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# USER MANUAL

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MODEL:

**FBHS-MR**

**Foot Bath Hand Sanitizer**

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*English (Original Instructions)*

*Updated: 05/12/20*



# USER MANUAL: FBHS-MR

READ ALL INSTRUCTIONS BEFORE OPERATING EQUIPMENT



## Table of Contents

<b>System Requirements</b>	03	<b>Cleaning</b>	09
<b>Installation</b>		<b>Maintenance</b>	10
Physical Set-Up	04	<b>Troubleshooting</b>	12
Plumbing Connections	06	<b>Appendices</b>	
Priming	07	Parts Callouts	16
Traffic Direction	07	Electrical Schematics	22
<b>Operation</b>	08	P&I Diagram	23



### **WARNING:**

1. All personnel using this unit must be familiar with the information contained in this manual. Follow all installation and maintenance instructions.
2. Always wear appropriate footwear. Secure or remove loose items on footwear.
3. Ensure solid footing when operating the unit.
4. Avoid contact of chemicals with skin and eyes. If contact occurs, see MSDS sheet for further first aid measures.
5. Follow safety instructions of chemical manufacturer (MSDS).
6. Always follow plant and OSHA guidelines about the use of equipment.
7. Disconnect power before servicing equipment.
8. Always follow safety precautions and obey warning labels. Failure to do so could result in injury or death.



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## Overview

The FBHS, Foot Bath and Hand Sanitizer, applies a fine mist spray onto the hands through 16 anti-drip nozzles. Concentrated sanitizer and water are pre-mixed in the onboard batch tank before it is applied to the hands. Dual sensors detect travel direction and activate hand spray when the user enters the production area. "Watchdog" timers are programmed into the system to prevent excessive water loss in the event of sensor failure. Level switches in both the foot bath and batch tank detect the liquid level and automatically replenish as necessary.

## Specifications

- Construction: 304L stainless steel (frame). LDPE, Polypropylene, Fiberglass reinforced Polyester (grate).
- Weight: 200 lb (90.72 kg)
- Dimensions: 48.5" x 47.5" x 46"  
(123.2 x 120.6 x 116.8 cm)
- Water Consumption: 1.5 GPM (3.8 L/m)
- Preset Chemical Dilution Ratio: 1:400\*

**\*NOTE:** Unit tested at 70°F using water with 50 psi injector inlet pressure.

## Cleaning Methods

See pages 8 for disassembly and cleaning instructions. For chemistry recommendations:

Use Case	Chemical Type
Organic Soils	Chlorinated Alkaline or Alkaline based foaming cleaner
Mineral Buildup	Acid based foaming cleaner

**NOTE:** Chemistry used must be compatible with materials of construction (listed above).

## System Requirements

### Water Supply

- Flow: 5 GPM (3.8L/m) minimum\*
- Pressure: 50-60 psi (207-414 kPa)\*\*
- Max Temperature: 70°F (4-38°C)

*3/8" supply piping size recommended*



### WARNING:

DO NOT EXCEED maximum water temperature! Damage can result.

***\*Minimum pressure must be maintained during specified water flow!***

***\*\*For consistent operation of spray nozzles, a water pressure regulator and filter is recommended.***



**NOTE:** Back flow prevention must be installed in the water line to this unit. Check local codes to ensure proper installation.



### WARNING:

DO NOT use flammable liquids (i.e. alcohol based solutions or similar) without dilution.

### Electrical

- 120 VAC Single Phase
- 60 Hz 15 Amps
- Supplied with 8 ft. power cable with NEMA 5-15P plug

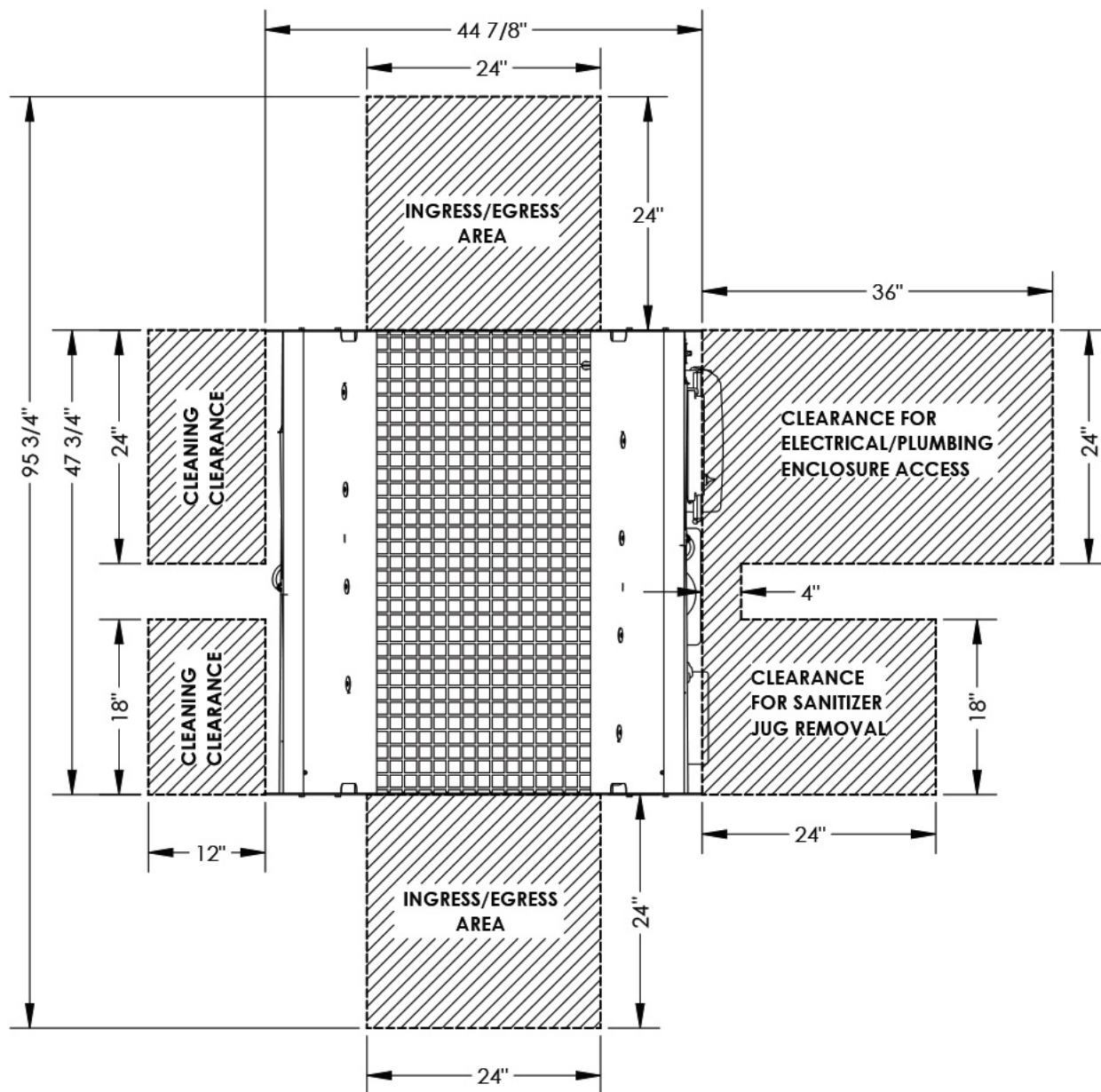
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## Installation

**NOTE:** For fixed installations, area in front of electrical panel must be clear at least 36"

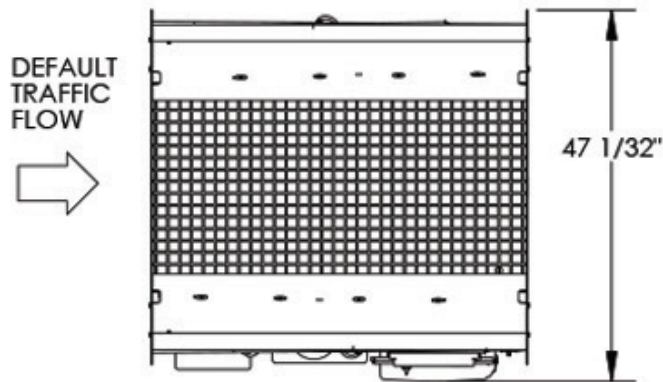


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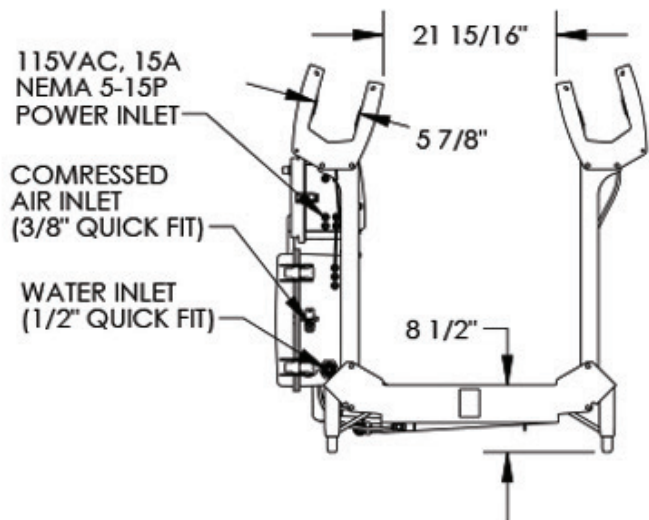
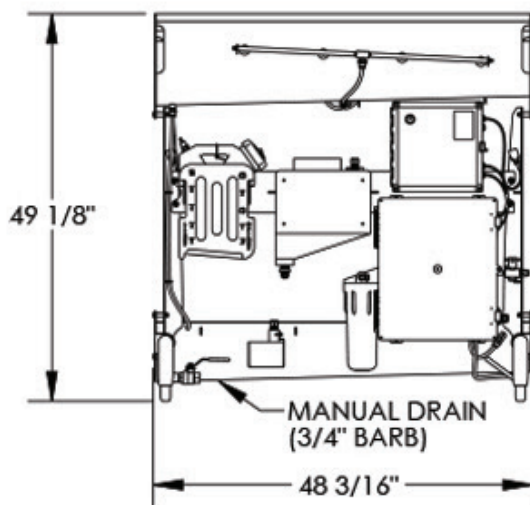
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## Installation



**NOTE:** Traffic flow direction can be reversed by swapping wires on inputs I-00 and I-001 of microcontroller (see electrical schematic for more information).



**NOTE:** Model -MR (Manual Refreash Foot Bath) is for locations which do not have a dedicated drain. Foot bath level is maintained by float switch and is only refreshed with new sanitizer if and when level drops to a point which activates float switch.



## Installation

### Physical Set Up:

1. Set unit in desired location.
2. Aspects to consider when deciding on placement:
  - Clearance for general use
  - Location of drain
  - Emergency exit paths or egress
  - Access to control box
  - Connections for water, electricity, and air

**NOTE:** To move the unit use a pallet jack or a hi-lo to lift from the bottom. Pad the forks to protect the finish.

3. Use a level to make sure the unit is stable and leveled in all directions [Figure 6.1].
4. Connect unit to electrical supply.

### Plumbing Connections:

1. Using 1/2" LDPE tubing or similar, connect water to the unit's push to connect fitting [Figure 6.2]
2. Using 3/8" LDPE tubing or similar, connect air to the unit [Figure 6.2].
3. Fill chemical jug with sanitizer product and connect suction line (label jug for identification).
4. If necessary, adjust the dilution ratio by selecting an appropriate metering tip (included) and test.
  - The unit is pre-configured for a 1:400 dilution ratio.
  - The smallest metering tip is a yellow tip with a small tube attached. This tube can be trimmed to alter the dilution ratio. [Figure 6.3]

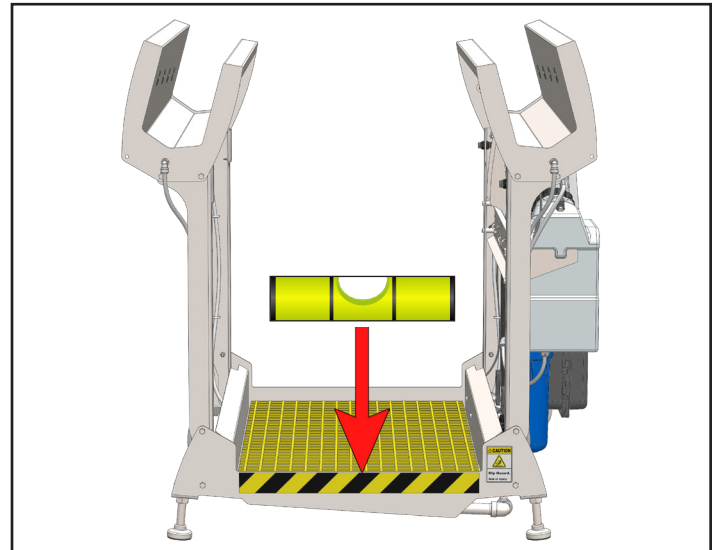


Fig. 6.1: Level and stabilize unit using a leveling device

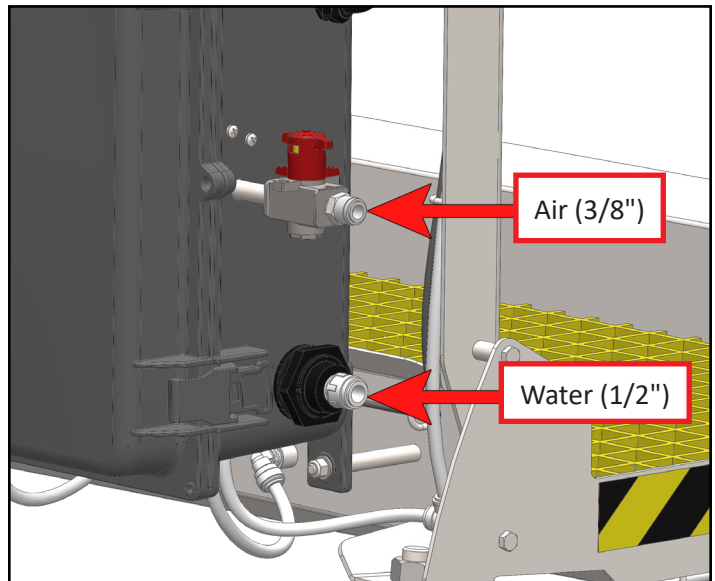


Fig. 6.2: Water and air inlets

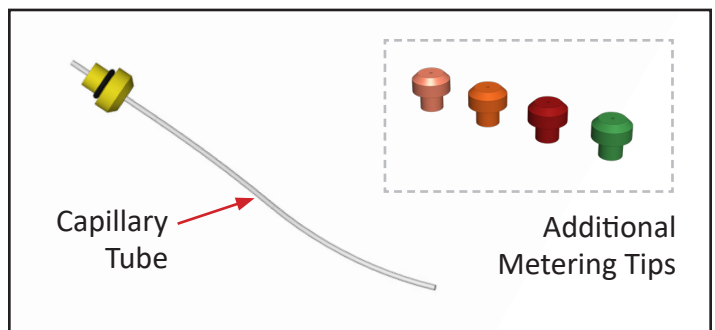


Fig. 6.3: Metering Tips and Capillary Tube

## Installation

### Plumbing Connections:

- Full length capillary tube results in a dilution ratio of approximately **1:670** at 30-50 psi water inlet pressure.
- When complete, re-connect solution lines to green hose barb of the Venturi Injector located in plumbing enclosure [Figure 7.1].

### Priming

1. Turn switch on control box to **ON** position [Figure 7.2].
2. Turn the red-handled compressed air relief valve on the air inlet to **SUP.**
3. Prime hand spray system by activating sensor at front of unit (either by stepping in front of or waving your hand) until solution begins to spray.

**NOTE:** If the filter cartridge is empty, it may take 10-20 activations of the hand spray before the filter becomes saturated and the pump primes.

4. Use appropriate means (titration or other) to ensure sanitizer is being mixed into hand spray and foot bath at the correct ppm.

### Traffic Direction

- The hand spray is designed to activate only when users are entering the unit from one end. The default traffic direction is shown in the previous section.
- The traffic direction can be changed if desired by switching the two black wires in terminals **I-00** and **I-01** on the micro controller (see electrical schematic for more information).

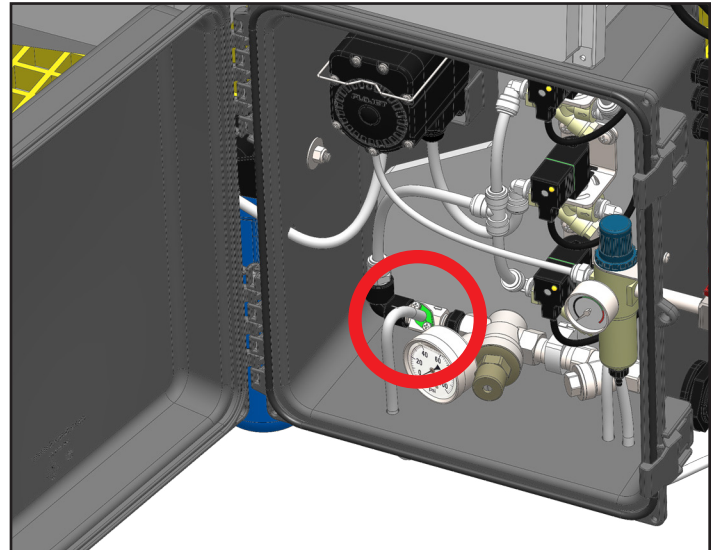


Fig. 7.1: Venturi DEMA Rocket Injector location

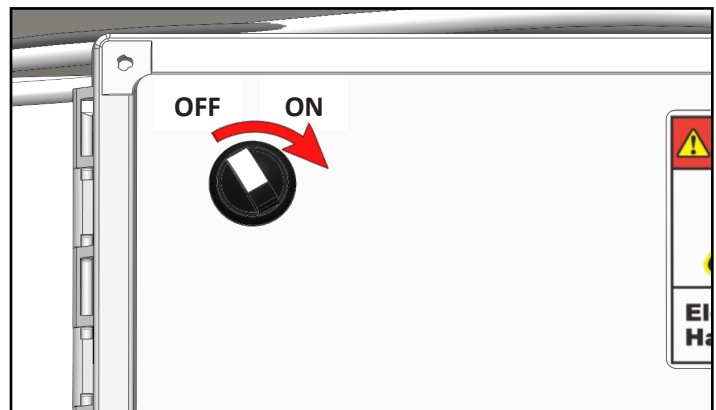


Fig. 7.2: Controller power switch

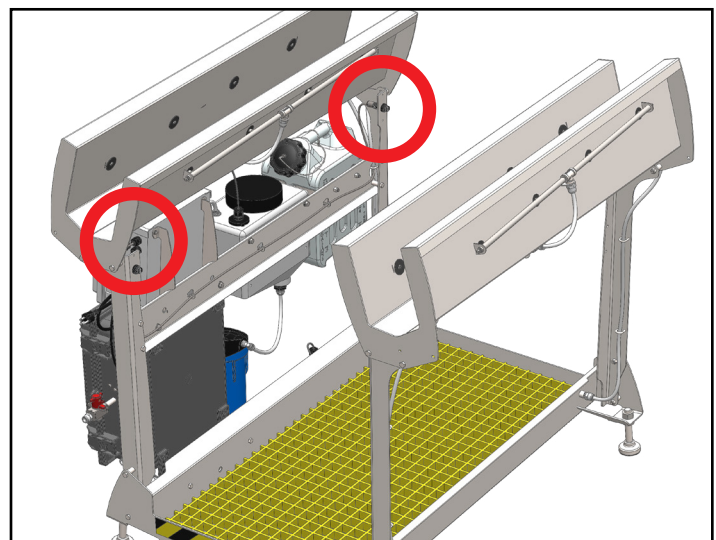


Fig. 7.3: Activation sensor locations

## Operation

1. Make sure the drain valve is closed [Figure 8.1]
2. Turn the power switch to “ON” [Figure 8.2]
  - If the batch tank is low or empty, it should begin to fill.
  - If the foot bath is low or empty, it will begin to fill after the batch tank is full.
3. Make sure the red handled air-shutoff valve is turned to “SUP”.
4. Once the foot bath and batch tank are full, the user may step into the unit.
  - The hand spray will activate as soon as the user steps into the unit, and will stop one second after they step off.

**NOTE:** The hand spray is designed to activate only in one traffic flow direction [Figure 8.3]. Flow direction can be altered if necessary (see page 7 for more information).

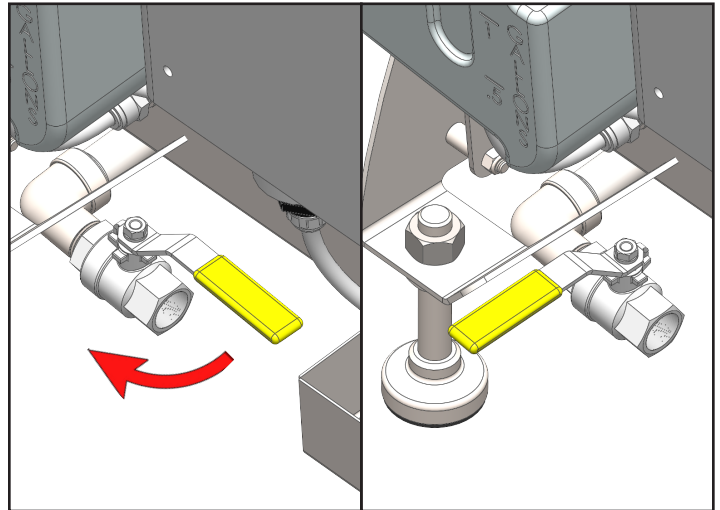


Fig. 8.1: Drain valve open (left) to close (right)

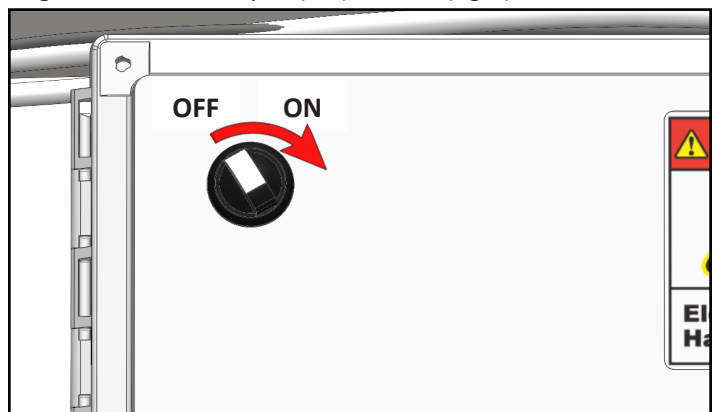


Fig. 8.2: Controller power switch

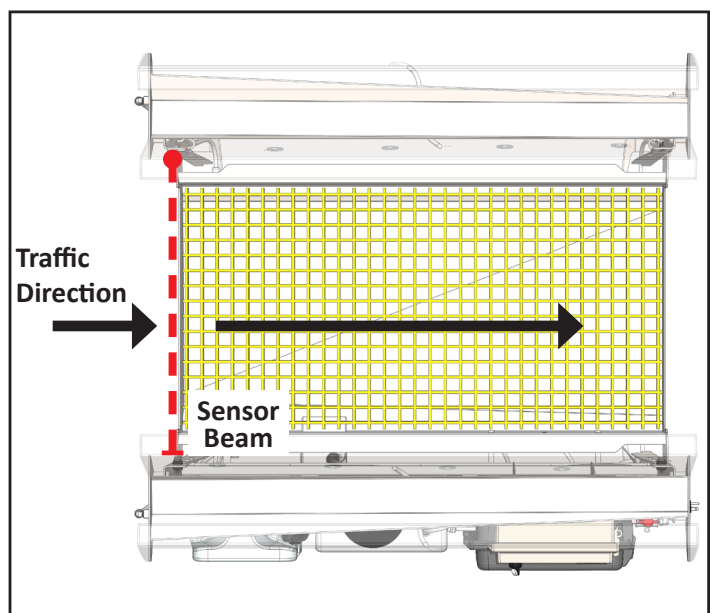


Fig. 8.3: Sensor beam and traffic direction



## Cleaning Procedures

### Cleaning Instructions

1. Turn the power switch to "OFF" [Figure 9.1].
2. Open the drain valve to drain the foot bath [Figure 9.1].
3. Use a cleaner that will not attack 304 stainless steel or any of the materials listed in the unit specifications.

Use Case	Chemical Type
Organic Soils	Chlorinated Alkaline or Alkaline based foaming cleaner
Mineral Buildup	Acid based foaming cleaner

4. Avoid direct water spray around the control boxes and wiring entering/exiting the control boxes.
5. If necessary, remove the yellow walkway grate to allow better cleaning of the tub [Figure 9.3].

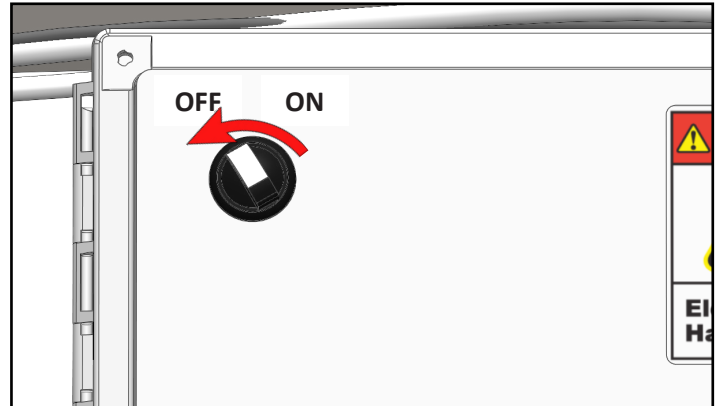


Fig. 9.1: Controller power switch

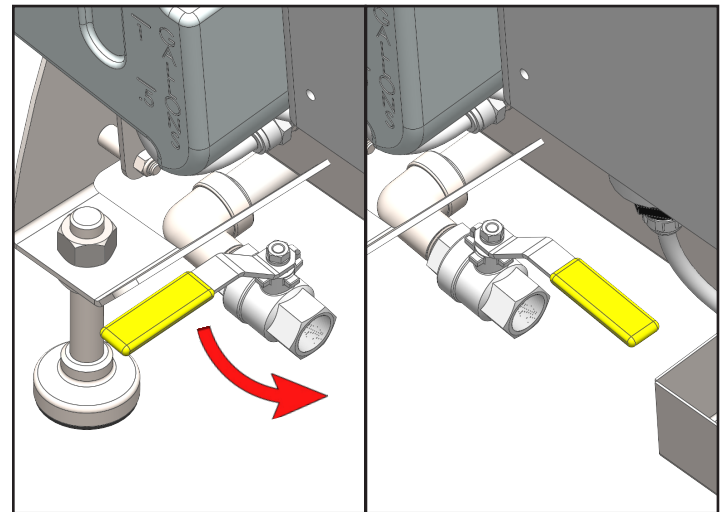


Fig. 9.2: Drain valve closed (left) to open (right)

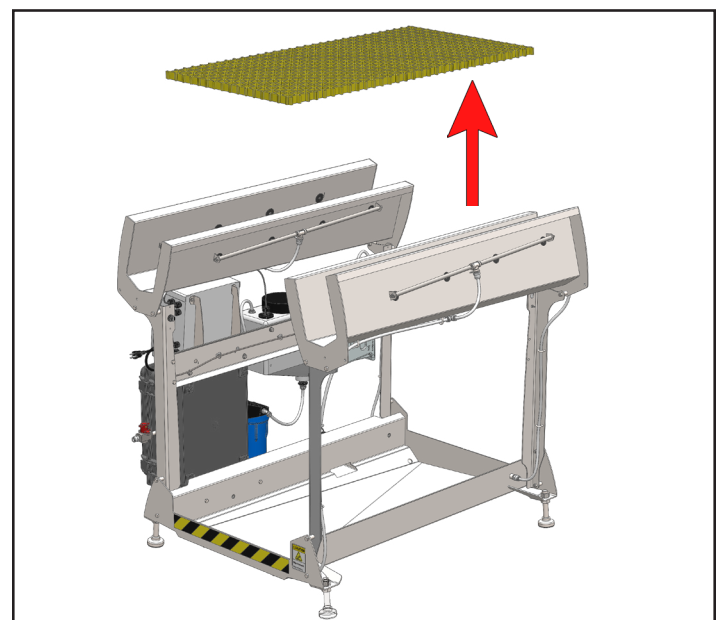


Fig. 9.3: Removing foot grate

## Preventative Maintenance

The following maintenance procedures are recommended for normal use. Units which see a high amount of use should be inspected more frequently.

### Notes:

#### Weekly:

- Check unit for proper sensor and spray function.
- Ensure foot grate is secure
- Inspect nozzles for clogs and clean if necessary
- Verify float switch is functioning properly.
- Check dilution ratio.

#### Monthly:

- Check all fasteners to ensure they are tight.
- Ensure warning labels and decals are present and in good condition.
- Inspect grate for wear or damage.
- Verify unit is level and
- Inspect electrical enclosure for signs of water intrusion.
- Inspect sensors for damage.
- Inspect nozzles for damage or wear.
- Inspect electrical cords and plumbing for damage.

#### Quarterly:

- Inspect structure for cracked welds or bent components.

#### Annually:

- Replace filter (~50,000 activations)

## Preventative Maintenance

### Foot Bath Depth Adjustment

The depth of the foot bath can be adjusted by sliding the foot bath float switch assembly up or down.

1. Loosen the screw band clamp which holds the float switch.
  - Slide float switch upward to increase the depth of the bath.
  - Slide it downward to decrease the depth.
2. Re-tighten screw band clamp. **Do not overtighten.**

### Filter Replacement

The filter should be replaced once per year or approximately 50,000 activations (whichever comes first).

1. Turn the switch on the control box to “OFF” to power down the system.
2. Turn red-handled compressed air relief valve to “EXH” to exhaust air pressure.
3. Unscrew the blue filter housing and remove filter
4. Install new filter and replace blue housing, screwing it on hand-tight. **Do NOT use a wrench!**

### Nozzle Disassembly and Cleaning

1. Unscrew nozzle from outside of trough using pointer finger and thumb (see parts callout for more information).
2. Remove the rubber shield washer from the nozzle
3. The nozzle can be disassembled by unscrewing the check valve assembly from the nozzle orifice.
  - There is a pintle, a rubber bulb and spring inside the check valve portion of the body. These parts are VERY small - take caution not to lose them! (see below)
4. Clean the body and orifice portion of the nozzle using compressed air and inspect.
5. Re-assemble the nozzle
  - Make sure the small rubber tip and the pintle are seated properly inside the spring and are in the correct orientation. See image below.
6. Reinstall the shield washer and screw the nozzle back into the spray bar.
  - Finger tighten only! **Do NOT use wrenches!**



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## Troubleshooting

Problem	Causes	Solutions	Notes
The foot bath does not fill	The drain valve was left open while the unit was attempting to fill the foot bath, causing the controller to time out	Close the drain valve.	If the foot bath or batch tank fail to fill up within a specific amount of time, the unit will stop attempting to fill them until it is reset. This Prevents excessive water loss in the event of a failure.
		Reset the unit by turning the power switch to "OFF" and then back to "ON".	
	The water supply is turned off or pressure is excessively low	Make sure the water supply is ON and the water pressure regulator on the unit reads at least 50 psi.	
		Reset the unit by turning the power switch to "OFF" and then back to "ON".	
	The foot bath solenoid valve is faulty or clogged	Reset the unit by turning the power switch to "OFF" and then back to "ON".	
		Wait for the batch tank to fill, or manually lift the float switch inside the batch tank and then check to see if the orange light on the foot bath solenoid coil connector illuminates. If the light illuminates but no water flows, repair or replace valve.	

## Troubleshooting

Problem	Causes	Solutions	Notes
The foot bath overflows	The float switch is faulty or out of adjustment	Open the drain valve to lower the water level in the foot bath such that it is below the walkway grating.	
		Reset the unit by turning the power switch to "OFF" and then back to "ON".	
		Test the float switch function as detailed in the maintenance instructions and adjust or replace as necessary.	
The hand spray does not function  (See Continued....)	The batch tank is empty	Make sure the water supply is on and the water pressure regulator on the unit reads at least 50 psi.	
		Reset the unit by turning the power switch to "OFF" and then back to "ON".	
		Make sure the light on the batch tank solenoid coil connector illuminates and water begins to flow into the tank. If the light illuminates but no water flows, replace the solenoid valve.	
		Test the batch tank float switch function as detailed in the maintenance instructions and adjust or replace as necessary.	If the foot bath or batch tank fail to fill up within a specific amount of time, the unit will stop attempting to fill them until it is reset. This prevents excessive water loss in the event of a failure.



# USER MANUAL: FBHS-MR

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## Troubleshooting

Problem	Causes	Solutions	Notes
The hand spray does not function  <i>(continued)</i>	Compressed air supply is turned off	Make sure the air supply is on and the red-handled shutoff valve is set to "SUP". The air pressure regulator gauge on the unit should read between 80 and 100 psi.	
	The hand spray solenoid valve is faulty or clogged	Check to see if the orange light on the hand spray solenoid coil connector illuminates when the photo eye is tripped. If the light illuminates but the hand spray does not activate, repair or replace the solenoid valve.	
	Pump failure	If the hand spray solenoid valve is open, and compressed air is supplied to the pump but it fails to cycle, replace the pump	
	Clogged filter	Unscrew the blue filter housing and check filter or debris or clogs. Replace the filter element if necessary.	
The batch tank overflows	Faulty float switch	Test the batch tank float switch function as detailed in the maintenance instructions and replace as necessary.	

## Troubleshooting

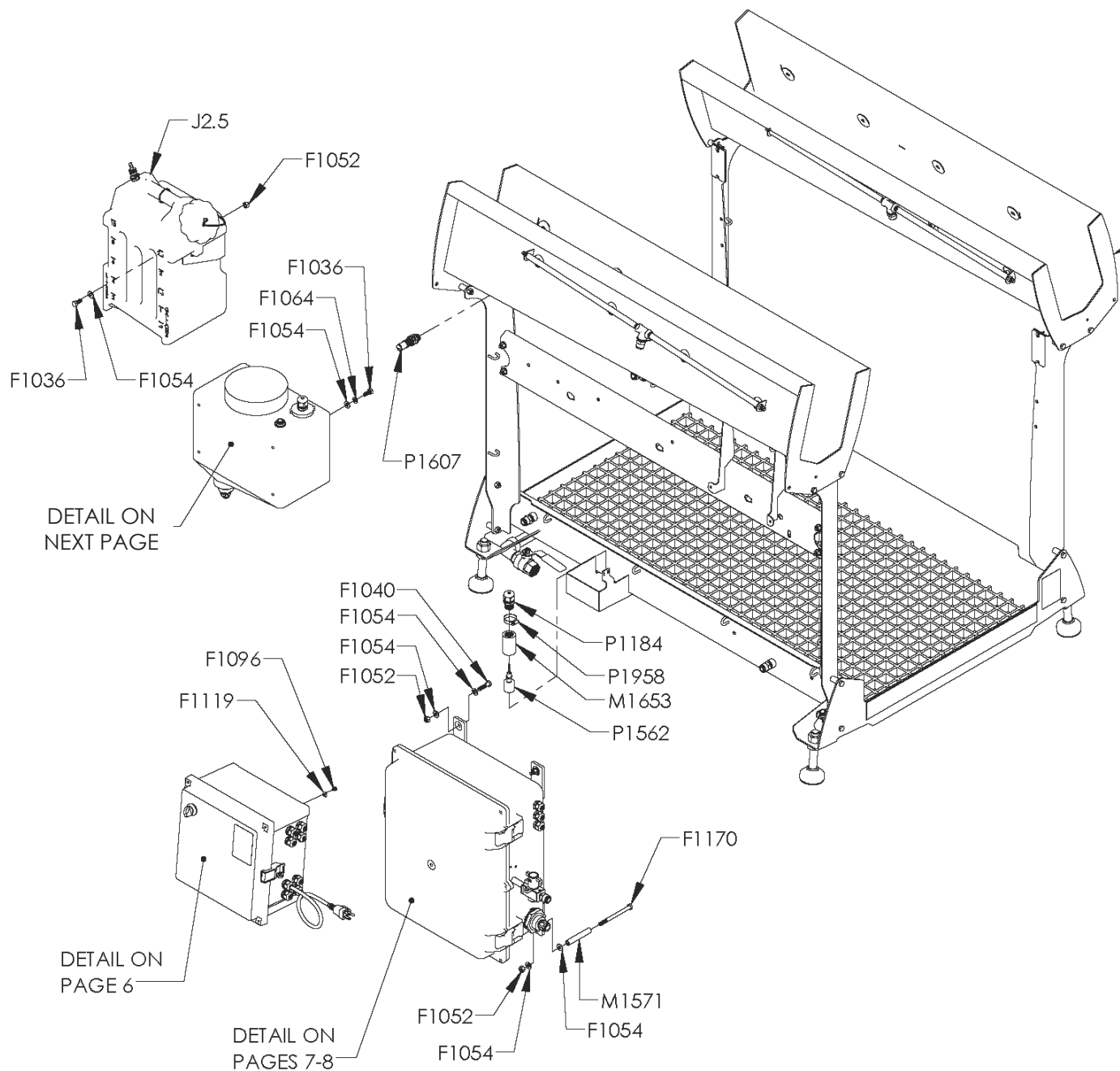
Problem	Causes	Solutions	Notes
Poor spray performance, or some nozzles spray while others do not	Clogged nozzles	Turn the power switch to "OFF" and turn the red-handled air shutoff valve to "EXH". Clean or replace the nozzles as detailed in the maintenance instructions. Turn the power "ON" and the air to "SUP" and test.	
	Clogged Filter	Unscrew the blue filter housing and check filter or debris or clogs. Replace the filter element if necessary.	
	Low air pressure	Make sure the pressure gauge on the air pressure regulator reads between 80 and 100 psi.	



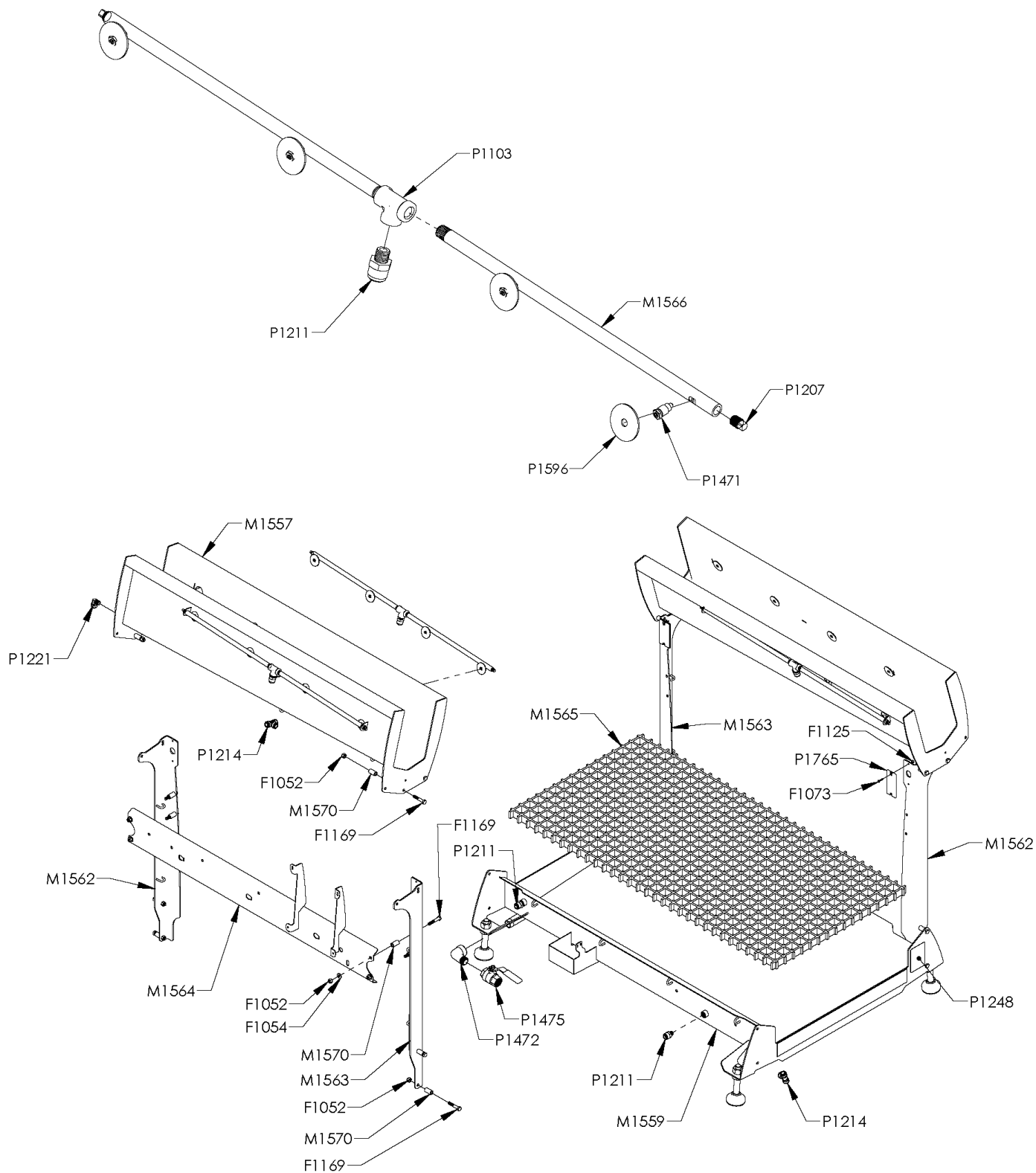
### More Information?

Please contact your equipment representative or manufacturer for further support.

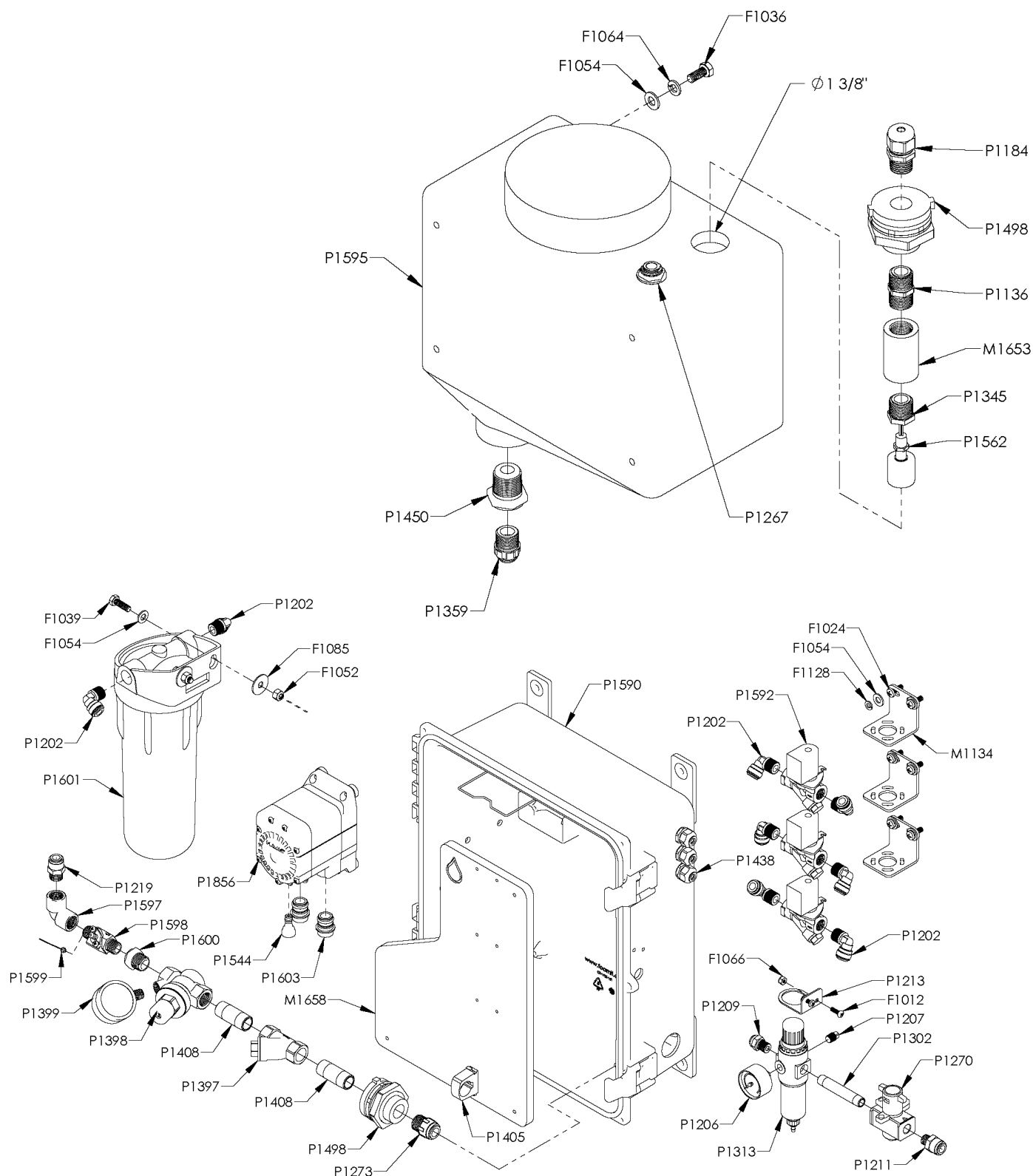
## Appendix A - Parts Callout



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## Appendix A - Parts Callout

PART NUMBER	DESCRIPTION
F1012	SCREW MACHINE 10-32 x 5/8 SS PHILLIPS
F1024	SCREW MACHINE 1/4-20 x 3/4 SS PHILLIPS
F1036	BOLT HHC 5/16-18 X 3/4 SS
F1039	BOLT HHC 5/16-18 x 1 SS
F1040	BOLT SHCS 5/16-18 X 1-1/4 SS
F1052	NUT NYLOCK 5/16-18 SS
F1054	WASHER 5/16 SS TYPE A
F1064	WASHER SPLIT LOCK 5/16 SS
F1066	NUT NYLOCK 10-32 SS
F1073	SCREW MACHINE 6-32 x 3/4 SS PHILLIPS PAN HD
F1085	WASHER FENDER 5/16 SS
F1096	SCREW MACHINE 10-32 X 3/8 SS PHILLIPS PAN HD
F1096	SCREW MACHINE 10-32 X 3/8 SS PHILLIPS TRUSS HD
F1119	WASHER #10 SS TYPE A
F1125	NUT NYLOCK 6-32 SS
F1128	WASHER SPLIT LOCK 1/4 SS
F1144	NUT HEX 3/4-10 SS
F1169	BOLT HHC 5/16-18 X 1-3/4 SS
F1170	BOLT HHC 5/16-18 X 4 SS
F1179	WASHER SPLIT LOCK #10 SS
M1134	SOLENOID BRACKET
M1557	FBHS HAND TROUGH WELDMENT
M1559	FBHS TUB WELDMENT
M1562	FBHS UPRIGHT WELDMENT RIGHT
M1563	FBHS UPRIGHT WELDMENT LEFT
M1565	FBHS GRATING
M1566	FBHS SPRAY BAR
M1570	STANDOFF 5/16 X 1/2 X 1 SS
M1571	STANDOFF 5/16 X 1/2 X 3 SS
M1652	FBHS BOX MOUNT WELDMENT
M1653	FLOAT SWITCH COUPLER 1/2" X 2" MACHINED
M1658	FBHS PUMP ENCLOSURE PANEL
M1958	"FBHS CONTROLLER BACK PANEL FIBOX AR1010
P1037	TERMINAL BLOCK 2 POS DIN RAIL
P1103	PIPE TEE 1/4 SS
P1110	TERMINAL BLOCK 2 POS GND DIN RAIL
P1111	END STOP TERMINAL BLOCK
P1118	SUPPLEMENTARY PROTECTOR 5A
P1122	POWER SUPPLY 24VDC 60W
P1136	PIPE HEX NIPPLE 1/2 X 1/2 POLY
P1169	DIN RAIL 35mm X 225mm LONG

PART NUMBER	DESCRIPTION
P1172	WIRE DUCT 25X60 X 188mm LONG
P1184	CORD GRIP 1/2 NPT X .095-.260 BLK
P1187	SOLENOID CABLE 18mm DIN 24V
P1202	QUICK FIT ELBOW 3/8 NPT X 3/8" TUBE
P1206	GAUGE 1-1/2" DUAL SCALE
P1207	PIPE PLUG 1/8 SQUARE SS
P1209	QUICK FIT ADAPTER 1/4" NPT X 1/4" TUBE
P1211	QUICK FIT 1/4 NPT X 3/8 TUBE
P1213	MOUNTING BRACKET A33-82
P1214	QUICK FIT 3/8" T JOINT POLYPRO
P1219	QUICK FIT 3/8 NPT X 3/8 TUBE
P1221	QUICK FIT ELBOW 1/4" NPT x 3/8" TUBE
P1267	QUICK FIT BULKHEAD 3/8"
P1270	SHUTOFF/LOCKOUT VALVE 1/4 NPT
P1271	3/8" OD POLYETHYLENE TUBING- NATURAL
P1273	QUICK FIT ADAPTER 1/2" NPT x 1/2" TUBE
P1284	EXTERNAL THREADED FEET 3/4" X 4" 1100 LB.
P1288	POWER CORD 18-3 SO 5-15P
P1302	PIPE NIPPLE 1/4 X 3 SS
P1313	REGULATOR 1/4"
P1317	SWITCH, 2-POS SELECTOR, 2NO, BLK
P1334	JUMPER- 4 POSITION
P1345	PIPE BUSHING 1/2" X 1/8" PP
P1359	QUICK FIT ADAPTER 1/2" NPT X 3/8" TUBE
P1367	2.5 GALLON JUG W/ WALL BRKT
P1397	STRAINER Y 1/2" NPT 316SS 100 MICRON
P1398	PRESSURE REGULATOR WATER 1/2" SS
P1399	PRESSURE GAUGE WRG14
P1405	PIPE CLIP 1/2"
P1408	PIPE NIPPLE 1/2 X 2 SS
P1438	CORD GRIP PG9 X .065-.230 BLK
P1450	PIPE BUSHING 3/4" X 1/2" POLY
P1471	MIST NOZZLE .020 SS FULL CONE WITH CHECK
P1472	PIPE ELBOW STREET 3/4 SS
P1475	BALL VALVE 3/4" SS W/ LOCKING LEVER
P1498	BULKHEAD TANK FITTING 1/2" NPT
P1508	1/4" OD POLYETHYLENE TUBING- NATURAL
P1544	QUICK FIT AIR INLET 1/4" FLOWJET P56
P1562	FLOAT SWITCH SPST PVDF 1/8" NPT
P1564	"WIRE, CONTROL CABLE, 20 AWG, 3-CONDUCTOR, UNSHIELDED, GRAY PVC JACKET"

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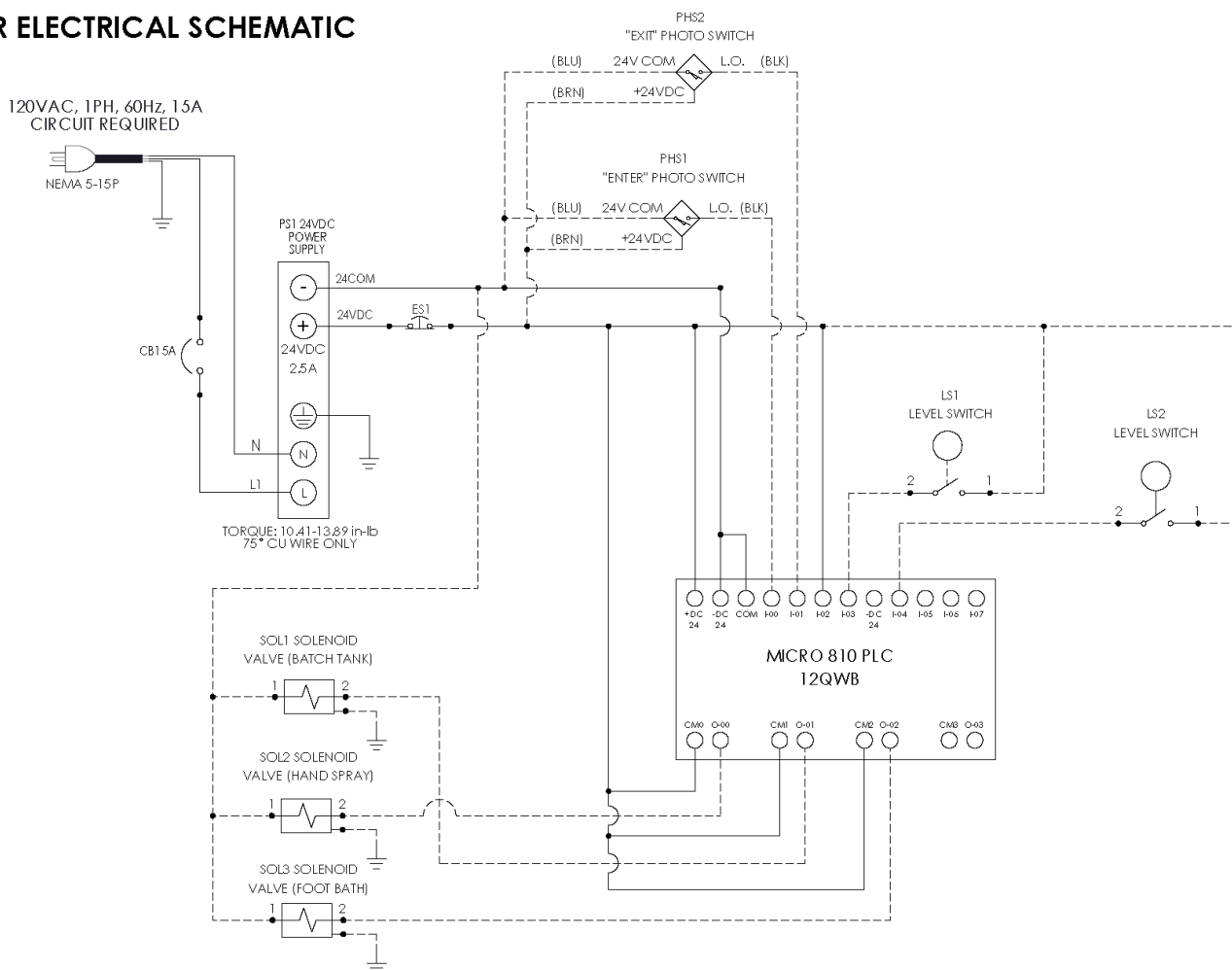


## Appendix A - Parts Callout

PART NUMBER	DESCRIPTION
P1586	ENCLOSURE 10 X 10 X 6 POLY W/ PLASTIC LOCKABLE LATCHES
P1588	MICROCONTROLLER ALLEN BRADLEY MICRO810
P1590	ENCLOSURE 16X13X8 PLASTIC
P1592	VALVE, SOLENOID, 3/8" PP 24VDC DIN COIL
P1595	TANK 3 GALLON RECTANGULAR CONE BOTTOM
P1596	WASHER 5/16 X 1-1/2 X 1/16 NEOPRENE
P1597	PIPE ELBOW 3/8 POLY
P1598	VENTURI INJECTOR DEMA ROCKET, LIGHT GREEN, .098", 2.3GPM AT 100PSI, SINGLE BARB
P1599	METERING TIP, CAPILLARY TUBE
P1600	PIPE BUSHING 1/2 X 3/8 POLY
P1601	FILTER HOUSING 10 INCH
P1602	FILTER 10 INCH 5 MICRON
P1603	QUICK DISCONNECT INLET/OUTLET FOR FLOJET PUMPS 3/8"
P1607	PHOTOELECTRIC SENSOR 18mm
P1764	MARKING TAPE BLACK/YELLOW 2" WIDE, 1 FOOT
P1765	REFLECTOR FOR PHOTOELECTRIC SENSORS 90mm X 40mm
P1856	FLOJET P56 PUMP SANTO
P1945	VENTURI INJECTOR 1/4" SUCTION LINE AND STRAINER
P1958	HOSE CLAMP WORM GEAR SS- 5/16" BAND
P1996	HEAT SHRINK TUBE, MOISTURE SEAL, 3:1 RATIO

READ ALL INSTRUCTIONS BEFORE OPERATING EQUIPMENT

## FBHS-MR ELECTRICAL SCHEMATIC



----- INDICATES FIELD WIRING  
 — — — — — INDICATES MECHANICAL LINKAGE

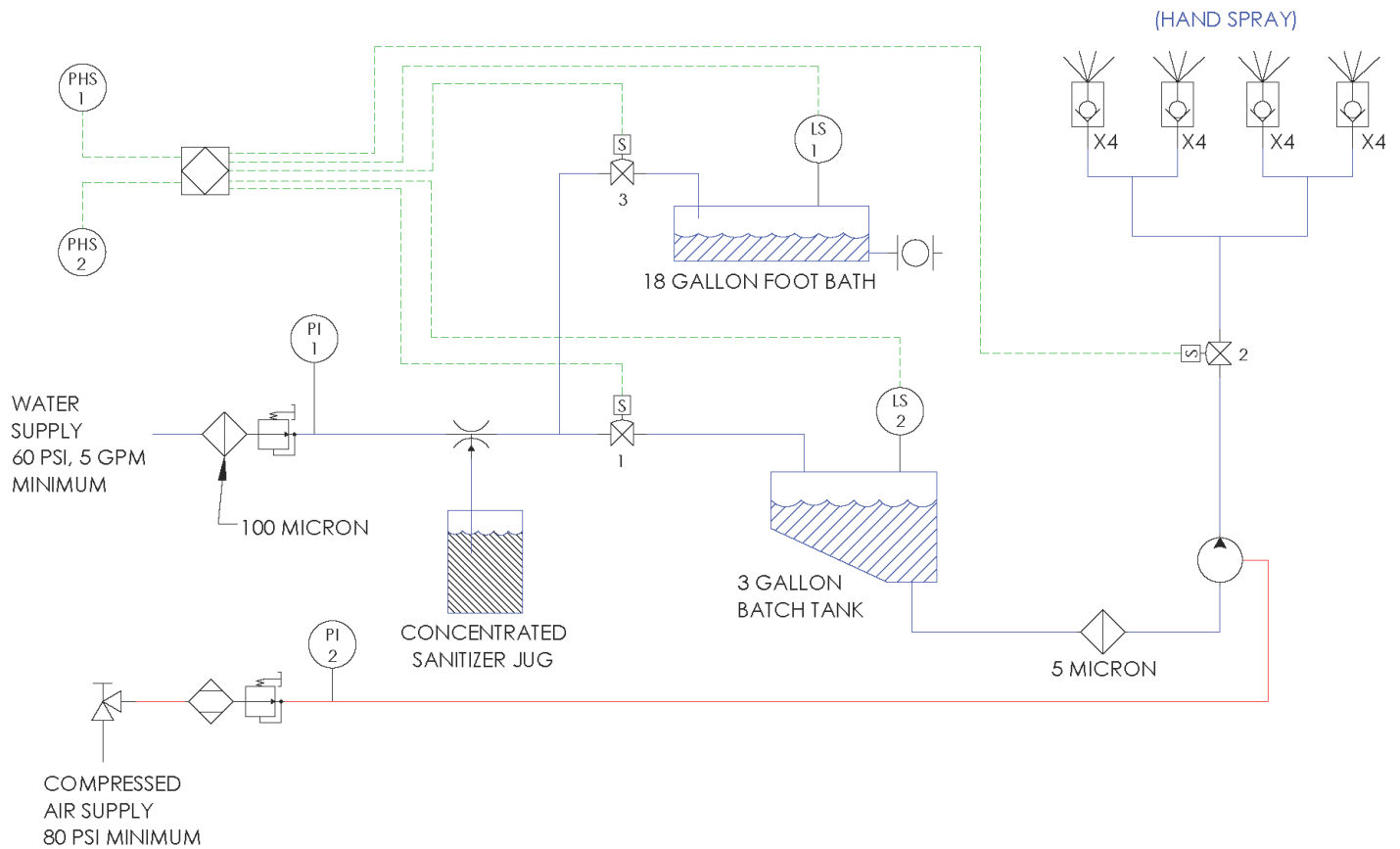
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## Appendix C - P & I Diagram

### FBHS-MR PIPING & INSTRUMENTATION DIAGRAM



AIR DRYER		PRESSURE REGULATOR		PLUMBING	
BALL VALVE, MANUAL		PUMP		COMPRESSED AIR	
RELIEF VALVE, MANUAL		VENTURI INJECTOR		ELECTRICAL	
DIAPHRAGM VALVE, SOLENOID OPERATED		LEVEL SWITCH		ENVELOPE	
FILTER		PHOTO SWITCH			
MIST NOZZLE (W/ ANTI-DRIP CHECK)		PLC			
PRESSURE INDICATOR					