

FoamFill System

Installation and Operation

88

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Form Number: F-2824

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SAFETY

Safety Precautions

- Read and understand all the associated documentation before you begin the installation.
- Read and understand all the notices and safety precautions.
- Be aware that these instructions are only guidelines and are not meant to be definitive. Contact Waterous when you have questions about installing, or operating, or maintaining the equipment.
- Do not install the equipment if you are not familiar with the tools and skills needed to safely perform the required procedures—proper installation is the responsibility of the purchaser.
- Do not operate the equipment when safety guards are removed.
- Do not modify the equipment.
- Regularly check for leaks, worn, or deteriorated parts.

NOTICE

Modification • Modifying the equipment can damage components and void your warranty.

 Do not modify the system or any of its components.



NOTICE

Before Operation

- Read and understand all the instructions provided.
- Check all fluid levels
 and replenish if necessary.
- Remove the all shipping plugs and install the operation plugs or caps.



Use this document to install and operate your Waterous equipment. Understand the following conditions before continuing with the document:

- The instructions may refer to options or equipment that you may not have purchased with your system.
- The illustrations in this document are intended to convey concepts. Do not use the illustrations to determine physical attributes, placement, or proportion.
- Understand that your application may require additional steps, that are not described in the illustrations or instructions, to perform the installation.
- Any equipment described in this document is intended to be installed by a person or persons with the necessary skills and knowledge to perform the installation.
- Any equipment described in this document is intended to be operated by a
 person or persons with the basic knowledge of operating similar equipment.

This document is divided into the following sections:

SAFETY

This section describes general precautions and alert symbols that are in this document.

INTRODUCTION

This section is an overview of the document.

PRODUCT OVERVIEW

This section describes the components that make-up the system.

INSTALLATION

This section describes the installation and initial setup procedures.

OPERATION

This section describes the equipment operation.

SERVICE PARTS

This section describes the service parts.

Using this Document

Use the guidelines below when viewing this document.

Viewing the Document Electronically

- · View this document in landscape orientation.
- Use the table of contents to navigate directly to that section.
- Text with this appearance is linked to a reference.

Printing the Document

- The document is viewed the best when printed in color.
- The *print on both sides* and *flip on long edge* features can provide the best results.
- Use a 3-ring binder to store the document.

SAFETY

INTRODUCTION

PRODUCT OVERVIEW

INSTALLATION

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OPERATION
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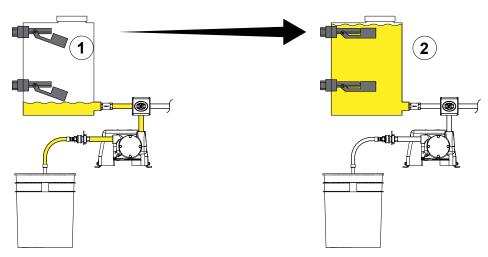
SERVICE PARTS

System Overview

The foam-fill system enables you to fill the foam concentrate-supply tank from a foam concentrate-supply container. Included in this system is a pump and motor assembly, control head, quick connect panel, overboard pick-up hose, flush valve assembly, tank-level sensors, wiring, check valve, and labels. Tank level sensors communicate the concentrate level in the supply tank to the controller. The controller starts and stops the fill pump based on the tank-level sensors and operating mode. The system operates in manual- or auto-fill mode. The system is available with a 3/4 or 1 inch pick-up hose, in brass or stainless steel, and 12 V or 24 V.

Manual-Fill Mode Operation

Use the manual-fill mode to fill the tank. Press the manual button to start the fill pump. The fill pump stops when the tank is full.

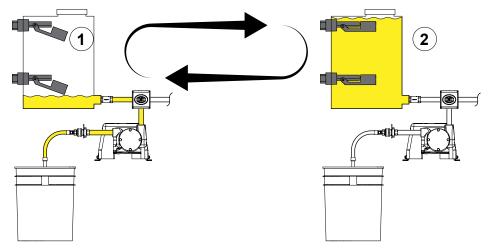


- 1. Start manual-fill mode whenever the supply tank is not full.
- 2. The fill pump stops when the supply tank is full.

Once the supply tank is full, the fill pump stops, and the cycle is completed. To pump additional concentrate into the tank, press and hold the manual button to run the fill pump. Do not overfill the tank.

Auto-Fill Mode Operation

Use the auto-fill mode when on-scene. Press the auto button to enable auto-fill mode. The fill pump starts when the tank level is low. The fill pump stops when the tank is full. This cycle repeats until it is interrupted.

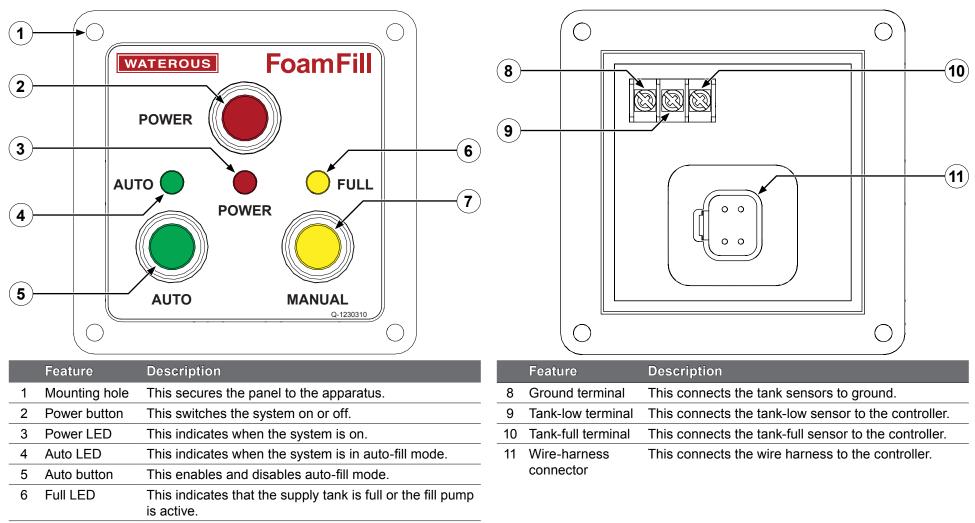


- 1. The fill pump starts when the concentrate level in the tank is low.
- 2. The fill pump stops when the tank is full.

The cycle repeats until the pump runtime expires, manual mode is enabled, or the system is switched off.

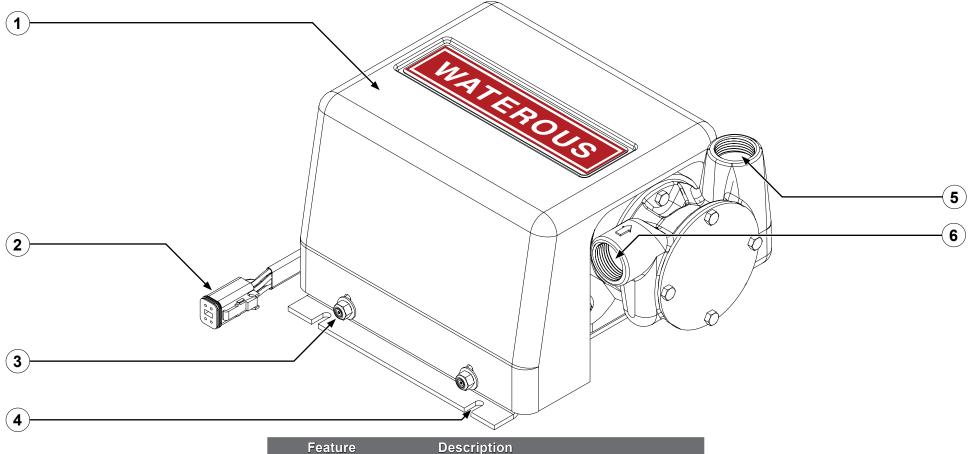
Control Panel

The control panel switches the system on or off, and enables or disables the system functions.



7 Manual button This enables you to manually operate the fill pump.

SAFETY	INTRODUCTION	Product Overview	INSTALLATION	OPERATION	SERVICE PARTS
Fill Pump					
The fill pump transf	ers the foam concentrate from	n the supply container to the supp	oly tank.		
1					



	Feature	Description
1	Cover	This protects the internal components.
2	Fill pump connector	This connects fill pump to the control panel.
3	Cover nut	This secures the cover to the assembly.
4	Base mount	This secures the fill pump to the apparatus.
5	Discharge port	This is the fill pump discharge.
6	Inlet port	This is the fill pump inlet.

SAFETY	INTRODUCTION	PRODUCT OVERVIEW		INSTALLATION	OPERATION	Service Parts
Quick-Conne	ct Panel		Pic	k-Up Hose		
Quick-Connect Panel The quick-connect panel connects the pick-up hose to the fill pump. It is available in brass or stainless steel and for a 3/4 or 1 inch. 1 1 1 1 1 1 1 1 1 1 1 1 1			The pick-up hose transfers concentrate from the supply container to the system. It is available in brass or stainless steel and 3/4 or 1 inch.			
Feature	Description	3	6	Feature	Description	7
		and to the annexative	4			
1 Mounting hole		anel to the apparatus.	4	Quick-connect cap		nector when not in use.
2 Panel-quick c	· · ·		5	Hose-quick connect		-up hose to the system.
3 Quick-connec	ci cap i nis protects the c	onnector when not in use.	6	Hose	For bucket style cor	s available in 2 lengths: ntainer—6 ft (2 m) included. ainer—10 ft (3 m) available.

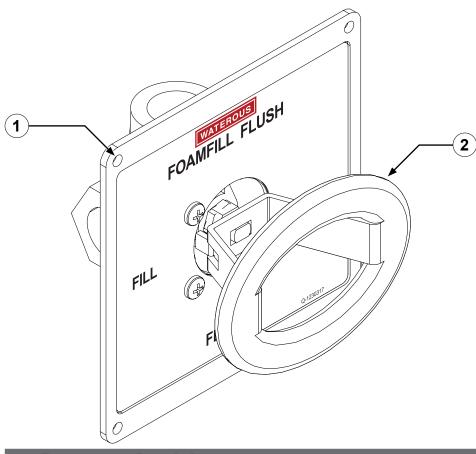
7 Wand

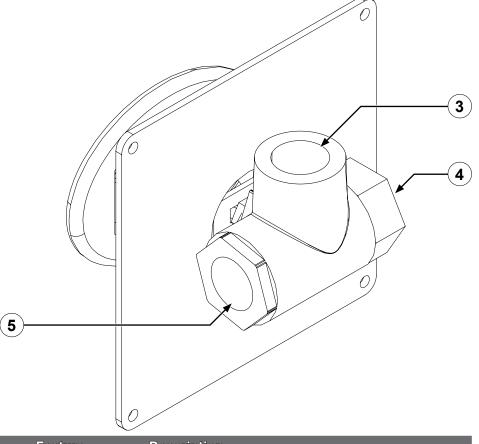
This is inserted into the supply container.

SAFETY	INTRODUCTION	PRODUCT OVERVIEW	INSTALLATION	OPERATION	SERVICE PARTS

Fill/Flush Valve

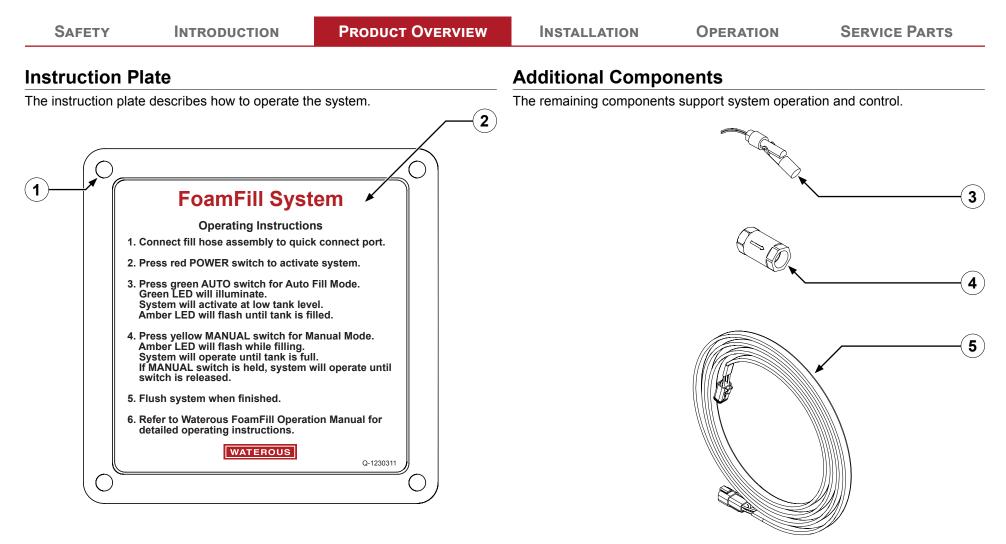
The fill/flush valve directs concentrate to the supply tank or water to the flush hose.





	Feature	Description
1	Mounting hole	This secures the panel to the apparatus.
2	Valve handle	This operates the valve.

	Feature	Description
3	Valve inlet port	This connects to the fill pump discharge port.
4	Fill output port	This connects to the concentrate-supply tank.
5	Flush output port	This connects to the flush hose.



	Feature	Description		Feature	Description
1	Mounting holes	These secures the panel to the apparatus.	3	Tank-level sensor	· · · · · · · · · · · · · · · · · · ·
2	Instruction label	This plate instructs how to use the system.			The system includes 2 sensors, 1 for tank full and 1 for tank low.
			4	Check valve	This prevents concentrate from reversing the flow

direction.

This connects the control panel and fill pump.

5

Wire harness

Installation Overview

This equipment is intended to be installed by a person or persons with the basic knowledge of installing similar equipment. Contact Waterous with questions about installing the equipment. The installation may require the following tasks and abilities:

- Locating, drilling, and cutting features into the apparatus.
- Routing and securing the hoses.
- Connecting the hoses and fittings.
- Routing and securing the wiring. Programming and final testing.
- Preparing for the Installation

Read and understand all the installation instructions before installing the equipment. Prepare a suitable, well-lit area, and gather all the necessary tools before you begin the installation.

Modifying the Equipment

This equipment is intended to operate as designed. Do not remove, modify, or change the components in the system. Doing so will void the warranty. Contact Waterous for more information.

NOTICE

Modification

- Modifying the equipment can damage components and void your warranty.
- Do not modify the system or any of its components.

Do not modify the system or any components. Doing so will void your warranty.



Use the following guidelines to determine a location to mount the fill pump:

- Consider the hose and cable routing.
- Consider accessibility for maintenance.
- Mount the fill pump where it has minimal exposure to excessive dirt, road debris, and heat buildup.
- Mount the fill pump in a location and orientation that enables you to drain the system during freezing temperatures.

Determining the Panel, Plate, Valve, and Connection Locations

Use the following guidelines to determine a location to mount the control panel, instruction panel, plate, flush valve, and quick-connect panel location:

- Consider the wire harness and hose routing.
- Consider accessibility during operation and maintenance.
- Install instruction plates near their applicable operator panels.

Determining Hose Routing

Use the following guidelines when routing the hoses:

- Route the hose in a straight line whenever possible.
- Do not pinch or kink the hose.
- Do not secure the hose to moving parts.
- Do not secure the hose near excessive heat.

Determining Cable and Wire Routing

Use the *Wiring Best Practices* document, available at <u>www.waterousco.com</u>, as a guide to select and route wiring for your application.

SAFETY	INTRODUCTION	PRODUCT OVERVIEW	INSTALLATION	OPERATION	SERVICE PARTS
Hose Conne	ctions Overview				
	2 3 4	5 6	7	Use the illustration to i between the compone	dentify the hose connections nts.
				1 Pick-up hose	
				2 Quick-connect par	nel
				3 Quick connect to f	ill pump hose
				4 Fill pump	
				5 Fill pump to fill/flue	sh-valve hose

6 Fill/flush valve

7 Concentrate-supply tank

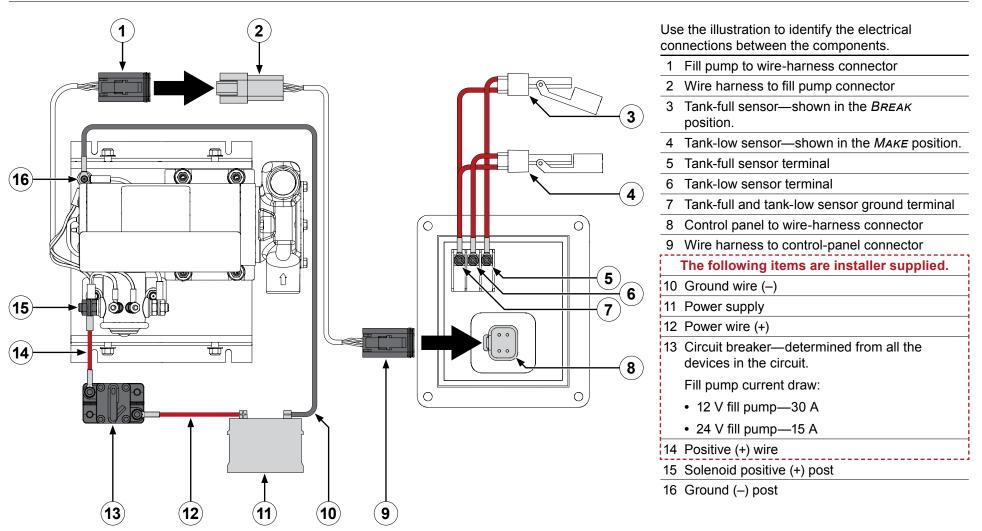
8 Flush hose

9 Fill/flush valve to supply-tank hose

10 Check valve

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Electrical Connections Overview



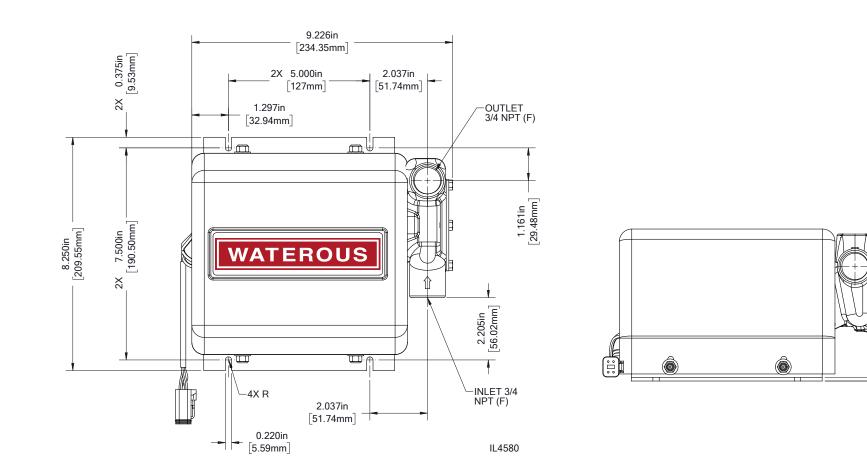


1.142in [29mm]

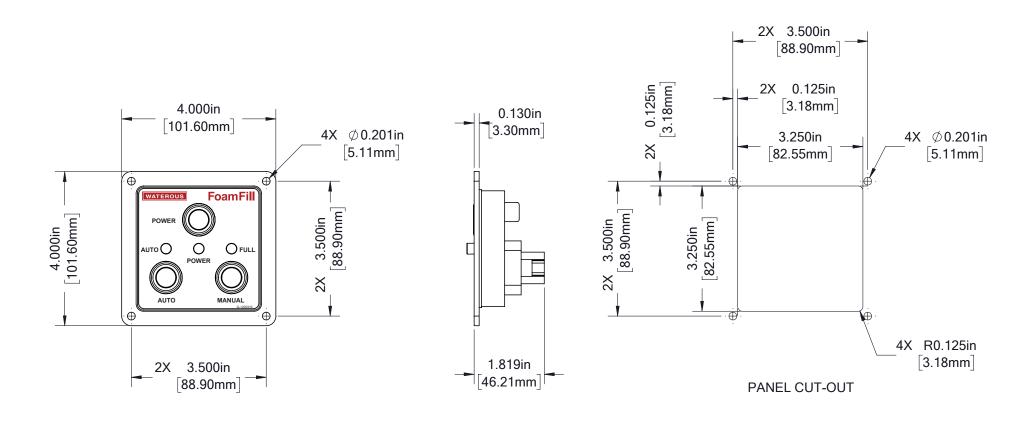
> 5.20in [132.03mm]

2X 0.125in

[3.18mm]



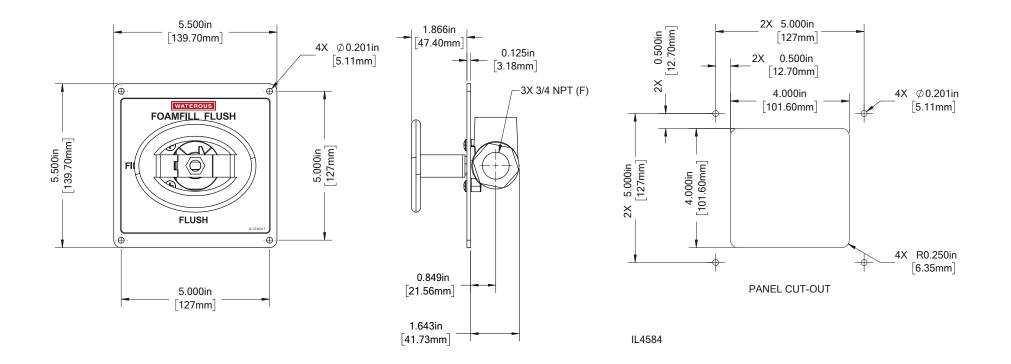




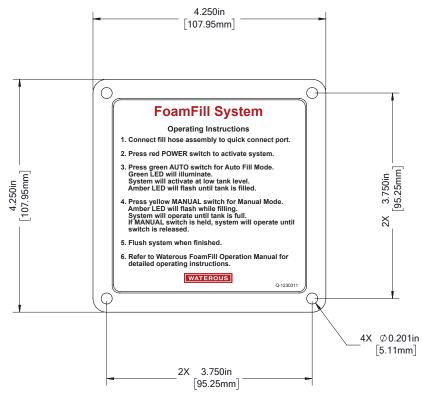
IL4581



Fill/Flush Valve Dimensions

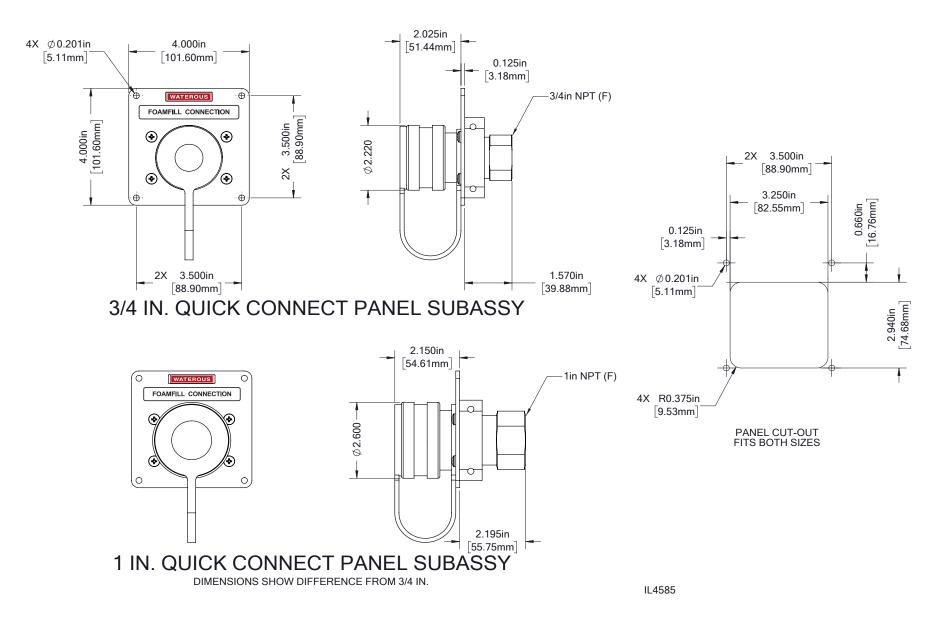


Instruction Plate Dimensions

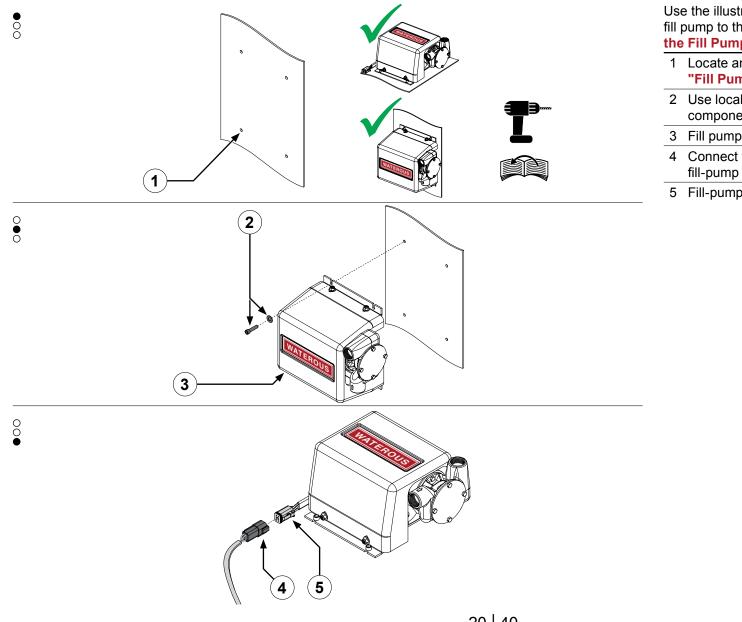


IL4586

Quick Connect Panel Dimensions



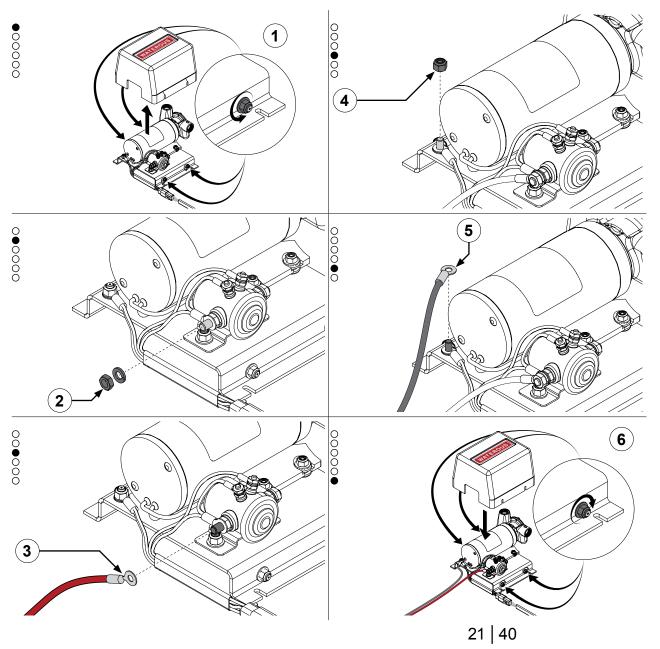
Installing the Fill Pump Assembly



Use the illustrations and instructions to install the fill pump to the apparatus. Refer to: "Determining the Fill Pump Location" on page 12

- 1 Locate and drill the mounting holes. Refer to: "Fill Pump Dimensions" on page 15
- 2 Use locally sourced hardware to secure the component to the apparatus.
- 3 Fill pump assembly
- 4 Connect the wire-harness connector to the fill-pump connector.
- 5 Fill-pump connector

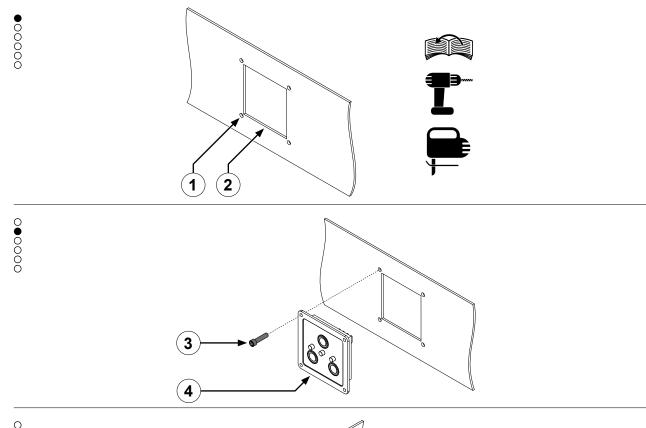
Connecting Power to the Fill Pump



Use the illustrations and instructions to install the fill pump. Refer to the *Wiring Best Practices* document or contact Waterous for more information. Proper wire selection is the responsibility of the installer.

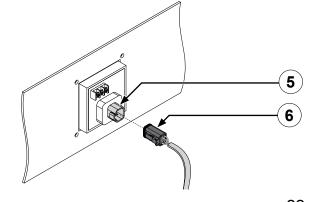
- 1 Loosen the nuts, remove and set aside the cover.
- 2 Remove and set aside the nut and washer on the solenoid power (+) post.
- 3 Install and secure the power (+) wire to the post using the hardware that you set aside.
- 4 Remove and set aside the nut and washer on the ground (–) post.
- 5 Install and secure the ground (–) wire to the post using the hardware that you set aside.
- 6 Install and secure the cover to the base.

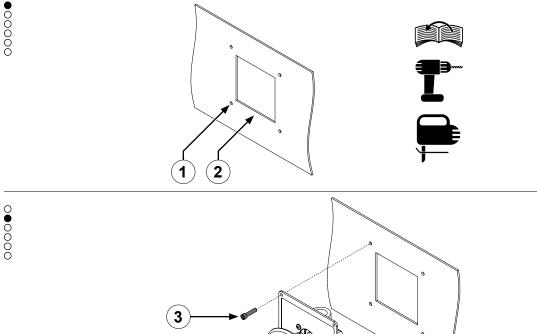
Installing the Control Panel



Use the illustrations and instructions to install the control panel to the apparatus. Refer to: "Determining the Panel, Plate, Valve, and Connection Locations" on page 12

- 1 Locate and drill the mounting holes. Refer to: "Control Panel Dimensions" on page 16
- 2 Locate and cut the cutout. Refer to: "Control Panel Dimensions" on page 16
- 3 Use locally sourced hardware to secure the component to the apparatus.
- 4 Control panel
- 5 Control-panel connector
- 6 Plug the wire-harness connector into the control-panel connector.





4

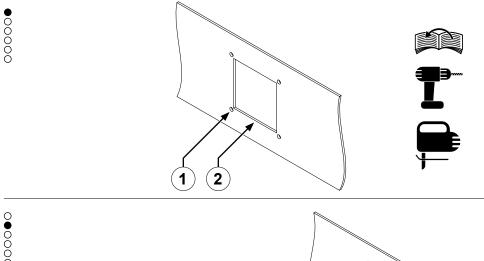
Use the illustrations and instructions to install the fill/flush valve to the apparatus. Refer to: "Determining the Panel, Plate, Valve, and Connection Locations" on page 12

- 1 Locate and drill the mounting holes. Refer to: "Fill/Flush Valve Dimensions" on page 17
- 2 Locate and cut the cutout. Refer to: "Fill/Flush Valve Dimensions" on page 17

3 Use locally sourced hardware to secure the component to the apparatus.

4 Fill/flush valve assembly

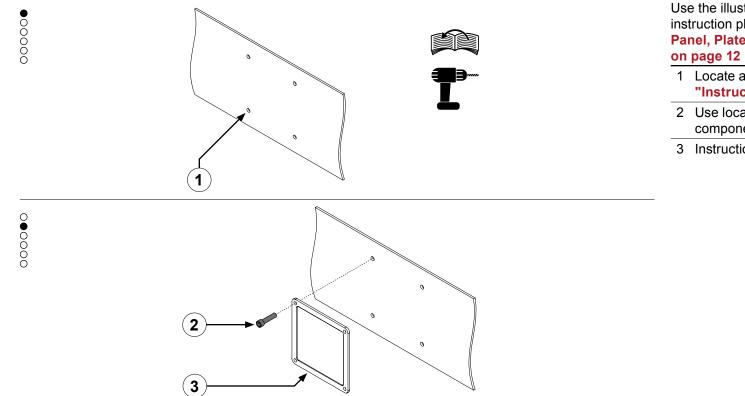
Installing the Quick-Connect Panel



Use the illustrations and instructions to install the quick connect panel to the apparatus. Refer to: "Quick Connect Panel Dimensions" on page 19

- 1 Locate and drill the mounting holes. Refer to: "Quick Connect Panel Dimensions" on page 19
- 2 Locate and cut the cutout. Refer to: "Quick **Connect Panel Dimensions**" on page 19
- 3 Use locally sourced hardware to secure the component to the apparatus.
- 4 Quick-connect panel

Installing the Instruction Plate



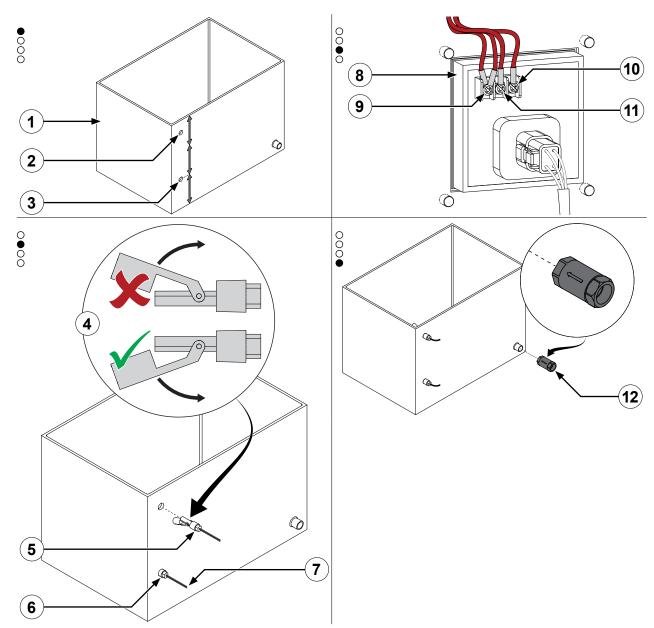
Use the illustrations and instructions to install the instruction plate. Refer to: "Determining the Panel, Plate, Valve, and Connection Locations"

- 1 Locate and drill the mounting holes. Refer to: "Instruction Plate Dimensions" on page 18
- 2 Use locally sourced hardware to secure the component to the apparatus.

3 Instruction plate

25 | 40

Installing the Tank-Level Sensors and Check Valve

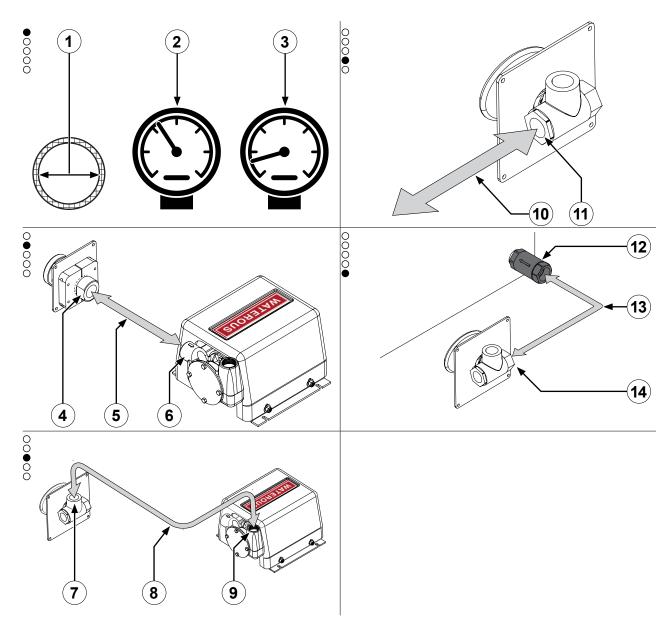


Use the illustrations and instructions to install the check valve and the tank-level sensors to the supply tank, and connect them to the sensors to control panel. Refer to: "Electrical Connections Overview" on page 14.

- 1 Supply tank—installer supplied.
- 2 Tank-full hole—installer located and drilled if not featured in the supply tank.
- 3 Tank-low hole—installer located and drilled if not featured in the supply tank.
- **Note:** The tank-low sensor is typically located to MAKE (trigger) when the tank is at 1/3 capacity.
- 4 Install the tank sensors into the tank so that the floats hinge downward.
- 5 Install the tank-full sensor into tank.
- 6 Install the tank-low sensor into tank.
- 7 Connect extension wires to the sensor-wire leads. The extension wire is installer supplied or is available through Waterous.
- 8 Connect the extension wires to the control panel.
- 9 Connect 1 extension wire from each sensor to the ground terminal.
- 10 Connect the remaining extension wire from the tank-full sensor to the tank full-sensor terminal.
- 11 Connect the remaining extension wire from the tank-low sensor to the tank low-sensor terminal.
- 12 Install the check valve on the supply tank.

Note: Use the arrow on the check valve to determine the flow direction.

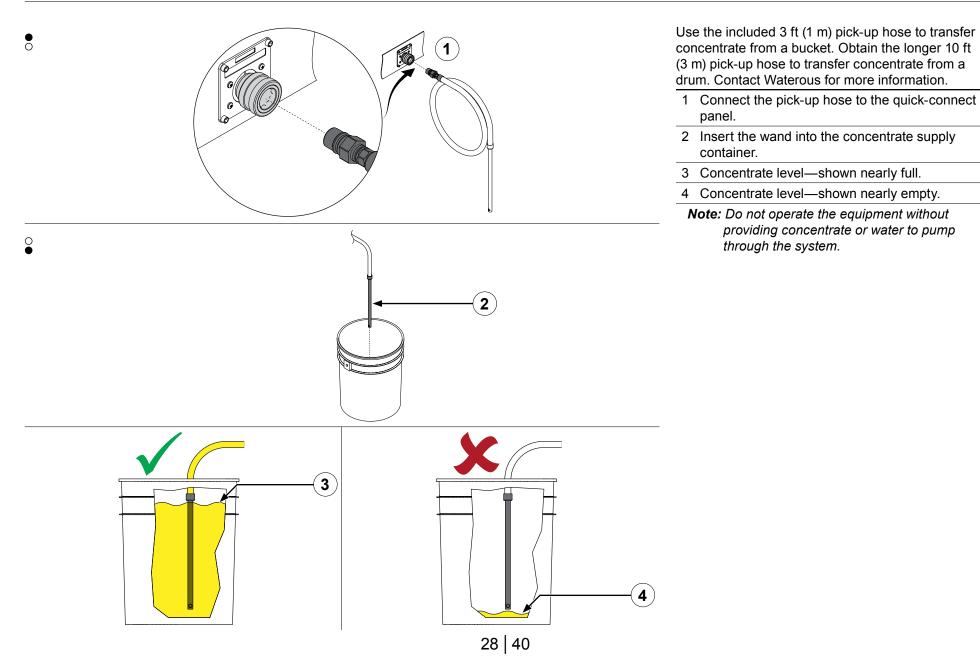
Installing the Hose Lines



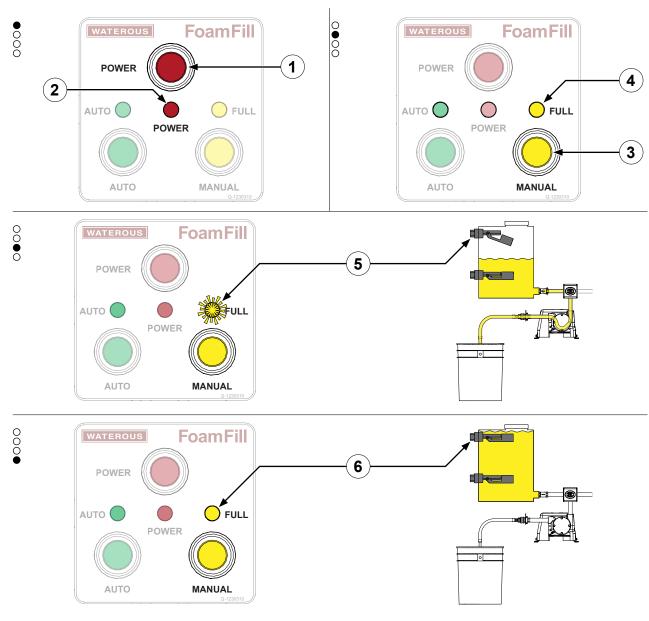
Use the illustrations and instructions to install the hoses. Refer to: "Hose Connections Overview" on page 13 for more information. Use locally source hoses and fittings that are appropriate for your application.

- 1 Use a hose with minimum 3/4 inch inner diameter, reinforced clear wall, as required by NFPA.
- 2 Use a hose with a minimum pressure rating of 50 psi (3.45 bar).
- 3 Use a hose with a minimum vacuum rating of 23 inHg (0.78 bar).
- 4 Quick-connect panel.
- 5 Hose from the quick connect to the fill pump.
- 6 Fill pump inlet port
- 7 Fill/flush valve inlet port
- 8 Hose from the fill pump to the fill/flush valve.
- 9 Fill pump discharge port
- 10 Hose from flush port to the apparatus exterior.
- 11 Flush port
- 12 Check valve inlet
- 13 Hose from the fill/flush valve to the check valve.
- 14 Fill port

Connecting the Pick-Up Hose



Operating in Manual-Fill Mode



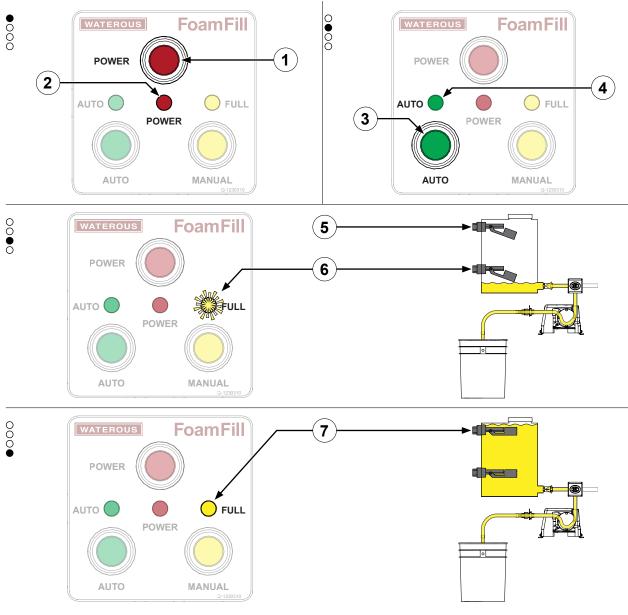
Use the manual-fill mode to fill the concentratesupply tank. Make sure that the fill/flush valve is in the fill position. Press the manual button to start the fill pump. The fill pump stops when the tank is full.

- 1 Press the power button to switch on the system.
- 2 The illuminated power LED indicates the system is switched on.
- 3 Press the manual button the start the fill pump.
- 4 The illuminated full LED indicates the tank-full sensor is in the *MAKE* position and the tank is full.
- 5 The blinking full LED indicates the tank-full sensor is in the *BREAK* position (the tank is not full) and the fill pump is running.
- 6 The fill pump stops when the tank-full sensor switches to the *MAKE* position or after 7 minutes of continuous runtime.

Once the tank is full, press the power button to switch off the system, or press the auto button.

Note: Press and hold the manual button to run the fill pump when the tank-full sensor is in the MAKE position. Do not fill the tank beyond capacity.

Operating in Auto-Fill Mode



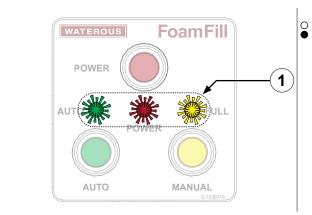
Use the auto-fill mode when on-scene. Make sure that the fill/flush valve is in the fill position. Press the auto button to enable auto-fill mode. The fill pump starts when the tank level is low. The fill pump stops when the tank is full. This repeats until the cycle is interrupted.

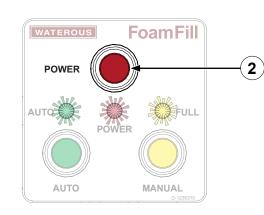
- 1 Press the power button to switch on the system.
- 2 The illuminated power LED indicates the system is on.
- 3 Press the auto button to enable the auto-fill mode.
- 4 The illuminated auto LED indicates the auto-fill mode is enabled.
- 5 Tank-full sensor switches to the *BREAK* position and switches off the full LED.
- 6 Tank-low sensor switches to the *BREAK* position, the fill pump starts, and the full LED blinks.
- 7 Tank-full sensor switches to the *MAKE* position, the fill pump stops, and the full LED is illuminated.

Note: Do not run the fill pump without providing concentrate or water to pump through the system.

Automatic Shutoff

 $\overset{\bullet}{\circ}$



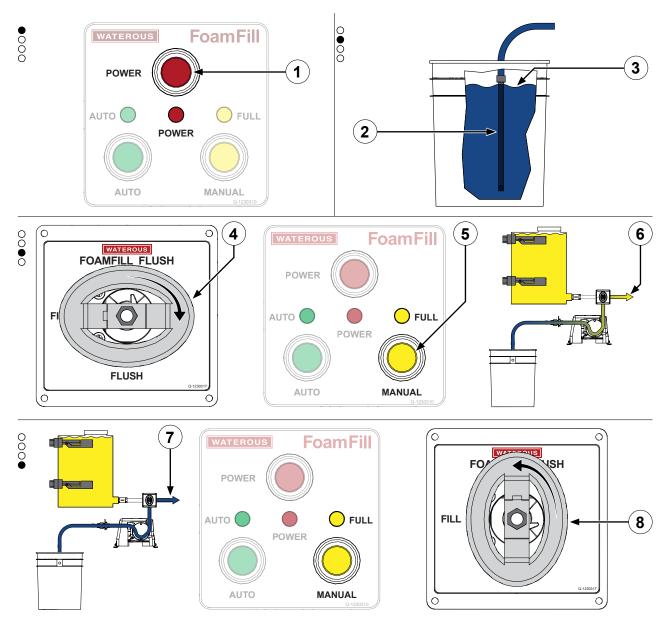


The system automatically stops the fill pump when it runs for 7 minutes without the tank-full sensor switching to the *MAKE* position.

- 1 Automatic shutoff is indicated by the auto, power, and full LEDs blinking simultaneously.
- 2 Press the power button off, and then on, to reset the system.

Note: Do not run the fill pump without providing concentrate or water to pump through the system.

Flushing the Fill Pump



You must flush the fill pump under certain conditions. The environment, the concentrate used, and other factors determine if, or when, you need to flush the foam pump. Refer to the recommendation by the concentrate manufacturer to create a protocol for your application.

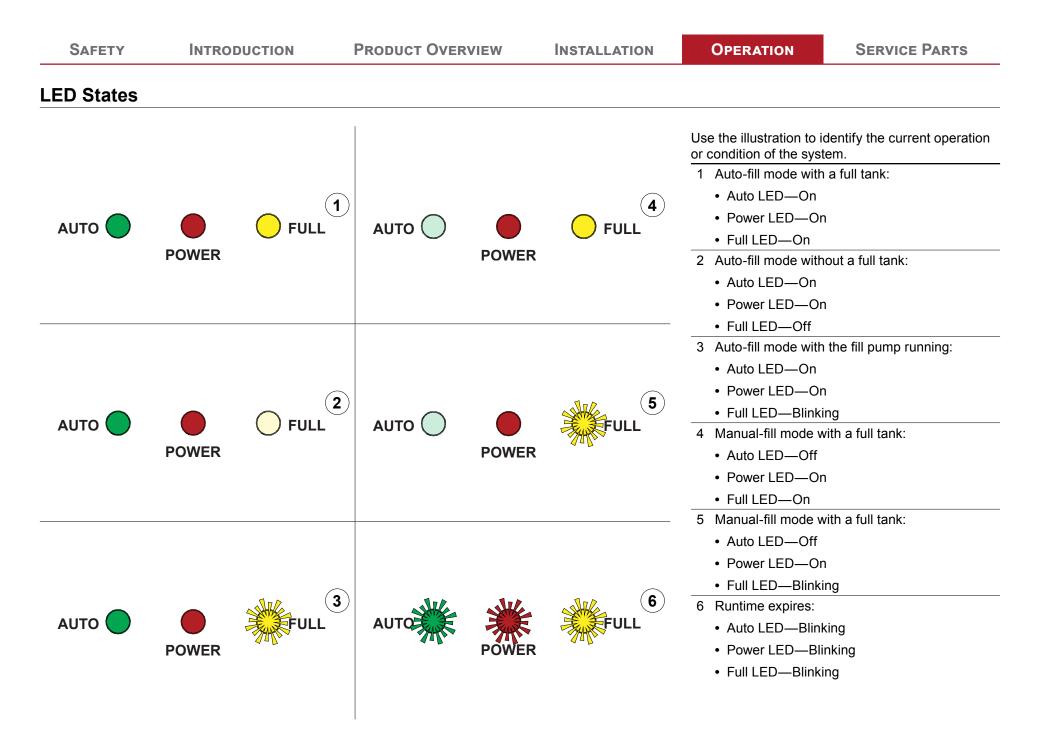
- 1 Press the power button to switch on the system.
- 2 Insert the wand into the container.
- 3 Make sure that you have an adequate supply of water to flush the pump.
- 4 Rotate the valve to the flush position.
- 5 Press the manual button.

Note: If the full LED is illuminated, you must press and hold the manual button until the concentrate is flushed from the system. If the LED is not illuminated, pressing the button will run the fill pump for 7 minutes before automatically stopping the fill pump.

6 Monitor the discharge during the flush procedure.

7 Continue pumping until the concentrate is flushed from the pump.

8 Rotate the valve to the fill position after you are finished.

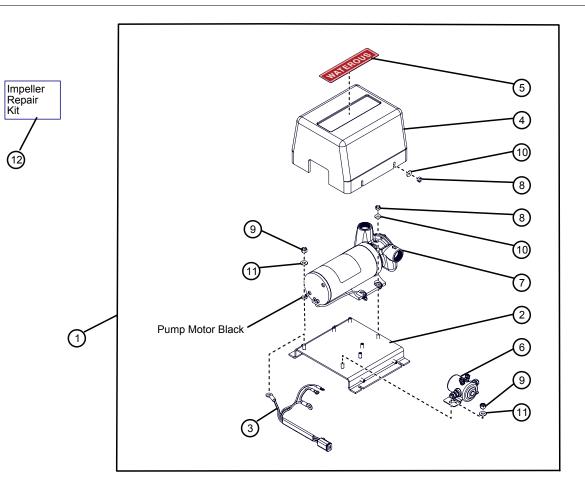


SAFETY	IN	TRODUCTION	PRODUCT OVERVIEW	INSTALLATION	OPERATION	SERVICE PARTS
in Compo	onents					
<u></u>	NO.	DESCRIPTION				
	1		ubassembly, FoamFill			
	20	Control Head Suba				
	30		nel Subassy 3/4 or 1 inch			
	40		ubassembly 3/4 or 1 inch	(61)		
	50	Fill/Flush Valve Su			`	
	60	Harness-Wire, 10 f			\mathbf{i}	
	61	Valve-Check, 3/4 F		(50)		
	62	Tank-Level Switch			U1ª	
	64	Plate-FoamFill Inst				
		(1				40)

SPL83438

SAFETY	INTRODUCTION	PRODUCT OVERVIEW	INSTALLATION	OPERATION	SERVICE PARTS

Fill Pump Components



SPL83438

NO.	DESCRIPTION
1	Motor and Pump Subassembly, FoamFill
2	Plate-Mounting, FoamFill Pump
3	Wire Harness, Pigtail (FoamFill)
4	Foamfill System Cover
5	Label-Waterous, 1.5 X 6.0 inches
6	Solenoid
7	Fill Pump

NO.	DESCRIPTION
8	Locknut #10-32
9	Locknut 1/4-20 inch
10	Washer #10
11	Washer 1/4 inch
12	Impeller Repair Kit

Control Panel and Wire Harness

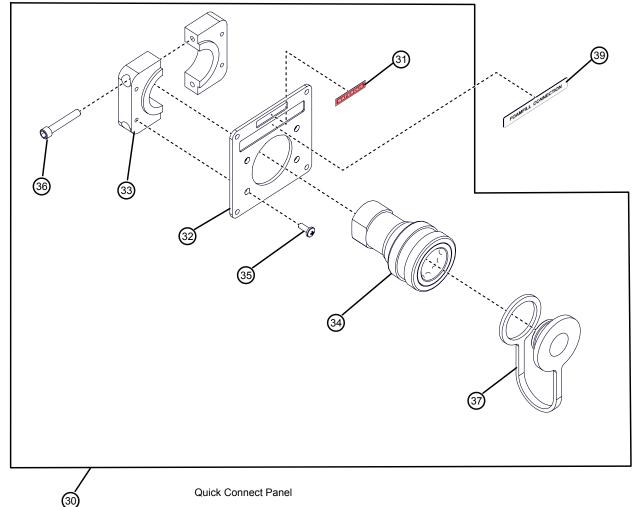


NO. DESCRIPTION Control Head Subassembly, FoamFill Harness-Wire, 10 ft (3 m)

SPL83438

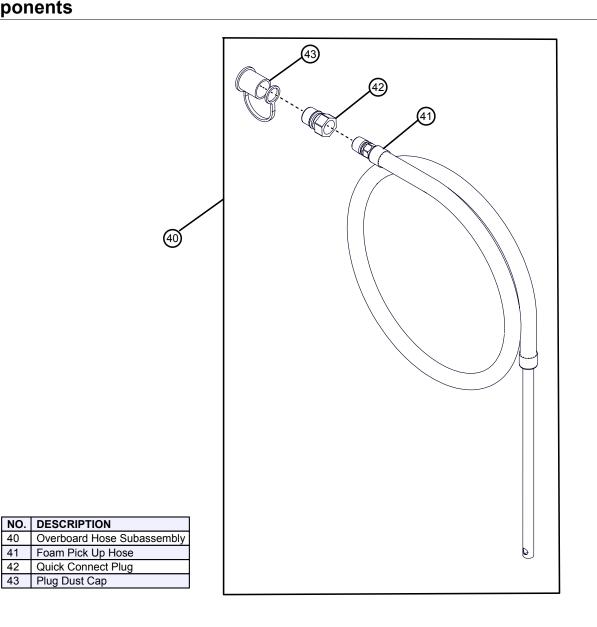
Quick-Connect Panel Components

NO.	DESCRIPTION	NO.	DESCRIPTION
30	Quick Connect Panel Subassy 3/4 or 1 inch	35	Screw 10-32 x 1/2 inch
31	Label-Waterous, .300 X 1.485	36	Screw 1/4-20 x 1-1/2 inches
32	Plate-Quick Connect Refill/Overboard	37	Socket Dust Cap
33	Clamp Collar, 3/4 or 1 inch Quick Connect	39	Label-FoamFill Connection
34	Quick Connect Socket		



SAFETY	INTRODUCTION	PRODUCT OVERVIEW	INSTALLATION	OPERATION	SERVICE PARTS

Pick-Up Hose Components



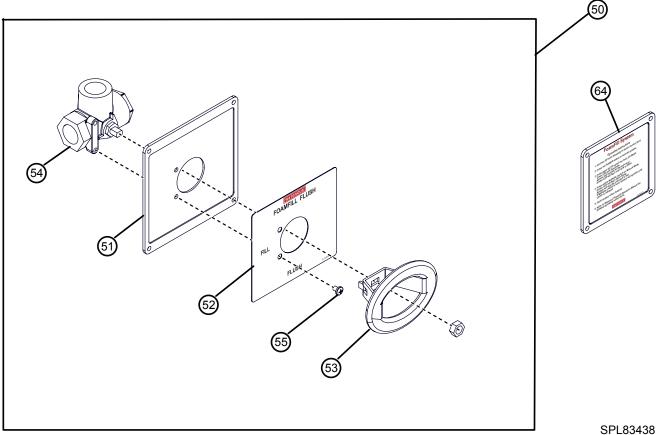
Overboard Pick-Up Hose

INSTALLATION

Fill/Flush Valve Components and Instruction Plate

NO.	DESCRIPTION
50	Fill/Flush Valve Subassembly
51	Refill Flush Valve Plate
52	Label-Flush (FoamFill)
53	Handle Oval, SS, H-3032-0

NO.	DESCRIPTION
54	Valve-3 Way, 3/4 FNPT, Brass
55	Screw 10-24 x 1/4 inch
64	Instruction Panel Plate



Fill/Flush Valve and Instruction Plate

WATEROUS

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