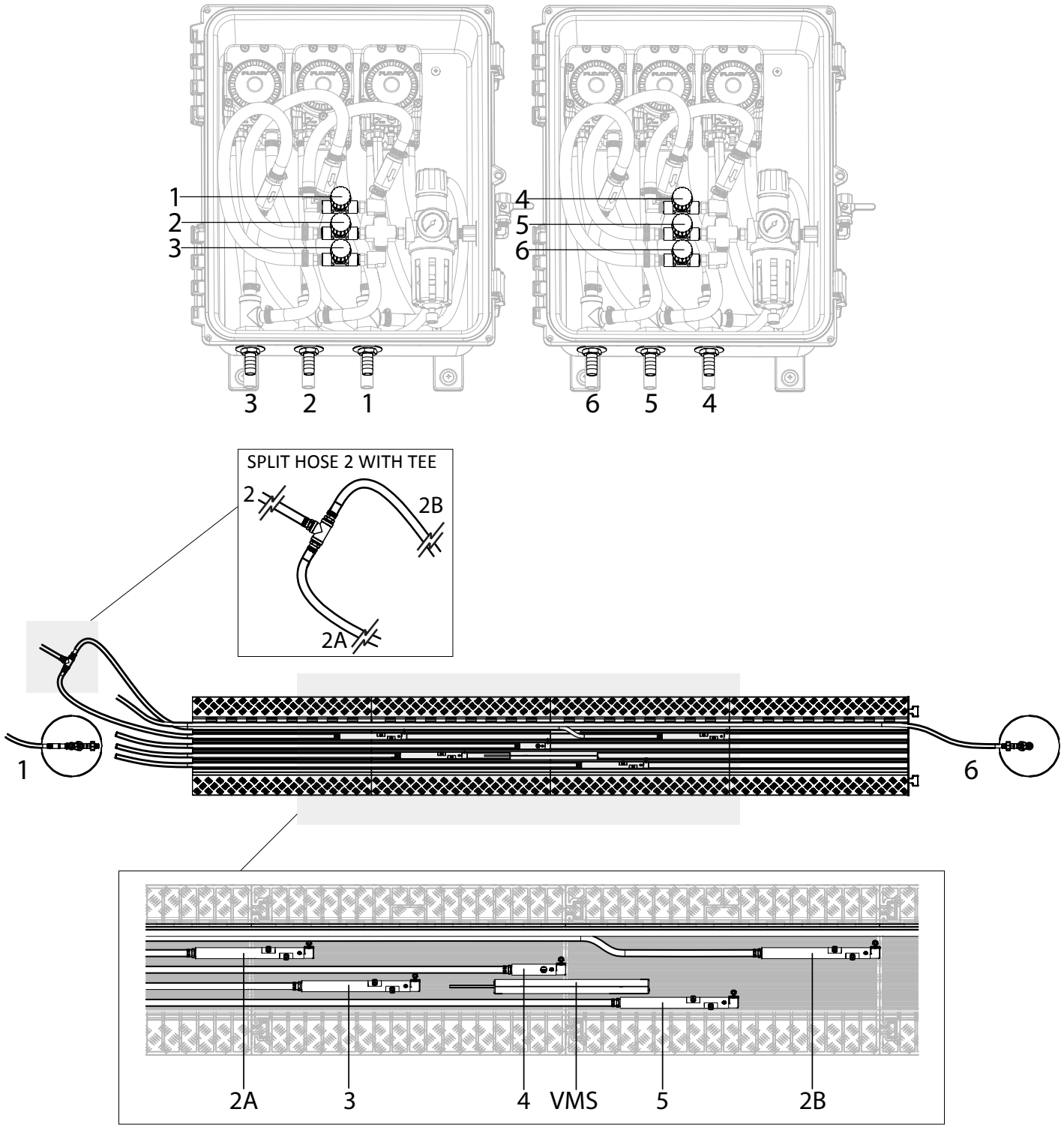
INSTALLATION DIAGRAM



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METERING TIP COLOR CHART

Metering tip color	Ounces of chemical per gallon of water*	Dilution ratio (water:chemical)*
No Tip	32	4:1
Gray	21.3	6:1
Black	12.8	10:1
Beige	6.4	20:1
Red	3.7	35:1
White	2.5	52:1
Blue	2.3	55:1
Tan	1.8	70:1
Green	1.3	100:1
Orange	0.9	140:1
Brown	0.8	160:1
Yellow	0.7	190:1
Purple	0.5	250:1
Pink	0.2	530:1

*Approximate dilutions at 40 psi (2.6 bar) water pressure for water-thin products at 1.0 cP. Injection rates will vary based on chemical viscosity, water pressure, and many other factors. We recommend testing unit output to verify injection rate prior to use.

Operation Instructions:

1. Verify that the unit is connected to compressed air, water, power, and chemical and the proportioning tank has solution available.
2. Open the two compressed air inlet valves (BVB14).
3. Turn the power switch ON and wait 60 seconds for sensor to calibrate.
   Note: Do not allow moving metal objects (including vehicles) to come within range of the sensor while it is calibrating.
4. Slowly drive a vehicle over the ramp to activate unit. While the unit is running and discharging product, adjust the needle valves (NV14Y),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 opening needle valve in 1/4 turn increments, allowing 30 seconds between adjustments, until desired consistency of foam is achieved.

   Note: Needle valves are located inside the pump boxes. See Installation Diagram to determine which needle valve controls which nozzle(s).
5. The side nozzle assemblies are adjustable ball-type nozzles. If needed, these nozzles may be adjusted to improve coverage.
   Note: Turn unit off before making any adjustments to ramp or nozzles.
6. To deactivate the unit, turn the power switch OFF.

READ ALL INSTRUCTIONS BEFORE OPERATING EQUIPMENT

Maintenance Instructions:
To keep the unit operating properly, periodically perform the following maintenance procedures:
Note: Always disconnect or shut off any compressed air, water, or electricity being supplied to the unit before performing maintenance.

- Inspect the pumps (P56/P56K/P56V) 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 chemical metering tip, suction lines, and strainers 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.
- Inspect ramps for damage and verify that ramp sections are properly connected to each other.
- Inspect spray tips for debris or blockages. Remove and clean as needed.

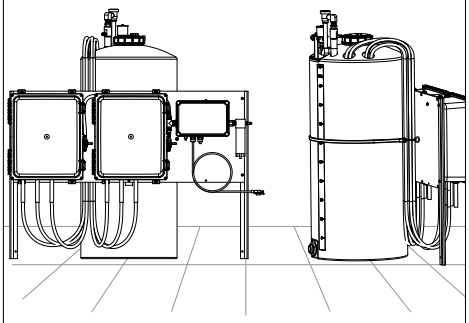
Troubleshooting Instructions:

- Check that all hose is uncoiled properly and there are no kinks that could obstruct fluid flow.
- 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 (R14).
- If the needle valves (NV14Y) are open too far, the pumps (P56/P56K/P56V) may cycle improperly due to lack of air pressure. If this occurs, close and readjust the needle valves (NV14Y) as described in the Operation Instructions.
- Make sure proper foaming chemical and concentration are being used.
- If air passes through a pump (P56/P56K/P56V) without cycling, the pump needs to be replaced.
- If solution backs up into the air regulator bowl, one or more check valves (CV38) need to be replaced.
- If foam comes out wet from a nozzle, no matter where the associated needle valve (NV14Y) is positioned, the associated check valve (CV38) may need to be replaced.
- Check for proper air pressure on the air gauges (AG100). The air requirements are 50 psi (3.4 bar) with 20 CFM (566.31 l/min).
- If the unit operates at a reduced air pressure:
  - Check the air compressor supplying the unit. If the pressure is less than 50 psi (3.4 bar), turn the unit off until the compressor can catch up.
  - If the air supply is 50 psi (3.4 bar), check the air gauges (AG100), which should read near 50 psi (3.4 bar). If an 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 (R14).
- Check the chemical metering tip, suction lines, and strainers for debris or damage. Clean or replace as needed. To prevent damage to the unit, a strainer must always be used on each suction line.
- If sensor is not working properly, turn system power off. Then turn system on and allow sensor to recalibrate as described in the Operation Instructions.
  Note: Sensor must be stationary to function properly.

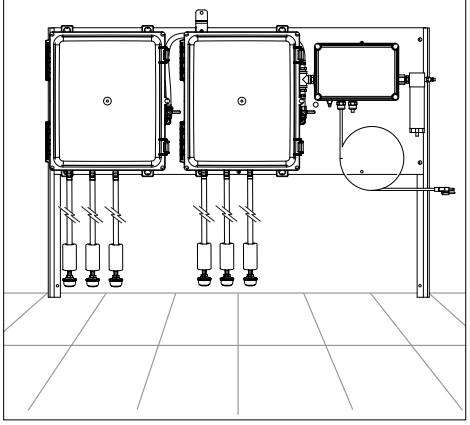
READ ALL INSTRUCTIONS BEFORE OPERATING EQUIPMENT

CONTROL PANEL INSTALLATION OPTIONS

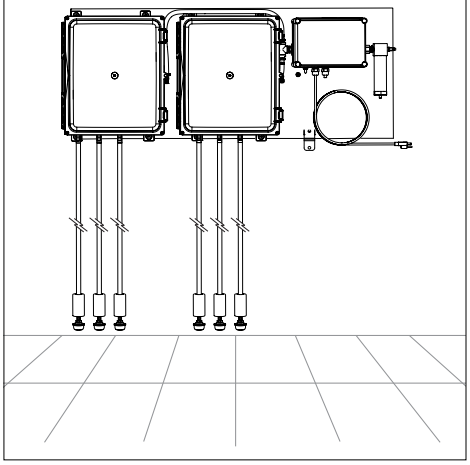
1. MOUNTED TO PROPORTIONING TANK



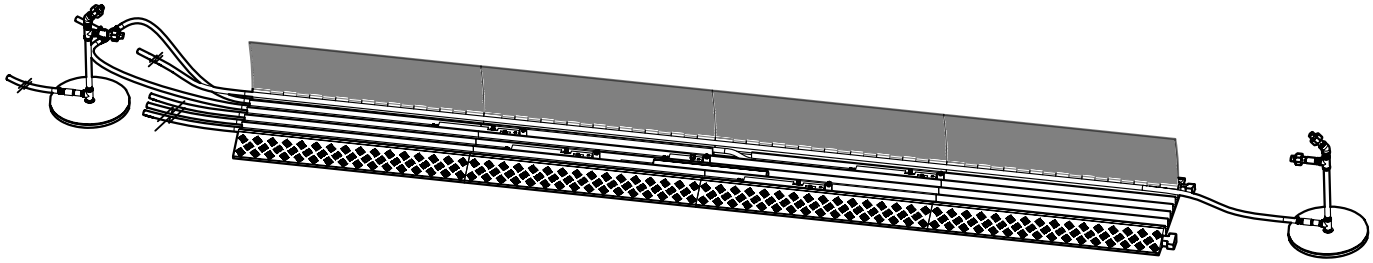
2. MOUNTED AGAINST A WALL



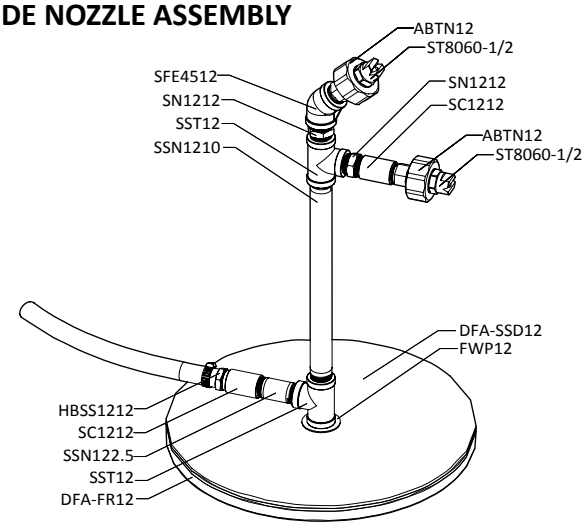
3. MOUNTED ON A WALL



RAMP AND NOZZLE ASSEMBLIES



SIDE NOZZLE ASSEMBLY



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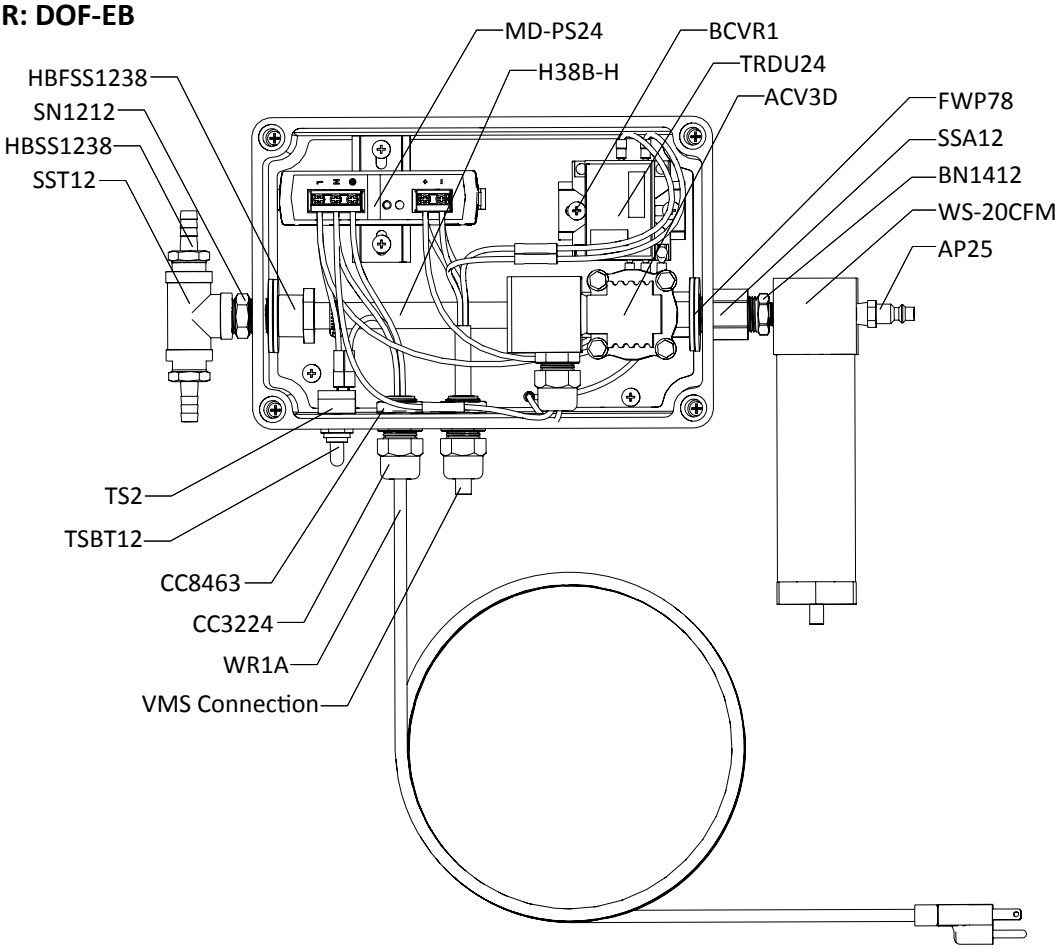
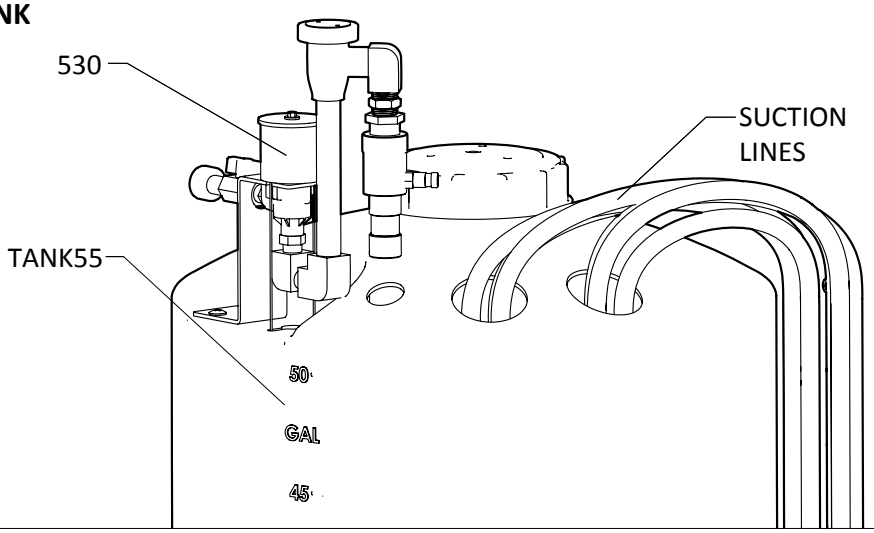
ELECTRICAL BOX ASSEMBLY
ITEM NUMBER: DOF-EB



PROPORTIONING TANK
ITEM NUMBER: PT55



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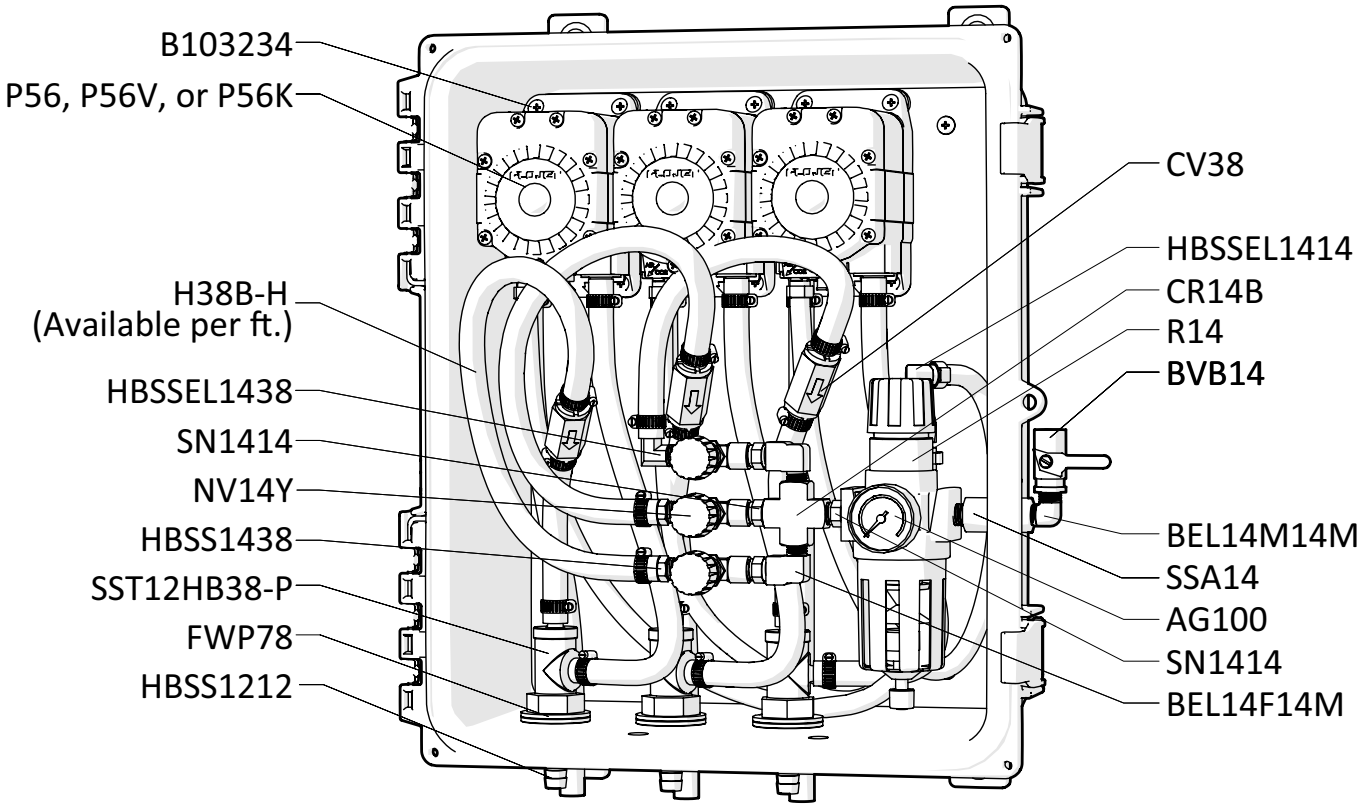
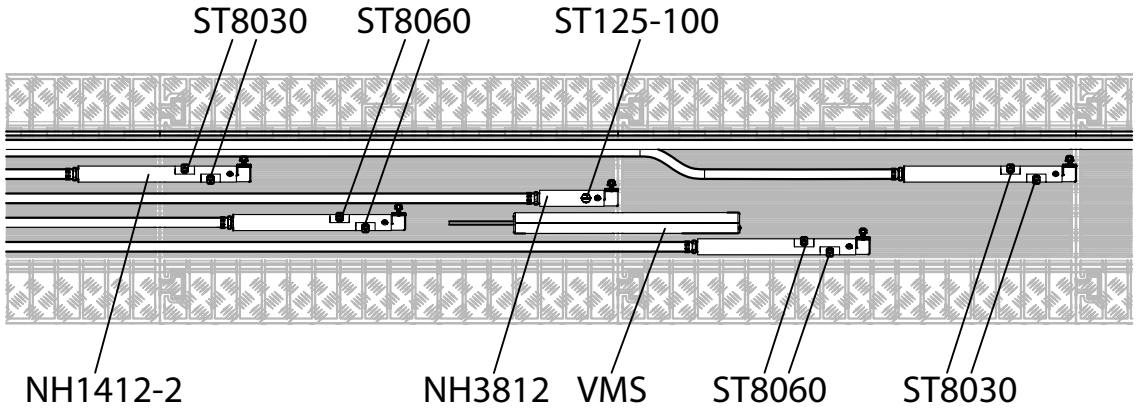
PUMP BOX ASSEMBLY



RAMP NOZZLE COMPONENTS



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PARTS LIST

ITEM NUMBER	DESCRIPTION
530	MED-VOL (9GPM) HYDRO MINDER W/SB
ABTN12	ADJUSTABLE BALL-TYPE NOZZLE 1/2in NPT
ABTNTB12	1/2in THREADED BALL FOR ABTN12
ACV3D	1/2 DEMA AIR SOLENOID, BRASS - 120v - 31gpm
AG100	1.5 INCH DRY MODEL 20 DUAL SCALE GAUGE
AP25	PLUG 1/4 NPTM AIR FITTING - BRASS
B103234	10-32 X 3/4 PHIL TRUSS MACH SCR 18-8
BEL14F14M	ELBOW 1/4in FPT X 1/4in MPT
BEL14M14M	ELBOW 1/4in MPT X 1/4in MPT
BN1412	HEX REDUCER NIPPLE 1/4in X 1/2in MPT
BT14	MALE BRANCH TEE 1/4in FPT X FPT X MPT
BVB14	AIR INLET VALVE - VA BRS 025-4F4F-BT, NICKEL
CB-5	5 AMP CIRCUIT BREAKER
CB-B	CLEAR BOOT FOR CIRCUIT BREAKER
CC3224	LTC BLACK 1/2 NPT
CC8463	1/2in NPT BLACK LOCKNUT
CR14B	1/4 FEMALE BRASS CROSS
CV38	PVC CHECK VALVE 3/8 BARBS - SS SPRING
DFA-FR12	Foam Ring 12 Inch
DFA-SSD12	Stainless Steel Disk 12 Inch
EB14201	EYE BOLT 14 20 1 INCH
EC14-2	OETIKER CLAMP 13.8
FB1187	FIBOX 11X7.5X7.1
FW14	1/4 X 5/8 OD FLAT WASHER 18-8 PLN
FWLG14	.569 ID X 1.28 OD X .08 THICK FLAT WASHER SS 18-8
FWP12	7/8 ID X 1.5 OD X 0.05 THK SSFW
FWP14	C-816 1/2in SS WASHER
FWP78	7/8in BY .137 BY 1 1/4in FLATWASHER 18-8 PLN
H12B-H	1/2 INCH BLUE HOSE - Available per ft.
H14B-H	1/4 INCH BLUE HOSE - Available per ft.
H38B-H	3/8 INCH BLUE HOSE - Available per ft.
HB1438	1/4in MPT X 3/8in HOSE BARB (PLASTIC)
HBB1414	BRASS 1/4 X 1/4 HOSE BARB
HBBEL1414	1/4 MPT X 1/4 HOSE BARB BRASS 90 DEG
HBFSS1238	HOSE BARB 3/8 X FEMALE PIPE THREAD 1/2 IN STAINLESS STEEL
HBSS1212	STAINLESS HOSE BARB 1/2 X 1/2
HBSS1238	STAINLESS HOSE BARB 1/2mpt X 3/8 barb Tariff 8479.90.9496
HBSS1438	STAINLESS HOSE BARB 1/4 MPT X 3/8 BARB
HBSSEL1438	STAINLESS HOSE BARB ELBOW 1/4 INCH NPT X 3/8 HOSE BARB
HHBB1418	HEX HEAD STAINLESS BUSHING 1/4in X 1/8in
HHPB112	HEX HEAD POLY REDUCER BUSHING 1in X 1/2in
J-BRKT35	J BRACKET - 35 IN LONG
KI1420	KNOCK INSERT 1/4 -20X11M TS INSERT NUT
LN1032	10-32 NM NYL INS LOCKNUT 18-8 PLN
LN14	1/4-20 NE NYL INS LOCKNUT 18-8 PLN
MD-PS24	POWER SUPPLY 24VDC PLASTIC CASE WITH DIN RAIL MOUNTING ADAPTER
MIX2	.625 OD x 2 IN BRUSH-OVERALL LENGTH 2.5 IN
MIX7	7 INCH WIRE TWISTED BRUSH - STAINLESS STEEL 13.5 inches OVERALL LENGTH
NH1412-2	NOZZLE HOUSING - 1/2 IN NPT INLET - 2 PORTS 1/4 IN NPT - PVC
NH3812	NOZZLE HOUSING - 1/2 IN NPT INLET - PORT 3/8 IN NPT - PVC
NV14Y	FLOW CONTROL VALVE - INCLUDES BLACK KNOB
NV14Y-HNDL	BLACK KNOB FOR NEEDLE VALVE - 2839-1/4
P12	HEX HEAD PLUG WITH 1/2 M.P.T.
P12SS	HEX HEAD PLUG - 1/2 IN. MPT - SS304
P56	PUMP WITH SANTOPRENE SEALS - INCLUDES HOSE BARBS, AIR FITTING, AND EXHAUST BARB
P56K	5700 PUMP WITH KALREZ SEALS - INCLUDES HOSE BARBS, AIR FITTING, AND AIR PORT
P56V	5700 PUMP WITH VITON SEALS - INCLUDES HOSE BARBS, AIR FITTING, AND AIR PORT
20756103B	Polypro G57 Air Port x HB Straight, w/ Viton o-ring
HB14P	1/4in BRASS HB AIR FITTING /G57/P56
HB5638	HOSE BARB FOR P56 PUMP
HB5638K	HOSE BARB FOR P56K PUMP
HB5638V	HOSE BARB FOR P56V PUMP
PB16138	POLYPROPYLENE CONTROL BOX - WORKING DIMS 16x13x8 - PUMP MOUNT
PB16138-GSKT	NEOPRENE GASKET 0.220 INCH ROUND CORD STOCK - 61.125 INCHES
PB16138-LATCH	LATCH FOR PB16138
PB16138-PIN	STAINLESS STEEL HINGE PIN FOR CONTROL BOX PB16138 - 1/8 x 4 3/4 x 1/2inches
PBFT-PP	MOUNTING FEET FOR POLYBOX - PB16138 - POLYPROPYLENE
PL16138	CONTROL BOX LID - POLYPROPYLENE - 16x13x8 - HINGED LOCKABLE LID
R14	FILTER, REGULATOR
RAMP-5CH	5 CHANNEL DRIVE OVER RAMP - 3 FT SECTION
RTDS35	RUBBER TIE-DOWN STRAP - 35 INCH - EPDM
S1034FHL	10 X 3/4 PHIL FLAT HI-LO THRD SCREW 18-8
S14201	1/4 20 Pan Head Screw - 1 inch Stainless
S142034	1/4-20 X 3/4 PHIL TRUSS M/S 18-8

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PARTS LIST

S142058-VS	1/4-20 X 5/8 PHIL TRUSS MACHINE SCREW 18-8 W/#516 VIBRASEAL ORANGE PATCH
SC1212	S.S. COUPLER 1/2in BY 1/2in
SFE4512	S.S. 1/2in FPT 45 DEGREE ELBOW
SHW3	3in LONG COATED WEIGHT
SN1212	1/2in HEX STAINLESS STEEL NIPPLE
SN1414	STAINLESS 1/4MPT X 1/4MPT NIPPLE
SO-BRKT	STANDOFF BRACKET - SS
SSA12	STAINLESS MALE/FEMALE S.S. ADAPTOR 1/2in X 1/2in
SSA14	SS304 MALE/FEMALE ADAPTOR 1/4 NPT X 1/4 NPT
SSC12	WORM GEAR CLAMP, S/S (.31-.91)
SSC38	WORM GEAR CLAMP, S/S (.25-.63)
SSLB-NH	SS BRACKET FOR NOZZLE HOUSING
SSN1210	1/2in X 10in S40 304 STAINLESS STEEL NIPPLE - TBE
SSN122.5	STAINLESS 304 NIPPLE 1/2IN X 2.5 IN
SST12	1/2in FPT 304 S.S. TEE
SST12HB38-P	STAINLESS TEE COMBO 1/2in FPT X 3/8 in BARB
ST125100	VEEJET NOZZLE 3/8in - 125100
ST8030	VEEJET NOZZLE 8030
ST8060	VEEJET NOZZLE 8060
ST8060-1/2	VEEJET NOZZLE S.S. 8060 - 1/2 MPT
STR14	40 MESH SUCTION LINE STRAINER 1/4 MNPT
T14B	FEMALE BRASS TEE 1/4in
TANK55	55 GAL. VERTICAL TANK WHITE HDPE
TRDU24	24 VOLT MULTI-FUNCTION TIMED RELAY
TRS11	11 PIN MAGNAL SOCKET
TS2	TOGGLE SWITCH SPST
TS2PLATE	ON/OFF SWITCH PLATE
TSBT12	TOGGLE SWITCH BOOT
VMS	VEHICLE MOTION SENSOR-50FT CABLE
WMS14	14 X 1 1/4 HEX W/H SMS SLOTT, S/S
WMS14A	5/16 X 1 1/2 STRAIGHT PLASTIC ANCHOR
WR1A	18/3 SJOOW 90 BLACK N.A. W/ 5-15P & 7in ROJ
WS-20CFM	TSUNAMI WATER SEPARATOR/AIR DRYER - 20 CFM - 1/4 in. FPT PORTS