Blue-White®

Operating Manual

FLEXFLO®

Peristaltic Metering Pump



A1

READ THE ENTIRE OPERATING MANUAL PRIOR TO INSTALLATION AND USE.

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Table of Contents

1.0 Introduction . . . 5
1.1 Features . . . 5
1.2 What's in the Box? . . . 6
1.3 Storage and Handling . . . 6
1.4 Product Matrix . . . 7
1.5 Application Guides . . . 7
1.6 Accessories and Options . . . 8
2.0 Engineering Specifications . . . 9
2.1 Output Specifications . . . 10
2.2 Materials of Construction . . . 10
2.3 Dimensions . . . 11
2.4 Viscosity Curves . . . 11
2.5 Suction Lift . . . 11
3.0 Installation . . . 12
3.1 Safety . . . 12
3.2 Mounting Location and Installation Requirements . . . 13
3.3 Wall Mounting . . . 14
3.4 Input Power Connection . . . 15
3.5 Pump Side View - Signal Wiring Connections (A1C) . . . 15
3.6 External Signal Wiring - "C" Control Model Only . . . 16
3.7 A12 Connection Guide - "C" Control Model Only . . . 17
4.0 Controls and Set-up . . . 18
4.1 Touchpad Layout "B" Base Model . . . 18
4.2 Touchpad Layout "C" Control Model . . . 19
4.3 Programming . . . 20
4.3.1 Remote Start/Stop ("C" Control model only) . . . 20
4.3.2 Programming FVS (Flow Verification Sensor) ("C" Control model only) . . . 21
4.3.3 Pump Lockout . . . 22
4.3.4 4-20mA Input ("C" Control model only) . . . 23
4.4 Outputs ("C" Control model only) . . . 24
4.4.1 4-20mA Output . . . 24
4.4.2 Motor Active Output . . . 24
4.4.3 TFD or FVS Alarm Output . . . 24
5.0 Operation . . . 25
5.1 Priming the Pump . . . 25
5.2 Manual Speed/Flow Adjust . . . 26
5.3 4-20 mA Input Speed Adjust ("C" Control model only) . . . 27
5.4 Calibration . . . 28
5.5 TFD+ (Tube Failure Detection) . . . 29
6.0 Maintenance . . . 30
6.1 Routine Inspection and Maintenance . . . 30
6.2 How to Clean the Pump . . . 30
6.3 Tube Replacement & Tube Care . . . 31
6.3.1 Tube Care and Use Guide . . . 31
6.3.2 Tube Replacement . . . 32
7.0 Parts and Accessories . . . 34
7.1 Replacement Parts List . . . 34
7.2 Replacement Tubing . . . 35
7.3 Accessories . . . 36
8.0 Troubleshooting . . . 38
9.0 System . . . 39
9.1 Updating the Firmware . . . 39
10.0 Warranty . . . 41

SAFETY INFORMATION

Please read this manual completely before unpacking, installing, and operating this equipment. In particular, pay attention to all dangers, warnings, and precautions, otherwise, it may cause serious injury to the operator or damage to the equipment.

Symbol	Description
	Warning (Risk of electric shock)
	Caution (Refer to the user's guide)
	Ground, Protective Conductor Terminal

Note: When in doubt regarding your electrical installation, contact a licensed electrician.

AGENCY LISTINGS

This pump is ETL listed to conforms to the following: UL Standard 778 as a motor operated water pump. CSA Standard C22.2 as process control equipment.

This pump complies to the Machinery Directive 2006/42/EC, BS, EN 60204-1, Low Voltage Directive 2014/35/EU BS EN 61010-1, EMC Directive 2014/30/EU, BS EN 50081-1/ BS EN 50082-1.

1.0 Introduction

Congratulations on purchasing the A1 Peristaltic Metering Pump!

The A1 pump is designed to inject chemicals into piping and process systems. The A1 is capable of pumping a variety of chemicals and solutions.

The A1 pump is a sophisticated yet simple peristaltic metering pump capable of pumping near continuous uniform flow with minimal pulsation. The speed of the pumping mechanism is adjustable from .05% through 100%.

The A1 pump is available with two control options:

Digital Control - (Model A1C) Includes digital interface, 4-20ma input, Remote Start/Stop Input, 4-20ma output, and output alarm I/O for motor active, and TFD/FVS functions.

Base Control - (Model A1B) Includes digital pump speed display and manual speed control via touchpad. No I/O.

Note: Your new pump has been pressure tested at the factory with clean water before shipping. You may notice trace amounts of clean water in the pump head.

1.1 Features

- Peristaltic flow for smooth, nearly pulse-less metering.
- Excels with off-gassing chemicals such as Peracetic Acid (PAA), Hydrogen Peroxide, Aqueous Ammonia, and Sodium Hypochlorite.
- Self-priming, vapor-lock resistant, with up to 30 ft. suction lift.
- Three tubing options available: Flex-A-Prene®, Flex-A-Thane®, and Flex-A-Chem®.
- Simple user interface.
- Convenient M12 Connectors (IP67) for Input/Output Communications.
  (M12 cables ordered separately)
- Multiple tube connection types: 1/4” x 3/8” tube compression, ½” male NPT, or 1/2” BSPT.
- Innovative wall-mount bracket snaps pump securely into place.
- Lockout features prevent tampering.
- Intuitive display for output adjustment, priming, and control modes.
- Heavy-duty UV shield protects display in harsh environments.
- Built-in Leak Detection (TFD): senses tube failure and automatically shuts down.

1.2 What's in the Box?

Your pump package will contain the following:

A1 Support Hub

- A1 pump with polycarbonate display cover
- 2 pump tubes (1 installed, 1 spare)
- 5 ml Silicon Oil bottle (70000-277)
- Power cord (if ordered)
- Mounting Bracket (90002-685)
- Foot Strainer (90002-200 with "T" connection, 71000-824 with "M" connection")
- Ceramic tubing weight (90008-068 with "T" type connector only)
- Injection fitting with internal back-flow check valve (71000-551/A-014NK-6A with "T" connection, 71000-767 with "M" connection")
- Suction Tubing, 5 ft (90008-116) and Discharge Tubing, 5 ft (76000-168) (with "T" type connector only)
- Mounting Screws and Washers
- Quick Start Guide

Note: Alternate injection fittings and longer lengths of tubing available in Accessories section.

1.3 Storage and Handling

The A1 Peristaltic Pump is shipped to withstand standard shipping methods. If your pump has arrived with damaged packing, note damage and check contents immediately.

Contact factory if pump or components have sustained damage. Shipping damage is not covered under warranty and will be addressed according to Blue-White freight terms and policy.

If the pump will not be installed at time of arrival, store the pump in original packaging indoors in an air conditioned environment. Do not store pump in excessive heat or freezing temperatures, or in environments with high humidity. Do not stack other boxes or equipment on top of the pump/packaging/box.

When preparing to install pump, keep it away from excess dust or unusual chemical/moisture exposure. Do not drop the pump or handle in such a way as to cause high impact. Always handle pump with care.

If there is any question about how to store or handle the pump and accessories, please contact the factory or authorized service center for assistance customerservice@blue-white.com (714) 893-8529.

1.4 Product Matrix

Model Number Matrix

A1

FLEXFLO® Model Number

A1	FLEXFLO® Peristaltic Metering Pump

Series

B	Base = Manual Speed Control (No I/O)
C	Control = 4-20mA Input, 4-20mA Output, Manual Speed Control, Remote Start/Stop Input, Outputs (TFD, FVS, Motor)

Power Cord (Operating voltage requirement 96VAC to 264VAC)

4	115V 50/60Hz, NEMA 5/15 plug (US)	**6**	220V 50/60Hz, CEE 7/V11 plug (EU)	**X**	No Power Cord

Pump Tube Size and Material

1	1/4” OD Flex-A-Thane® | 0.001 – 1.09 GPH | .035 - 69 mL/Min | 65 PSI (4.5 bar)
3	7/16” OD Flex-A-Thane® | 0.003 – 5.60 GPH | .176 - 353 mL/Min | 50 PSI (3.45 bar)
4	1/4” OD Flex-A-Prene® | 0.001 - 0.44 GPH | .014 - 28 mL/Min | 100 PSI (6.89 bar)
6	3/8” OD Flex-A-Prene® | 0.001 – 1.35 GPH | .043 - 85 mL/Min | 100 PSI (6.89 bar)
7	7/16” OD Flex-A-Prene® | 0.002 – 4.17 GPH | .132 - 263 mL/Min | 50 PSI (3.45 bar)
8	7/16” OD Flex-A-Chem® | 0.002 – 3.09 GPH | .098 - 195 mL/Min | 50 PSI (3.45 bar)

Inlet/Outlet Connection Size, Connection Type

T	3/8" OD x 1/4" Tube Compression Fitting
M	1/2" Male NPT Fitting
MB	1/2” Male BSPT Fitting, Natural PVDF (Kynar)

A1	**B**	**4**	**-**	**1**	**T**	**Sample Model Number**

1.5 Application Guides

For assistance with correct use of pump for your application, please contact our factory for assistance. Additionally, resources are available on our website to assist with application review.

Chemical Resistance Guides - Charts include most common chemicals compatibility with tubing. www.blue-white.com/resources/tubes-and-chemical-compatibility/

Viscosity Effects - Learn how viscosity can affect pump performance. www.blue-white.com/article/achieving-successful-dosing-of-viscous-or-abrasive-chemicals/

Suction Lift - Learn how suction lift can affect pump performance. www.blue-white.com/bw-videos/bwa-suction-lift-explained-the-key-to-pump-performance/

Other concerns - Visit our Help Center where you can review specific information about the A-100N pump and ask Oswald AI Chat questions. www.blue-white.com/resources/help-center/

1.6 Accessories and Options

WALL MOUNT SHELF



The Wall Mount Shelf is a simple way to mount your pump without using valuable floor space. The bracket is sturdy and versatile and allows the pump to be mounted at a convenient height for operation and service. Includes (4) 3/8” x 2-3/4” long anchor bolts.

KIT-PSM HDPE Bracket, 14.75” wide
KIT-PSS HDPE Bracket, 11” wide

SUCTION AND DISCHARGE TUBING



C-334-6 Tubing, Suction, clear PVC 3/8” O.D. x 5’ length
C-334-6-10 Tubing, Suction, clear PVC 3/8” O.D. x 10’ length
C-334-6-100 Tubing, Suction, clear PVC 3/8” O.D. x 100’ length
C-335-6 Tubing, Discharge, opaque PE 3/8” O.D. x 5’ length
C-335-6-10 Tubing, Discharge, opaque PE 3/8” O.D. x 10’ length
C-335-6-100 Tubing, Discharge, opaque PE 3/8” O.D. x 100’ length

TANKS



High strength polyethylene tanks are available to store chemicals. STAR III tanks at capacities of 7 gal, 15 gal, or30, gal. Cylindrical tanks at capacities of 15 gal, 30 gal, or 50 gal.

INJECTION FITTINGS



Injection fittings ensure that chemical feed injects into the process stream while preventing the process fluid from returning to the chemical line. The built-in check valve contains a ceramic ball that prevents siphoning, which makes changing a tube an easy process.

Part Number	Description	Material (Body/O-ring	Spring
A-014NK-6A	Injection Valve, PVDF/FKM, ¼”x3/8” tube connection	PVDF/FKM	½ psi
A-014NK-6E	Injection Valve, PVDF/EP, ¼”x3/8” tube connection	PVDF/EP	½ psi
A-014NK-6A-T	Injection Valve, PVDF/FKM, ¼”x3/8” tube connection (PTFE Ball)	PVDF/FKM (PTFE ball)	½ psi
71000-770	Injection Valve, PVDF/FKM, ½” Hose Barb	PVDF/FKM	2 psi
71000-377	Injection Valve, PVDF/EP, ½” Hose Barb	PVDF/EP	2 psi
71000-767	Injection Valve, PVDF/FKM, ½” MNPT	PVDF/FKM	2 psi
71000-386	Injection Valve, PVDF/EP, ½” MNPT	PVDF/EP	2 psi
71000-985	Injection Valve, PVDF/FKM, ½” MNPT (PTFE Ball)	PVDF/FKM (PTFE ball)	2 psi

2.0 Engineering Specifications

Maximum Working Pressure (Excluding pump tubes)	Up to 100 PSI (6.89 bar)
Maximum Fluid Temperature	185 °F (85 °C)
Maximum Viscosity	5,000 centipoise
Maximum Suction Lift	30 ft. of water at sea level (14.7 atm psi)
Ambient Operating Temperature	14 °F to 115 °F (-10 °C to 46 °C)
Ambient Storage Temperature	-40 °F to 158 °F (-40 °C to 70 °C)
Operating Voltage	115V60Hz 1 PH (0.6A max., 80W max.)
	220V50Hz 1 PH (0.3A max., 80W max.)
	230V60Hz 1 PH (0.3A max., 80W max.)
	230V50Hz 1 PH (0.3A max., 80W max.)
	240V50Hz 1 PH (0.3A max., 80W max.)
Power Cord Options	115V60Hz = NEMA 5/15 (USA)
	230V60Hz = NEMA 6/15 (USA)
	220V50Hz = CEE 7/VII (EU)
	240V50Hz = AS 3112 (Australia/New Zealand)
	230V50Hz = BS 1363/A (UK)
Signal Connectors	M12 - 5 pin (IP67 rated)
Motor	Brushless DC, 42W.
Duty Cycle	Continuous
Motor Speed Adjustment Range	2,000:1 (0.05% - 100%) Max rpm = 65rpm
Maximum Overall Dimensions	7.25” W x 9” H x 10” D (18.5 W x 22.9 H x 25.2 D cm)
Product Weight	6 lb. (2.7 Kg)
Approximate Shipping Weight	13 lb. (5.9 Kg)
Approximate Shipping Dimensions	10.5” W x 13.75” H x 11” D (26.7 W x 35 H x 28 D cm)
Control Panel Cover	UV-Resistant Polycarbonate
Enclosure	NEMA 4X, Valox® (PBT)
RoHS Compliant	Yes
Standards	cETLus, CE

2.1 Output Specifications

Output Specifications

Tube Model/ Material	Feed Rate			Max Speed	Max Pressure	Max Temperature
	GPH	LPH	mL/Min	RPM	PSI (bar)	°F (°C)
Flex-A-Thane® Tube						
A1-1*	.0005 - 1.09	.0020 - 4.13	.0349 - 69.8	65	65 (4.50)	130 (54)
A1-2*	.0011 - 2.27	.0004 - 8.63	.0719 - 143.8	65	65 (4.50)	130 (54)
A1-3*	.0028 - 5.60	.0106 - 21.2	.1767 - 353.3	65	50 (3.45)	130 (54)
Flex-A-Prene® Tube						
A1-4*	.0002 - 0.44	.0008 - 1.68	.0140 - 28.0	65	100 (6.89)	185 (85)
A1-6*	.0006 - 1.35	.0026 - 5.14	.0426 - 85.2	65	100 (6.89)	185 (85)
A1-7*	.0021 - 4.17	.0079 - 15.8	.1316 - 263.1	65	50 (3.45)	185 (85)
Flex-A-Chem® Tube						
A1-8*	.0015 - 3.09	.0059 - 11.7	.0975 - 195.0	65	50 (3.45)	130 (54)

***** Data pertains to both “T” and “M” connection types.

NOTE: All values are from testing with water at sea level with 3 foot suction lift.

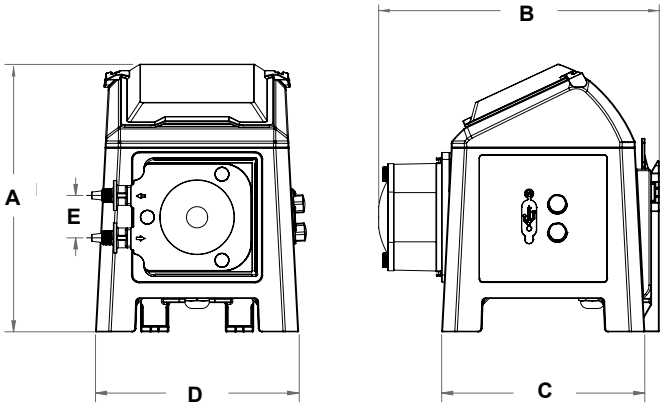
2.2 Materials of Construction

Non-wetted Components:	
Enclosure:	Valox® (PBT)
Control Panel Cover:	UV-Resistant Polycarbonate
Pump Head:	Valox® (PBT) thermoplastic
Pump Head Cover:	Polycarbonate
	Permanently lubricated sealed motor shaft support ball bearing.
Cover Screws:	Stainless steel, polypropylene cap
Roller Assembly:	Rotor: Valox® (PBT)
	Rollers: Nylon
	Roller Bearings: Bronze
TFD+ System Sensor:	Polysulfone (PES)
Power Cord:	3 Conductor, SJTW-A water-resistant
Mounting Brackets and Hardware:	316 Stainless steel screws, GF Nylon bracket

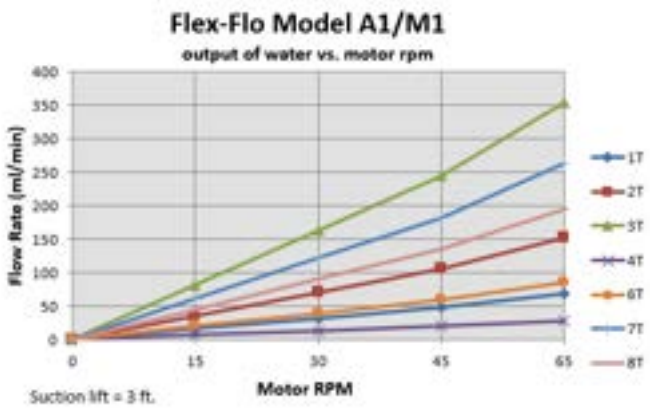
Wetted Components:	
Pump Tube Assembly:	Tubing : Flex-A-Prene®, Flex-A-Thane® or Flex-A-Chem®
	Adapter Fittings: PVDF

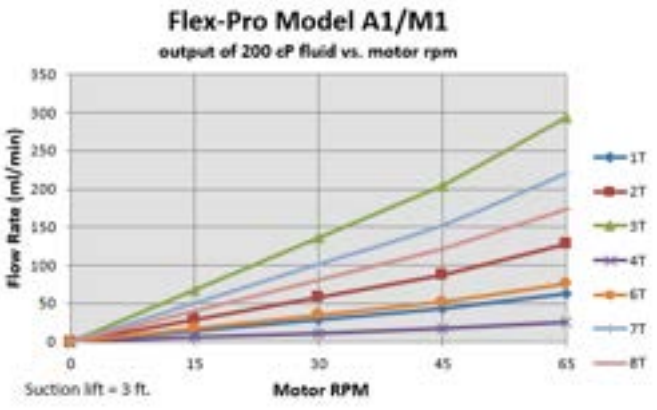
2.3 Dimensions

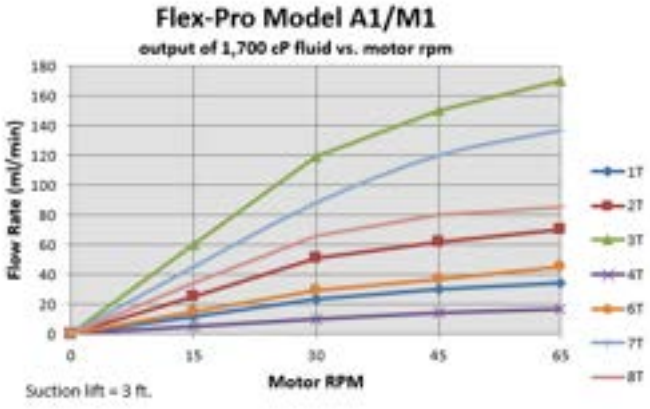
Dim	Inch	cm	Dim	Inch	cm
A	9.46”	24.02	D	7.18”	18.23
B	9.92”	25.19	E	1.5”	3.81
C	7.18”	18.23			

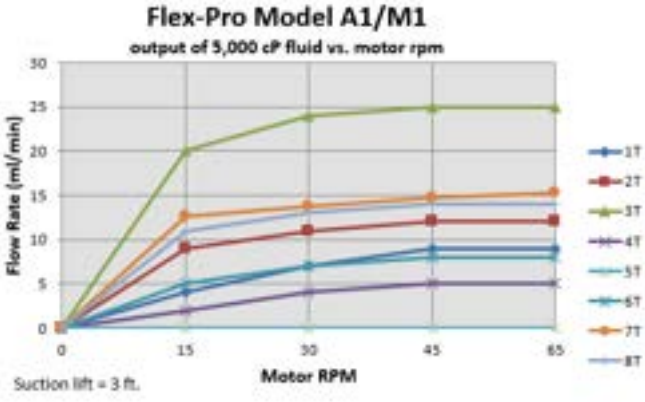


2.4 Viscosity Curves









2.5 Suction Lift

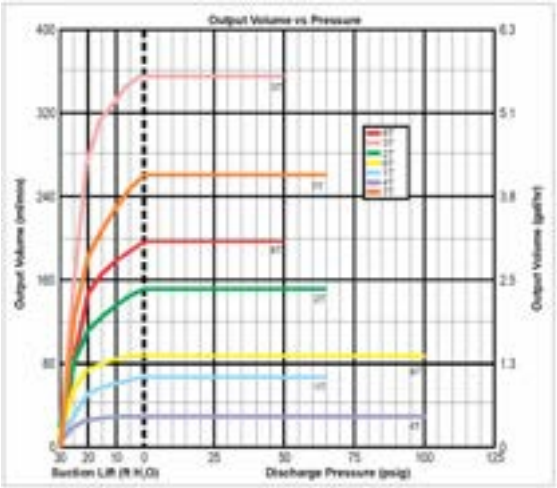
Note that the pump’s output specification is based on laboratory tests with water at 72 degrees Fahrenheit (Sp.gr. = 1.0) and 3 feet of suction lift.

When lifting fluids with a Specific Gravity other than water, your output rate will vary. Use the following equation and the graphs below to calculate your pump output.

Fluid Sp.Gr. x Suction Lift Height = the equivalent height in water

Example: The Sp.Gr. of 12.5% Sodium Hypochlorite at 60 degrees F is 1.20. If the required suction lift is 8 feet, the equivalent suction lift using water is 1.20 x 8 = 9.6 feet.

NOTE: All tests performed after approximately 30 minutes tube break-in period. Tested using 72°F water at atmospheric conditions at sea level. Output volume shown with the pump operating at 125 rpm motor speed.



3.0 Installation

3.1 Safety



CAUTION

- Follow these instructions before installing your pump to avoid failure.
- The pump is designed to be installed and operated by qualified personnel only. Please note that warranty coverage does not include damage due to misuse or improper installation.
- Ensure pump is installed according to instructions and site guidelines.
- Always wear eye protection when installing or removing chemical feed pumps.
- Wear suitable PPE (Personal Protective Equipment) such as gloves, goggles, masks, protective gear, chemical resistant clothing, and proper footwear to avoid injury due to splashes, spills, and fumes.
- Confirm chemicals being used with the pump are compatible with wetted components of the pump. Review all SDS sheets prior to use or service. User is responsible for determining chemical compatibility with pump.
- Inspect equipment regularly for wear, leaks, or abnormal operation.
- Only use the pump for the purpose which it is intended.
- This pump should not be used by children and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge.
- Pump is not a toy. Do not allow children to play with the pump.



PRESSURE

- Minimum Total Pump Head is 0 PSI (0 bar) (pump may operate at atmospheric pressure.)
- Maximum Total Pump Head is 100 PSI (6.89 bar) Do not exceed maximum pressure. High pressure and temperature will damage the tube and pump. Tubes have specific pressure ratings. Refer to tube specifications for details.



WARNING

- Risk of electric shock – cords are supplied with a grounding conductor and grounding-type attachment plug. To reduce risk of electric shock, be certain that it is connected only to a properly grounded, grounding-type receptacle.
- Power cord connection is located on bottom of the pump. Power cords must be type IEC 320-C13.
- Be certain to connect the pump to the proper supply voltage. Using the incorrect voltage will damage the pump and may result in injury. The voltage requirement is printed on the pump serial label.
- Electrical connections and grounding must conform to local electrical codes.
- Use the voltage for which the cord is rated.
- To prevent electronic noise interference, electronic signal wires and AC power wires must be kept separate. Do not bundle these cables together or run within the same conduit.
- When there is a power interruption, the pump will restart (resume) in the same state as prior to power interruption.
- POWER: 115V60Hz (0.6A max.), 220V50Hz (0.3A max.), 230V60Hz (0.3A max.), 230V50Hz (0.3A max.), 240V50Hz (0.3A max.) 80 W Max.
- COVERS FOR USB CONNECTION AND M12 CONNECTIONS MUST BE IN PLACE WHEN NOT CONNECTED TO CABLES
- Serial Label is located on right side of pump. Install pump so label is visible after installation.
- Do not open the pump electrical enclosure. No serviceable parts inside.

3.2 Mounting Location and Installation Requirements

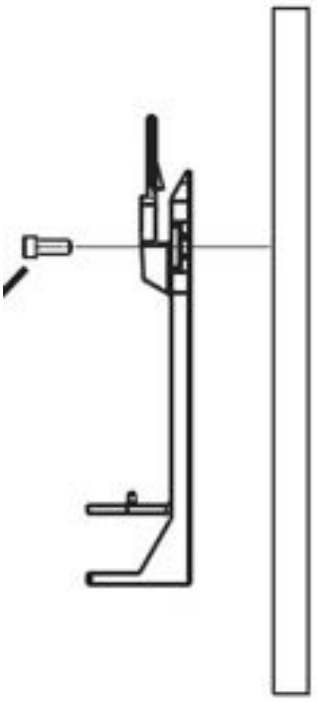
Choose an area located near the chemical supply tank, chemical injection point and electrical supply. Although the pump is designed to withstand outdoor conditions, a cool, dry, well ventilated location is recommended. Install the pump where it can be easily serviced. **Do not place pump on floor or in a location with excessive chemical spills or vapors.**

- Pump head is left facing only. Plan for tubing connection on left side of pump.
- Mount the pump to a secure surface or wall using the enclosed hardware.
- Wall mount to a solid surface only. Mounting to drywall with anchors is not recommended.
- Mount the pump close to the injection point. Keep the outlet (discharge) tubing as short as possible. Longer tubing increases the back pressure at the pump tube.
- Your solution tank should be sturdy. Keep the tank covered to reduce fumes. Do not mount the pump directly over your tank. Chemical fumes may damage the unit. Mount the pump off to the side or at a lower level than the chemical container.
- Mounting the pump lower than the chemical container will gravity feed the chemical into the pump. This “flooded suction” installation will reduce output error due to increased suction lift. You must install a shut-off valve, pinch clamp or other means to halt the gravity feed to the pump during servicing.
- Be sure to install a back-flow prevention check valve to prevent fluid from flowing back through pump during service.
- A pressure relief valve is recommended on the discharge side of the pump to prevent over-pressurization of the pump.
- A back-pressure valve is not required to maintain consistent flow and typically not recommended.

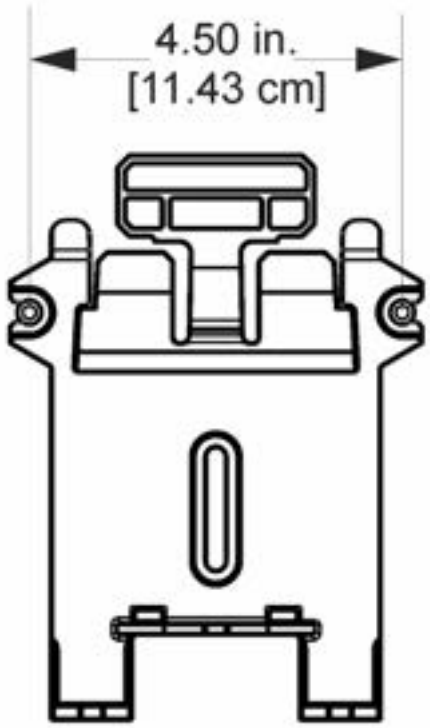
Caution: When power is applied to the pump, the pump will either automatically begin to pump, or maintain power-off status, depending on the previous pump status.

3.3 Wall Mounting

Using the provided #10 self-tapping screws, mount the bracket to a secure wall that is located where it can be easily serviced.



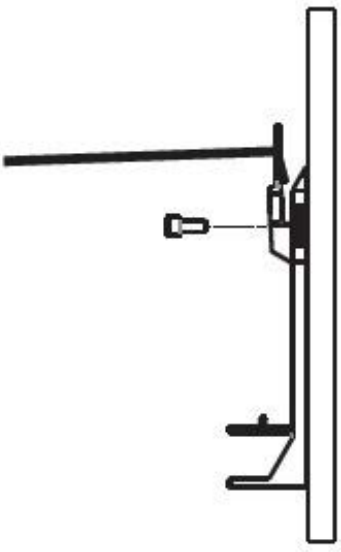
Wall Mount Bracket (Side View)



Wall Mount Bracket (Front View)

Lower the pump so that the tab on the wall mount is inserted into the slot located on the back of the pump. The pump will now be secured to the wall mount bracket. To remove pump, pull tab and lift pump.

Wall Mount Bracket -Pull Tab



3.4 Input Power Connection

WARNING! Risk of Electrical Shock



- Power cord connection is located on bottom of the pump. Power cords must be type IEC 320-C13.
- Be certain to connect the pump to the proper supply voltage. Using the incorrect voltage will damage the pump and may result in injury. The voltage requirement is printed on the pump serial label.
- The pump is supplied with a ground wire conductor and a grounding type attachment plug (power cord). To reduce the risk of electric shock, be certain that the power cord is connected only to a properly grounded, grounding type receptacle.
- Electrical connections and grounding must conform to local electrical codes.
- Use the voltage for which the cord is rated.
- To prevent electronic noise interference, electronic signal wires and AC power wires must be kept separate. Do not bundle these cables together or run within the same conduit.
- When there is a power interruption, the pump will restart (resume) in the same state as prior to power interruption.
- POWER: 115V60Hz (0.6A max.), 220V50Hz (0.3A max.), 230V60Hz (0.3A max.), 230V50Hz (0.3A max.), 240V50Hz (0.3A max.) 80 W Max.
- COVERS FOR USB CONNECTION AND M12 CONNECTIONS MUST BE IN PLACE WHEN NOT CONNECTED TO CABLES

Note: When in doubt regarding your electrical installation, contact a licensed electrician.

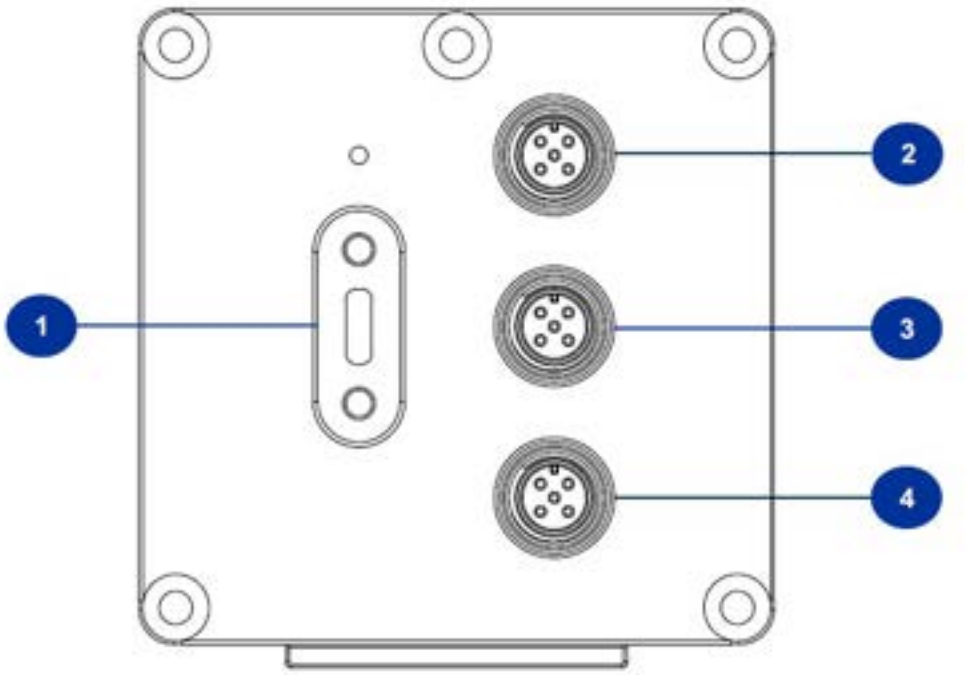
3.5 Pump Side View - Signal Wiring Connections (A1C)



3.6 External Signal Wiring - “C” Control Model Only

M12 Signal wiring connectors provided for “C” Control models only.

Covers for USB Connection and M12 Connections must be in place when not connected to cables. Leaving M12 connectors exposed to the environment may void warranty.



Item Number	Item
1	USB-C Connector
2	M12 Connector I/O 1
3	M12 Connector I/O 2
4	M12 Connector I/O 3

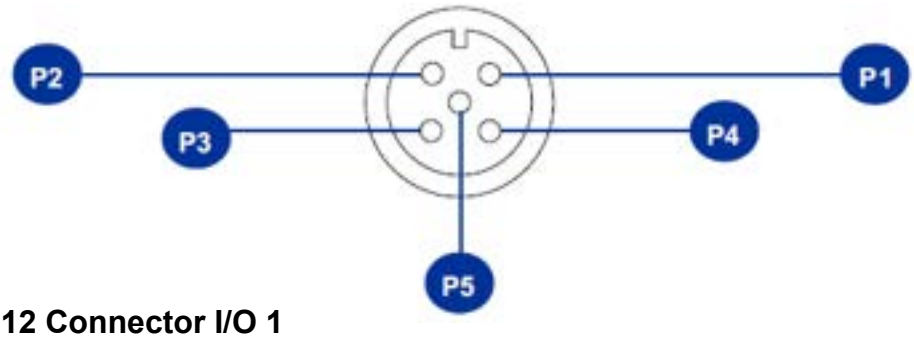
M12 Cables not included with product. See accessories for cable options.
Blue-White requires any A-type M12 connector with 5 position female sockets.
All signal wiring entirely from control device to pump must be shielded and grounded properly.

3.7 M12 Connection Guide - “C” Control Model Only



Never allow individual M12 cable wires to touch each other while the pump is active. Wiring shorts will cause the pump to malfunction and can void the warranty.

Properly grounded shielded must be used for all signal wiring.



Blue-White M12 Cable Wiring	
Pin #	Wire
P1	Brown
P2	White
P3	Blue
P4	Black
P5	Gray

M12 Connector I/O 1

Pin	Function	Specifications	Reference
P1	4-20mA Input (+)	120 Ohm Impedance Non Powered Loop	(+) Positive
P2	4-20mA Input (-)	120 Ohm Impedance Non Powered Loop	(-) Negative
P3	4-20mA Output (+)	250 Ohm Max Load	(+) Positive
P4	4-20mA Output (-)	DC GND (O VDC)	(-) Negative
P5		Not Used	

M12 Connector I/O 2

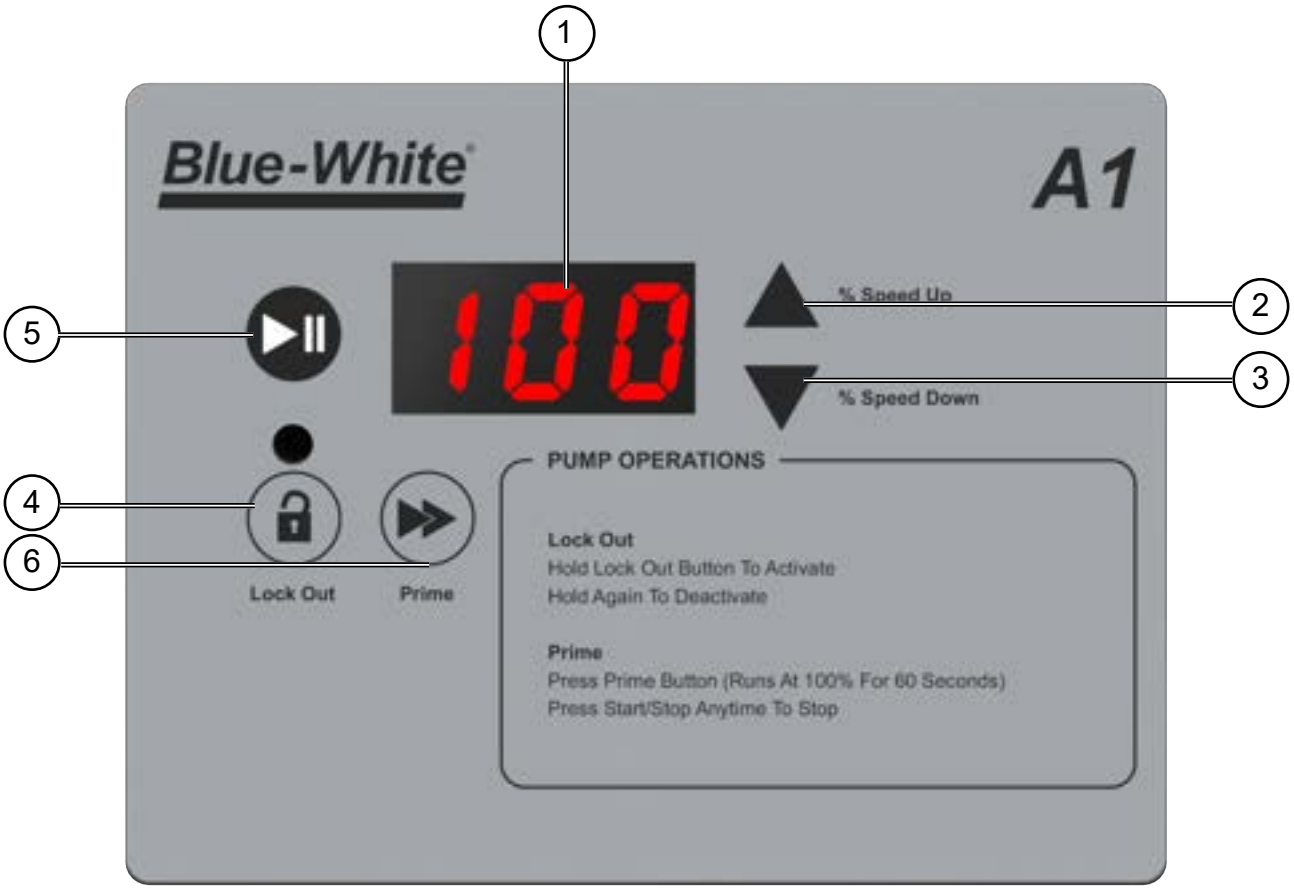
Pin	Function	Specifications	Reference
P1	Remote Start/Stop	Dry Contact Closure (Do Not add voltage)	Green Light = Normally Open Red Light = Normally Closed
P2	Ground	DC Ground	0 VDC
P3	FVS (+)	15 VDC @ 60 mA	Power for FVS Sensor
P4	FVS (-)	DC GND (O VDC)	FVS Ground Input
P5	FVS (Signal)	Input Signal	Input for FVS Signal

M12 Connector I/O 3

Pin	Function	Specifications	Reference
P1	Pump Motor Running (+)	0-60VDC sinking output (+) Solid State Contact Closure	(+) Positive
P2	Pump Motor Running (-)	0-60VDC sinking output (-) Solid State Contact Closure	(-) Negative
P3	N.O. (closes with TFD or FVS alarm)	Relay Out, N.O. Contact 3Amp @ 250 VAC	
P4	COM	Relay Out, COM Contact	
P5	N.C. (opens with TFD or FVS alarm)	Relay Out, N.C. Contact 3Amp @ 250 VAC	

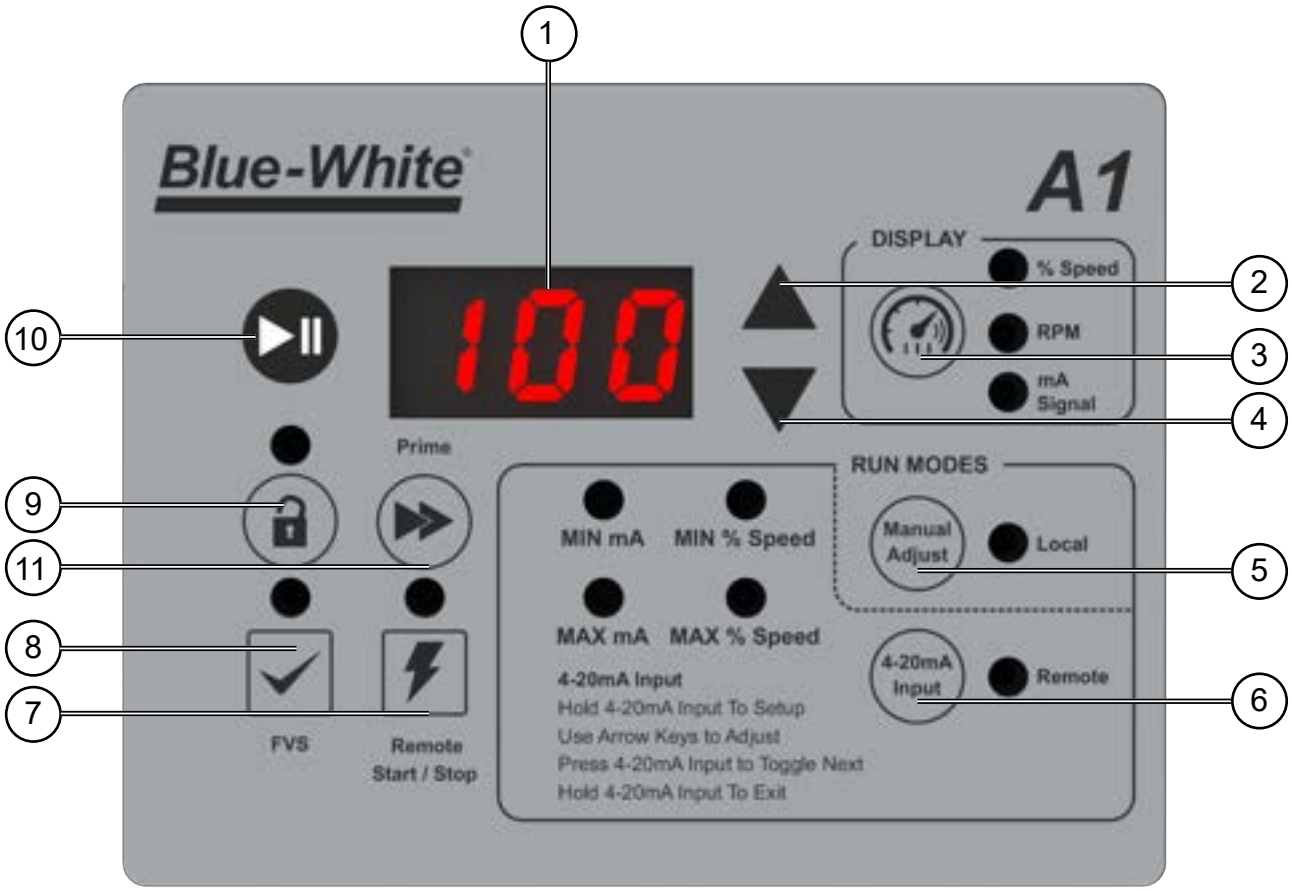
4.0 Controls and Set-up

4.1 Touchpad Layout “B” Base Model



Item Number	Item
1	LED Readout (Pump Speed / RPM / 4-20mA signal)
2	Up Key
3	Down Key
4	Lock-Out Key
5	Start & Stop Key
6	Prime Key

4.2 Touchpad Layout “C” Control Model



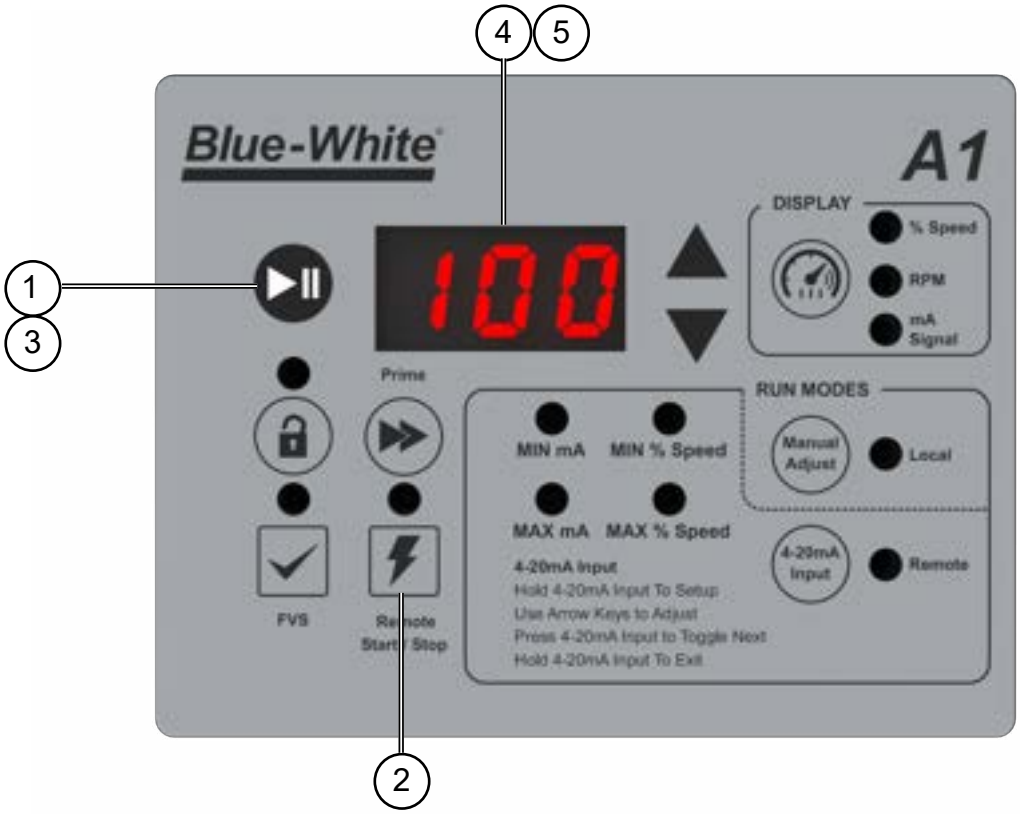
Item Number	Item
1	LED Readout (Pump Speed / RPM / 4-20mA signal)
2	Up Key
3	Rate Display Key
4	Down Key
5	Manual Speed Adjust Control Mode (Local)
6	4-20mA Input Control Mode (Remote)
7	Remote Start/Stop Key (Red = N.C, Green = N.O.)
8	Flow Verification Sensor (FVS) Key
9	Lock-Out Key
10	Start & Stop Key
11	Prime Key

4.3 Programming

A1C - programming options are Manual Speed Adjustment (up/down), Remote Start/Stop, Manual Adjust/Local Mode, 4-20mA Input Mode, Pump Lock-out, FVS Input, and Display readout options.

A1B - programming options are Manual Speed Adjustment (up/down), and Pump Lock-out.

4.3.1 Remote Start/Stop (“C” Control model only)

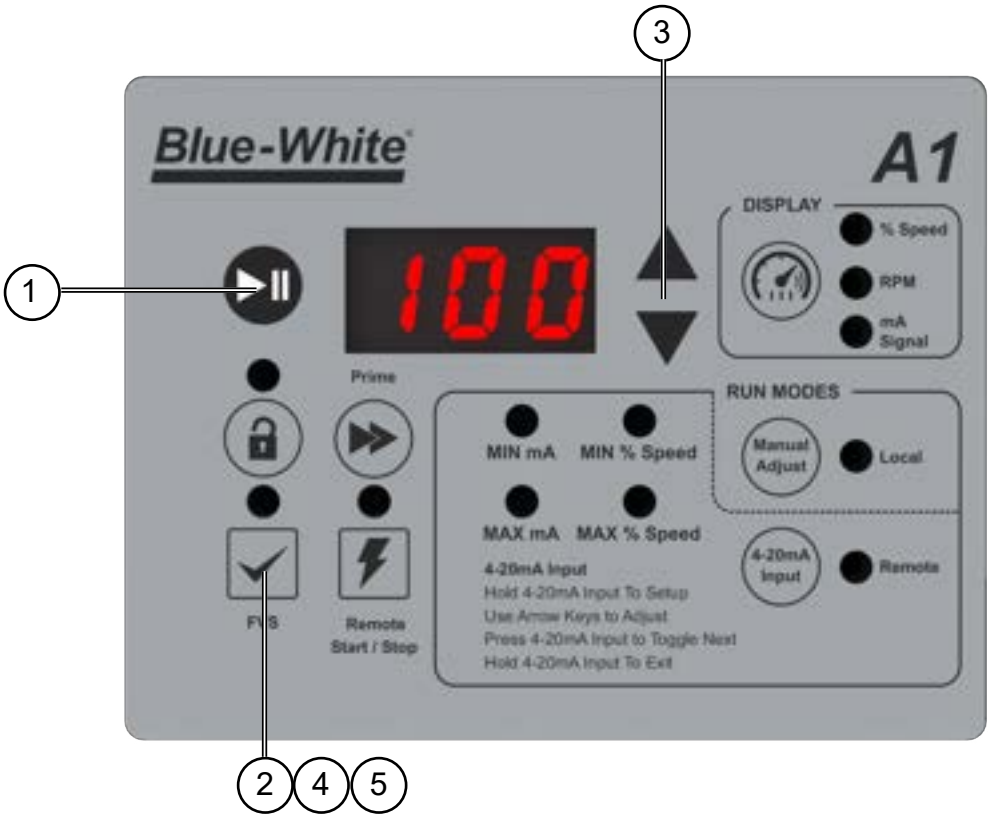


Step	Directions for selecting Normally Open operation
1	Confirm that pump is OFF
2	Press Remote Start/Stop button to activate. **Light will turn green.**
3	Press Start/Stop button to put pump in ready state.
4	Display will show “SbY” (standby) when waiting for contact closure
5	Display will show Pump Speed (or RPM or 4-20mA signal) when contact is closed.

Step	Directions for selecting Normally Closed operation
1	Confirm that pump is OFF
2	Press and hold Remote Start/Stop button for 7 seconds to activate. **Light will turn red.**
3	Press Start/Stop button to put pump in ready state.
4	Display will show “SbY” when contact is closed.
5	Display will show Pump Speed (or RPM or 4-20mA signal)” when contact is open.

4.3.2 Programming FVS (Flow Verification Sensor) (“C” Control model only)

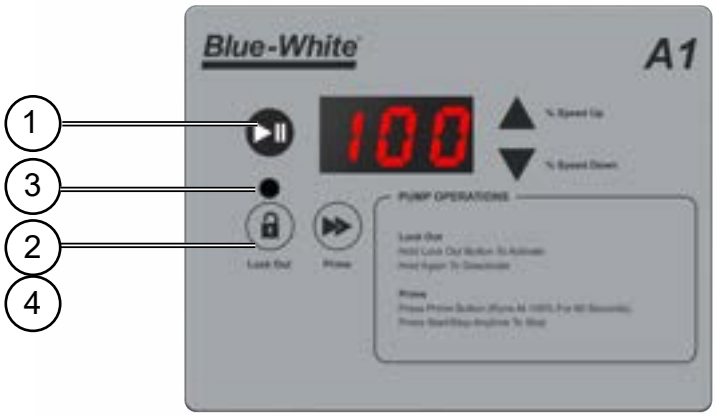
NOTE: When active, the FVS alarm condition (no flow) will show “FvS” on the display and will activate output alarm relay.



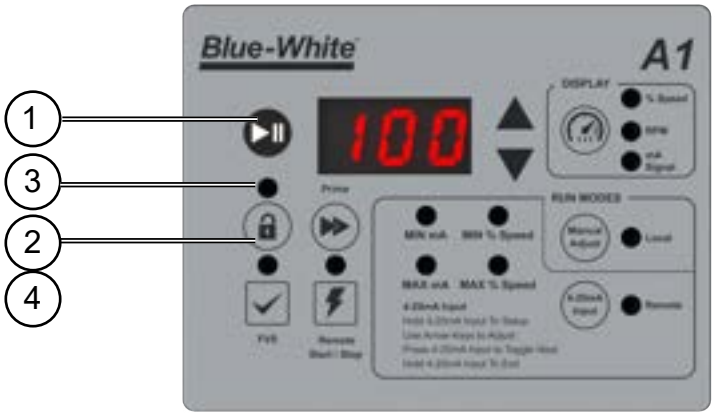
Step	Directions for programming FVS
1	Confirm that pump is OFF
2	Press and hold FVS button for 7 seconds to set.
3	Toggle Up and Down arrows to set Delay time. (Range 1-20 seconds.)
4	Press and hold FVS button for 7 seconds to save Delay Time.
5	Activate FVS by pressing FVS button once. Light will turn on. Press again to deactivate.

4.3.3 Pump Lockout

Pump Lockout feature allows the user to “lock out” the ability to change pump controls, such as Pump Speed, Prime, FVS, Remote Start/Stop, Manual/4-20ma Modes. User will still be able to start and stop the pump.



“B” Base Model

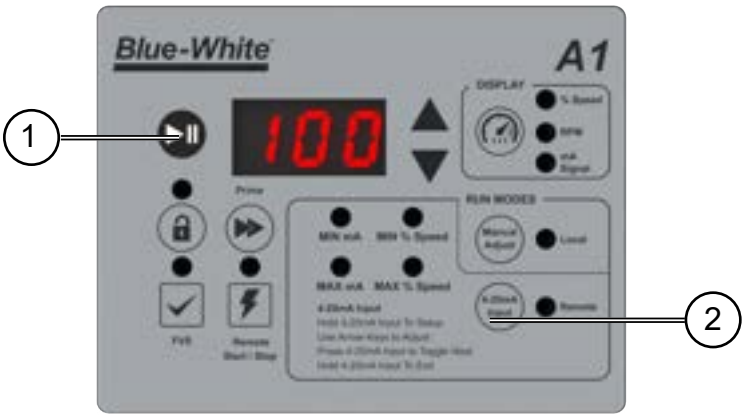


“C” Control Model

Step	Directions for activating pump Lockout
1	Pump can be running or in the off position.
2	Press and hold Lockout button for 7 seconds to activate.
3	Light will activate.
4	To deactivate, press again for 7 seconds.

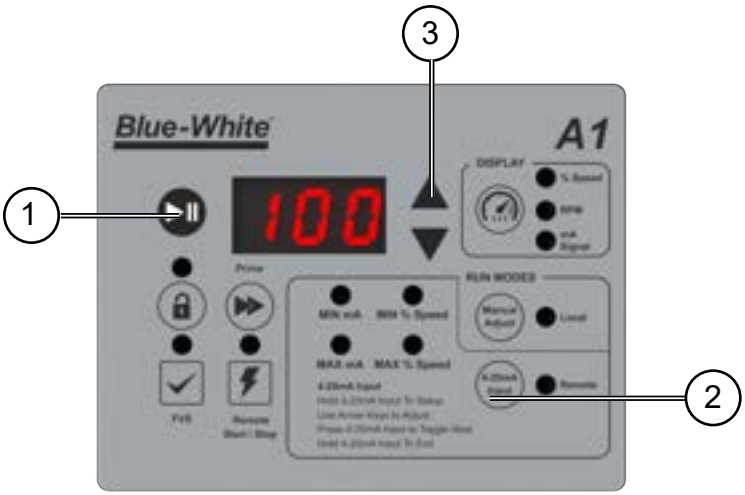
4.3.4 4-20mA Input (“C” Control model only)

Selecting 4-20mA Input Mode



Step	Directions
1	Confirm Pump is in the OFF position
2	Press 4-2omA Input button

Programming 4-20mA Input



Step	Directions
1	Confirm the pump is in the OFF position
2	Press and hold the 4-20mA Input button until the MIN mA light turns on
3	Use arrow keys to toggle the desired MIN mA value
4	Press 4-20mA Input button to access MIN % speed value. Light will turn on.
5	Use arrow keys to toggle the desired MIN % speed value.
6	Press 4-20mA Input button access MAX mA value. Light will turn on.
7	Use arrow keys to toggle the desired MAX mA value.
8	Press 4-20mA Input button access MAX % speed value. Light will turn on.
9	Use arrow keys to toggle the desired MAX % speed value.
10	Press and hold 4-20mA Input button to exit the programming mode

4.4 Outputs (“C” Control model only)

4.4.1 4-20mA Output

The pump will generate a full scale 4-20mA output signal whether in Manual Speed Adjust Mode or 4-20mA Input Mode. There is no option for scaling the output signal. The output signal will always represent full 0-100% speed scale.

4.4.2 Motor Active Output

The pump will generate a contact closure “Motor Active” signal when the motor is running.

4.4.3 TFD or FVS Alarm Output

When FVS is activated, an alarm output will activate when FVS condition occurs.
A TFD alarm will trigger when a tube leak is detected.
This output can wired for Normally Open or Normally closed. See wiring section for details.

5.0 Operation

Once the pump has been installed and wired properly, it can be put into operation. Be sure you are familiar with all control features before using the pump. Ensure the pump is connected to proper power source. As soon as pump is powered on, it is ready to be run. There is no power on/off switch.

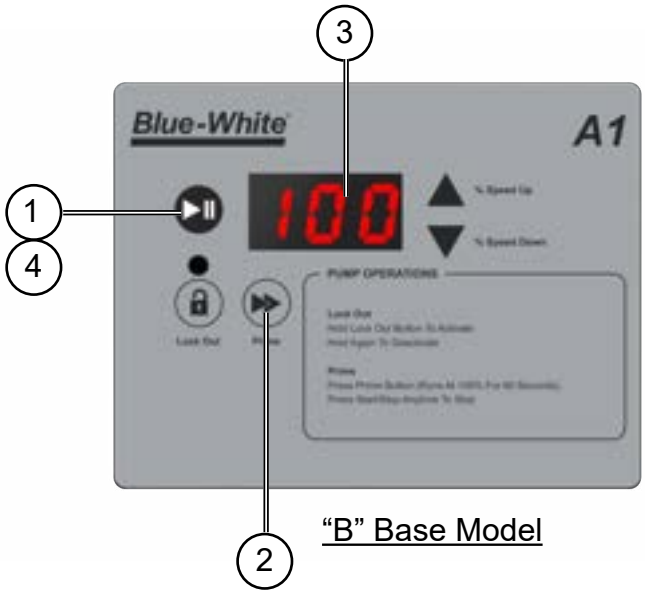
Caution: If the last time the pump was run and power was disconnected, the next time the pump is powered on it will resume operating in same state when powered off. If the pump was running at a set manual speed, it will start immediately at the same speed.

5.1 Priming the Pump

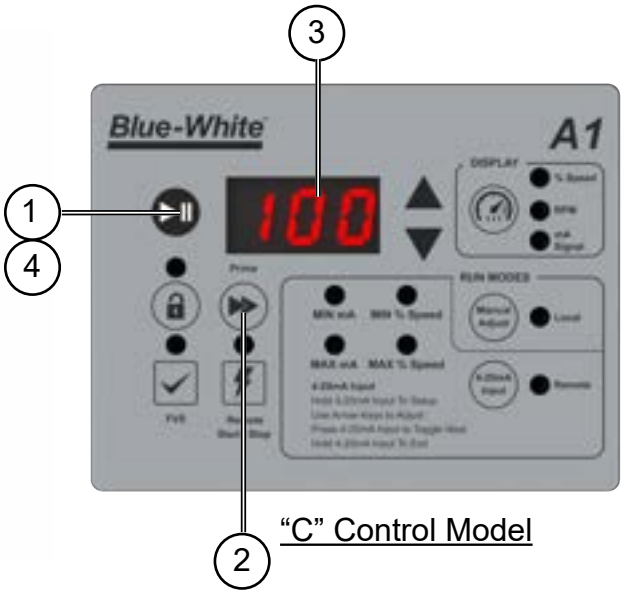
Before priming the pump, or starting the pump, be sure that all suction and discharge lines are connected properly and that proper valves are open.

If the pump does not prime, check the suction line for clogs, obstructions, or leaks. Make sure all appropriate valves are open.

To prevent accidental priming during normal operation, put the pump in Lockout mode.



"B" Base Model



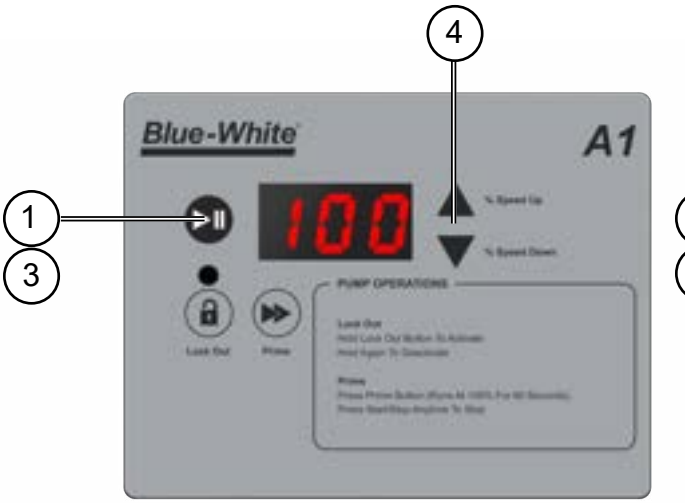
"C" Control Model

Step	Directions for Priming the Pump
1	Pump can be running or in the OFF position
2	Press the Prime Button
3	Pump will run at 100% speed and Display will count down from 60 seconds
4	Press Start/Stop button at any time to stop the pump.
5	Pump will return to previous state after priming.

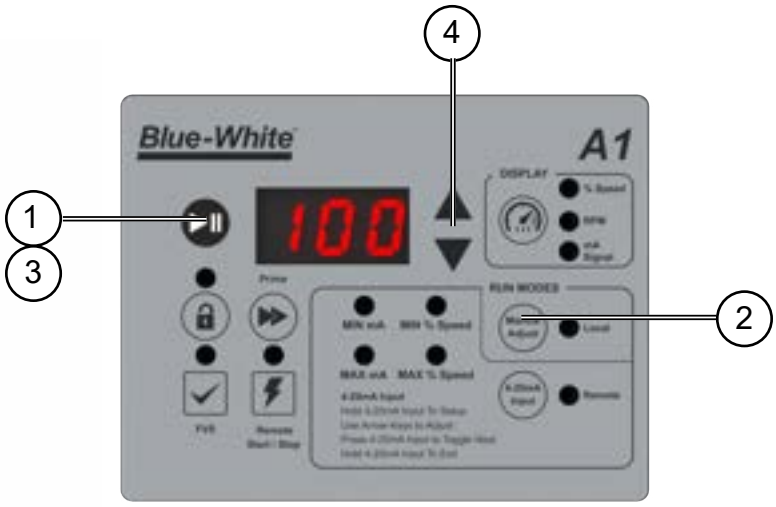
5.2 Manual Speed/Flow Adjust

Manual Operation

The A1 has a variable speed DC motor capable of adjusting the speed between 0.05% and 100% speed.



"B" Base Model

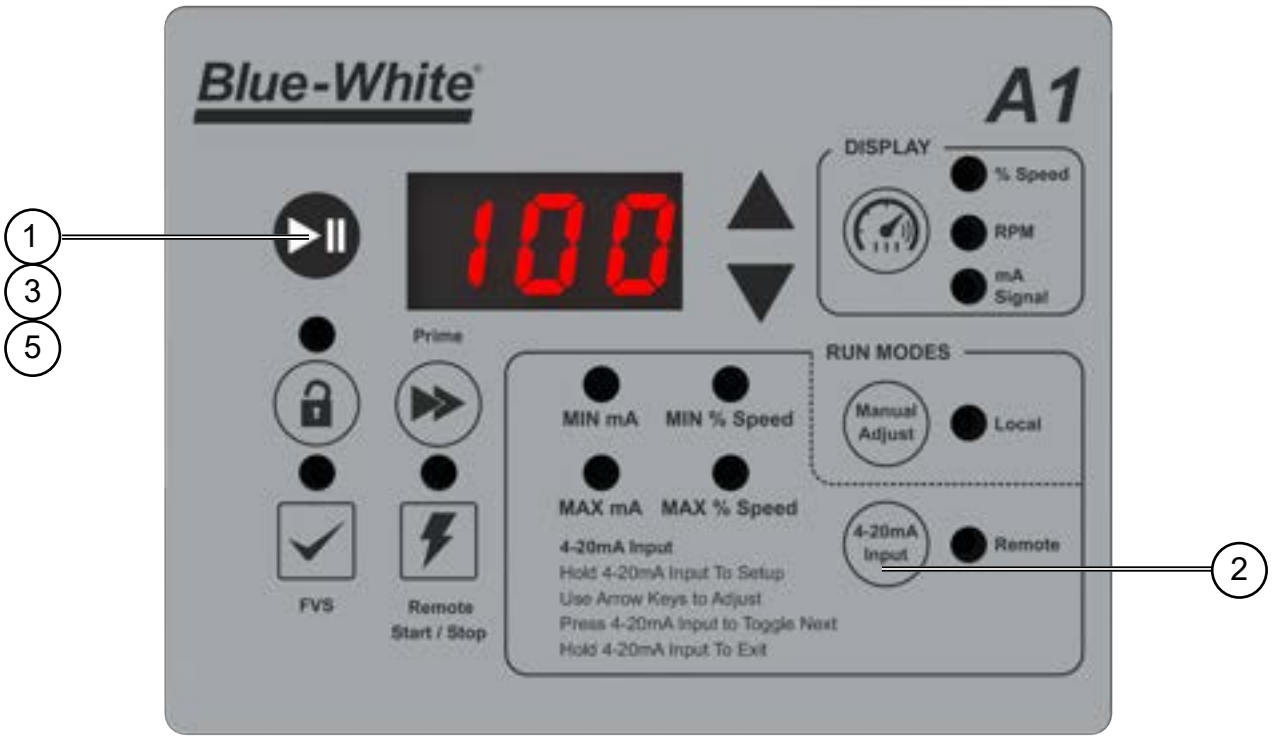


"C" Control Model

Step	Directions for Manual Speed Adjust
1	Confirm pump is in the OFF position
2	Press the Manual Adjust Button (C model only). Local light will activate.
3	Press Start/Stop button.
4	Adjust pump speed using up and down arrows.
5	Press Start/Stop button at any time to stop pump.

5.3 4-20 mA Input Speed Adjust (“C” Control model only)

To pump speed can be adjusted remotely via an external 4-20mA signal. Ensure pump is wired properly for 4-20mA operation and all signal wired is shielded. The 4-20mA signal can be scaled at the pump. See Programming section for details.



Step	Directions for 4-20mA operation
1	Confirm pump is in the OFF position
2	Press the 4-20mA Button. 4-20mA light will activate.
3	Press Start/Stop button.
4	Pump speed will be adjusted by incoming 4-20mA signal.
5	Press Start/Stop button at any time to stop pump.

Note: Press “Display” button to toggle between “% Speed” and “mA Signal” to ensure 4-20mA signal at the pump is consistent with 4-20mA source.

5.4 Calibration

To ensure the most accurate pumping, a pump calibration is recommended prior to operating the pump, or whenever parts are replaced or system conditions change. The actual pump flow rate will vary depending on the suction/discharge line conditions and solution variables. Calibrate the pump with actual suction line conditions.

To calibrate the pump:

1. Obtain a calibration column or similarly precise solution container.
2. Connect suction tubing to draw from the supply tank and connect discharge tubing to calibration column.
3. Prime to the pump to the point where solution is discharging into the calibration column.
4. Fill calibration column to lowest marking and measure/note amount of solution in the column.
5. Press the Prime button and allow the pump to flow for the 1 minute period. (Alternately, the pump can be calibrated at any speed or time duration, as long as speed and time are recorded properly.)
6. Record the flow difference in the calibration cylinder.
7. Calculate the flow rate by dividing the flow by the time. For example, if the pump runs for 1 minute, and the flow difference is 30 ml, then divide 30ml by 1 minute. The flow rate is 30 ml/min at the calibrated pump speed.
8. For best accuracy, run more than one calibration to check results, or run another calibration at a different pump speed.

Calibration results should be similar to the flow rating for the pump tube, but can vary depending on chemical composition, discharge pressure, viscosity, temperature, elevation, and other conditions.

Reference Calibration Video here. www.blue-white.com/bw-videos/the-blue-white-academy-how-to-calibrate-the-1-series-peristaltic-metering-pump/



Calibration Video

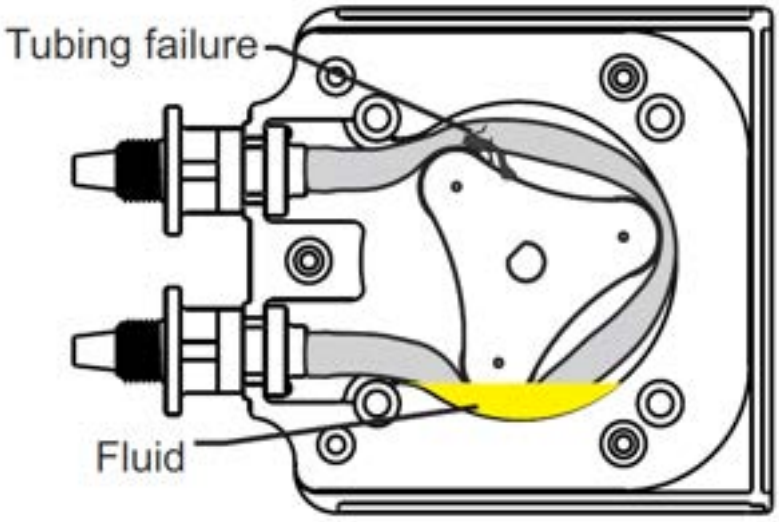
5.5 TFD+ (Tube Failure Detection)

TFD (Tube Failure Detection) - The pump is equipped with a Tube Failure Detection System which is designed to stop the pump and activate alarm output signal in the event of tube leak or rupture and the chemical enters the pump head.

This system is capable of detecting the presence of a large number of chemicals including Sodium Hypochlorite (Chlorine), Hydrochloric (muriatic) Acid, Sodium Hydroxide, polymers, oils, and many others.

If the system has detected chemical, the pump will stop and the display will change to “tFd.” An output alarm will activate on “C” models.

The pump must be serviced after a TFD event. Refer to maintenance instructions for inspecting and replacing the tube. Pump head and sensor must be thoroughly cleaned before the pump is placed back in operation. Refer to maintenance section for details on tube replacement. Failure to clean pump head will void warranty.



6.0 Maintenance



Prior to service, pump clean water (or other appropriate neutral solution) through the pump to remove chemical.



Always wear protective clothing, face shield, safety glasses and gloves when working on or near your metering pump. Additional precautions should be taken depending on solution being pumped. Refer to SDS warnings from chemical manufacturer.

6.1 Routine Inspection and Maintenance

The pump requires very little maintenance. However, the pump and all accessories should be checked weekly. This is especially important when pumping chemicals. Inspect all components for signs of leaking, swelling, cracking, discoloration or corrosion. Replace worn or damaged components immediately.

Cracking, crazing, discoloration and the like during the first week of operation are signs of severe chemical attack. If this occurs, immediately remove the chemical from the pump. Determine which parts are being attacked and replace them with parts that have been manufactured using more suitable materials. The manufacturer does not assume responsibility for damage to the pump that has been caused by chemical attack.

6.2 How to Clean the Pump

The pump will require occasional cleaning, including connections, tubing/piping, strainers,and injection fittings. The frequency will depend on the severity of service.

- When changing the pump tube assembly, the pump head chamber, the roller assembly, and the pump head cover should be wiped of any dirt and debris.
- Clean the motor shaft with a clean towel, and then apply a small amount of grease to the shaft. This will help prevent the rotor from sticking to the motor shaft.
- Periodically, or when necessary, grease the pump head cover bearing. Apply a small amount of grease (Aeroshell aviation grease #5 or equivalent).
- 100% silicone lubricant should be applied to the roller assembly for proper maintenance.
- Periodically clean the injection fitting /check valve assembly, especially since injecting fluids, like sodium hypochlorite, can calcify. These lime deposits and other buildups can clog the fitting, increase back pressure, and interfere with the check valve operation.
- Periodically clean the suction strainer.

6.3 Tube Replacement & Tube Care



Prior to service, remove system pressure and close valves to prevent chemical leak. If possible, pump clean water through the pump and suction / discharge line to remove any chemical.

Always wear protective clothing, face shield, safety glasses and gloves when working on or near your metering pump. Additional precautions should be taken depending on solution being pumped. Refer to MSDS precautions from your solution supplier.

Use extreme caution when replacing the pump tube. Do not place your fingers near the rollers

6.3.1 Tube Care and Use Guide

- **Blue-White Tube Assemblies are specifically designed, tested, and intended for use only in Blue-White peristaltic pumps.** Users assume the risk of using Blue-White Tube Assemblies for any other purpose.
- **Blue-White peristaltic metering pumps are designed to operate with Tube Assemblies manufactured by Blue-White only.** Use of tubing not manufactured by Blue-White will affect the pump's performance, may damage the pump, and will void the warranty.
- Blue-White Tube Assemblies are designed to function in a specific pump model. Verify that the Tube Assembly used is compatible with the pump before installing.
- There are a variety of Blue-White Tube Assembly options available for each peristaltic pump. **Verify that the Tube Assembly selected is suitable for the application before use.** It is possible the Tube Assembly provided with the pump may not be the best option for your specific application. Review your application before using the pump. Any change in chemical, flow, pressure, duty, or piping will require re-evaluating the Tube Assembly's fit for purpose.
- We recommend keeping spare Tube Assemblies on site, as the Tube Assemblies are wearable parts and will need periodic replacement. Keep all spare Tube Assemblies in the original packaging and store them in a clean, dry, and temperature-controlled environment out of direct sunlight. Flex-A-Prene and Flex-A-Chem Tube Assemblies have a shelf life of 3 years. Flex-A-Thane Tube Assemblies have a shelf life of 1 year.
- Tube Assembly life is highly dependent on pump speed, pressure, and duty. Tube Assemblies may last only a few days/weeks, or can last longer than a year in a specific application. However, Tube Assemblies should be replaced at least once a year. An estimate of Tube Assembly life for a specific application can be provided by contacting the Blue-White factory.
- Contact the Blue-White factory immediately if you are unsure about the use and operation of any Tube Assemblies.
- **The pump tube assembly will eventually become non-operational if it is not regularly inspected and replaced. The tube life is affected by many factors, such as the type of chemical being pumped, the amount of back pressure, the motor revolutions per minute (RPM), and temperature.**

6.3.2 Tube Replacement

Safety first. **Remove the pressure.** Relieve (remove) the system pressure on the discharge and suction side of the pump. Failure to do so will cause the solution to squirt when disconnecting the tube connections.

A guide to tube replacement video is available here.
www.blue-white.com/bw-videos/the-blue-white-academy-how-to-replace-the-a1-m1-tubing/

Tube Replacement Video

1. Press the Start/Stop key to stop the pump.



2. Disconnect the system plumbing from the pump tube adapters.



3. Remove the three black thumb screws from the front of the pump head cover by unscrewing counterclockwise. Remove the pump head cover by pulling straight out.



4. Set the motor speed to 10%. Press the Start/Stop key to start the pump.

5. With the pump running, pull the inlet (suction) fitting out of the pump head.



6. Guide the tube counterclockwise away from the rollers. Pull the outlet (discharge) fitting out of the pump head.

7. Press the Start/Stop key to stop the pump.

8. Thoroughly clean the pump head and rotor. The rotor can be removed by pulling it straight out. After cleaning, push the rotor back on the shaft. Add pure silicon oil to roller axles and rollers to prevent excess wear on tubes and rollers.

9. Set the motor speed to 10%. Press the Start/Stop key to start the pump.



10. Insert the inlet (suction) side of the pump tube fitting into the lower retaining slot of the pump head. Carefully guide the pump tube into the pump head.



11. Stretch the tube slightly and insert the outlet (discharge) fitting into the upper retaining slot of the pump head.

12. Place the clear cover onto the pump head. Secure the cover with the provided three thumb screws.



13. The pump is now ready for operation.

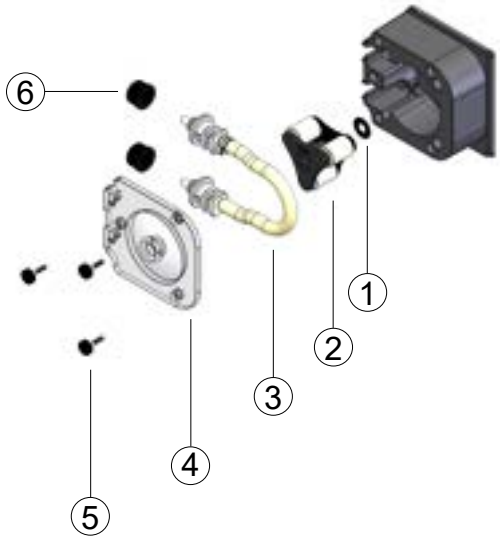


7.0 Parts and Accessories

7.1 Replacement Parts List

	Pump Head Components	Part No.	QTY Req'd
1	Spacer, back	90011-014	1
2	Complete Roller Assembly*		1
	Tube being used:	Roller needed:	
	A1-1T / A1-2T / A1-3T / A1-7T	71000-350	
	A1-4T / A1-6T	71000-159	
	A1-8T	71000-255	
3	Tubing **(Reference Tubing Matrix)**		1
4	Pump Head Cover	90002-185	1
5	Thumb screw with 9/64" key drive	90011-160	3
6	Tube nut, compression, for 3/8" tubing**	C-330-6	2
N/S	Mounting Bracket	90002-685	1
N/S	Bumper Feet	90003-592	4
N/S	Cover, Top, Polycarbonate, grey opaque	90002-754	1
N/S	Silicon Oil, 5ml	A-050	1
N/S	Silicon Oil, 10ml	A-100	1
N/S	Silicon Oil, 15ml	A-150	1

*Rollers are specific to tube being used. See next page for complete tube part numbers.
**Tube nuts are used on "T" style inlet/outlet compression fttings.



*Pump Head not for sale. For more information please contact a local sales representative.

7.2 Replacement Tubing

FLEXFLO® Model Number

A1	Tubing

Pump Tube Size and Material

1	Flex-A-Thane® 1/4” OD
2	Flex-A-Thane® 3/8” OD
3	Flex-A-Thane® 7/16” OD
4	Flex-A-Prene® 1/4” OD
6	Flex-A-Prene® 3/8” OD
7	Flex-A-Prene® 7/16” OD
8	Flex-A-Chem® 7/16” OD

Inlet/Outlet Connection Size, Connection Type

T	3/8” OD x 1/4” Tube Compression Fitting, Natural PVDF (Kynar)
M	1/2” Male NPT Fitting, Natural PVDF (Kynar)
MB	1/2” Male BSPT Fitting, Natural PVDF (Kynar)

A1	**-**	**1**	**T**	**Tube Sample Model Number**

Output Specifications

Tube Material / Size	Feed Rate			Max Pressure	Max Temperature
	GPH	LPH	mL/Min	PSI (bar)	°F (°C)
Flex-A-Thane® Tube					
1	Up to 1.09	Up to 4.13	Up to 68.8	65 (4.50)	130 (54)
2	Up to 2.27	Up to 8.63	Up to 143.8	65 (4.50)	130 (54)
3	Up to 5.60	Up to 21.2	Up to 353.3	50 (3.45)	130 (54)
Flex-A-Prene® Tube					
4	Up to .44	Up to 1.68	Up to 28.0	100 (6.89)	185 (85)
6	Up to 1.35	Up to 5.14	Up to 85.2	100 (6.89)	185 (85)
7	Up to 4.17	Up to 15.8	Up to 263.1	50 (3.45)	185 (85)
Flex-A-Chem® Tube					
8	Up to 3.09	Up to 11.7	Up to 195.0	50 (3.45)	130 (54)

7.3 Accessories



KIT-M12

Kit contains: Two M12 cables. 10 foot length.

Other cable lengths:

KIT-M12-2-15 15 foot length.
KIT-M12-2-30 30 foot length.

KIT-M12 WIRING INSTRUCTIONS

DIAGRAM	PIN #	WIRE COLOR
	PIN 1	BROWN
	PIN 2	WHITE
	PIN 3	BLUE
	PIN 4	BLACK
	PIN 5	GRAY

NOTE: THIS DIAGRAM IS FOR THE PUMP'S M12 PORT



KIT-M12-3

Kit contains: Three M12 cables. 10 foot length.

Other cable lengths:

KIT-M12-3-15 15 foot length.
KIT-M12-3-30 30 foot length.



CABLE-UAC

Kit contains: One 3' USB-A to USB-C cable.



POWER CORDS - DETACHABLE

90010-663 115V/60Hz NEMA 5/15
90010-664 220V/50Hz CEE 7/V11
90010-665 230V/50Hz BS 1363/A
90010-666 240V/50Hz AS 3112
90010-696 230V/60Hz NEMA 6/15
90010-821 115V/60Hz NEMA 5/15 (Lockable)



Suction / Discharge Tubing
1/4" ID x 3/8" OD

SUCTION AND DISCHARGE TUBING

C-334-6	Tubing, Suction, clear PVC 3/8" O.D. x 5' length
C-334-6-10	Tubing, Suction, clear PVC 3/8" O.D. x 10' length
C-334-6-100	Tubing, Suction, clear PVC 3/8" O.D. x 100' length
C-335-6	Tubing, Discharge, opaque PE 3/8" O.D. x 5' length
C-335-6-10	Tubing, Discharge, opaque PE 3/8" O.D. x 10' length
C-335-6-100	Tubing, Discharge, opaque PE 3/8" O.D. x 100' length



KIT-S07
STAR III 7 GALLON TANK

KIT-S07

Kit contains: One 7 gallon tank, One 3/8" suction tube, One 3/8" discharge tube, One foot valve and strainer and One mounting bracket with screws



KIT-S15
STAR III 15 GALLON TANK

KIT-S15

Kit contains: One 15 gallon tank, One 3/8" suction tube, One 3/8" discharge tube, One foot valve and strainer and One mounting bracket with screws



KIT-S30
STAR III 30 GALLON TANK

KIT-S30

Kit contains: One 30 gallon tank, One 3/8" suction tube, One 3/8" discharge tube, One foot valve and strainer and One mounting bracket with screws



KIT-PSM
WALL MOUNT BRACKET, HDPE

KIT-PSM - 14.75" Wide

KIT-PSS - 11" Wide

Kit contains: One HDPE Bracket, (4) 3/8" x 2-3/4" long dia anchor bolts.

8.0 Troubleshooting

Common Issues

Air is entering the pump. Check suction lines to make sure all connections are tight. Check the level of the chemical tank. Remove obstructions and clean strainers.

Pump is not accurate. Check the suction line and clean the strainer. Check for obstructions in suction lines, discharge lines, and injectors. Check the condition of the pump tube and roller. Replace as necessary. (See Spare Parts)

The pump will not run and/or shows “tfd”

Check if the TFD (leak detection) has detected a solution/chemical in the pump.

The pump will not run and/or shows “fvs”

The Flow Verification System “FVS” alarm has been activated. Check flow verification device and ensure flow is present. Resolve flow issue and press Start/Stop button to reset. Or deactivate FVS feature by pressing and holding FVS button until light turns off.

An Error Code appears on display

Error Code	Explanation	Troubleshooting
E01	Motor Over Current	Check that tube is installed correctly
E02	Over Voltage	Check power supply output voltage
E03	Under Voltage	Check power supply output voltage
E04	Temperature exceeds 75°C at control	Check ambient conditions, restart pump once cooled to ambient temperature
E05	Inverter Error	Contact Blue-White Industries (714) 893-8529 customerservice@blue-white.com
E06	No Motor Connection	Contact Blue-White Industries (714) 893-8529 customerservice@blue-white.com
E08	Motor Stall	Check that tube is properly installed
E10	Capacitor bank charging error	Contact Blue-White Industries (714) 893-8529 customerservice@blue-white.com
E17	Communication error at display	Contact Blue-White Industries (714) 893-8529 customerservice@blue-white.com

Electrical

The pump will not power up. Check power source or try a different power source. Check to ensure the power cable is properly wired.

The input signal (4-20mA, Remote Start/Stop) is dropping or incorrect. Check wiring integrity and proper connection to pump. Ensure 4-20mA signal is powered via 15-24VDC. Check that all signal cables are shielded and properly grounded. Ensure signal wiring is not located or run next to high voltage power or equipment generating EMI. Ensure power wiring to the pump is clean/conditioned.

9.0 System

About the A1 Pump

The A1 Pump is designed to be simple and easy to operate. The pump comes pre-tested and is ready to use.

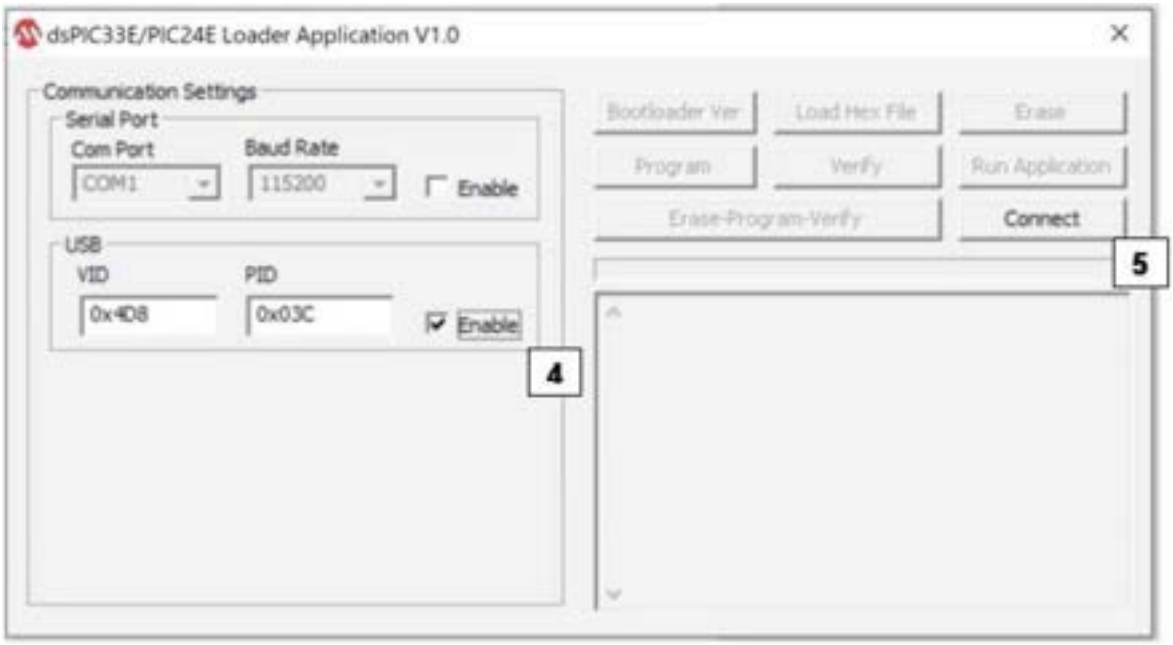
Firmware updates may be required. Contact customer service for details.

9.1 Updating the Firmware

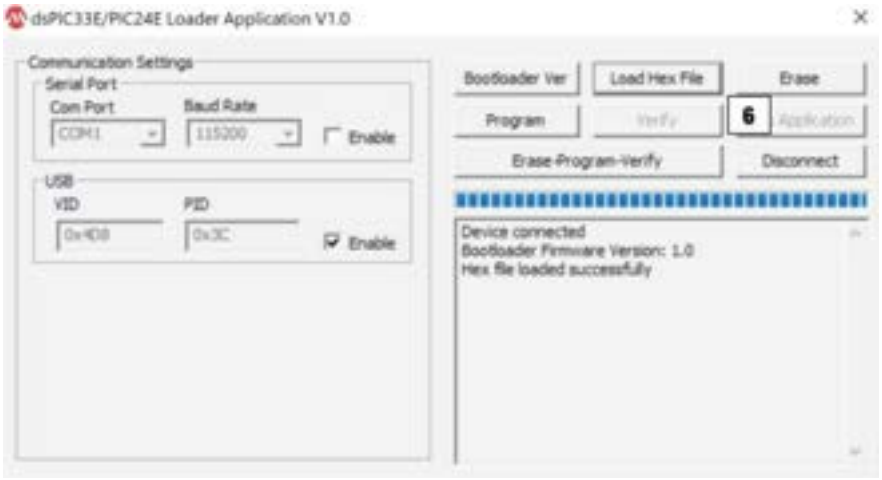
Requirements

Download & Install the A1 Programmer file by visiting the Firmware Update section of the A1 product page at www.blue-white.com as well as download the Firmware Update File.

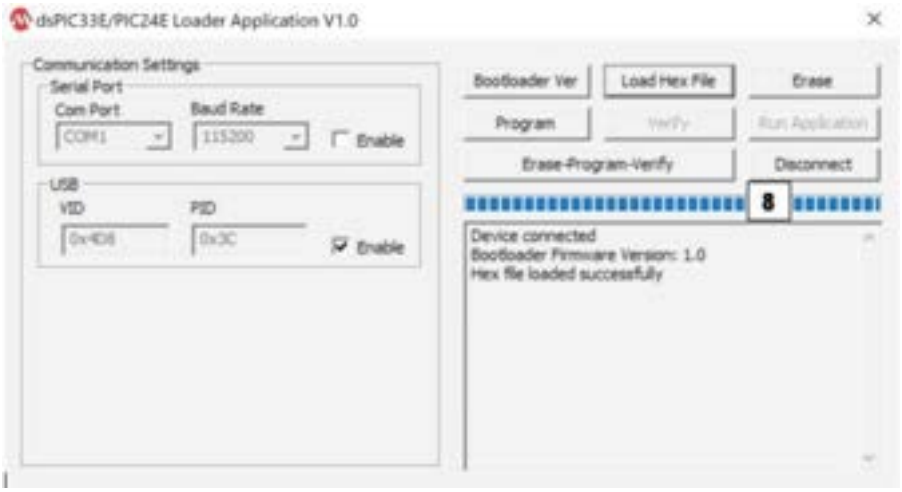
1. Connect the Pump to a computer via USB-A / USB-C cable (Pump must not be powered before starting.) (Be sure to replace USB cover after updating firmware)
2. Power up the Pump
3. Open the A1 programmer
4. Select “Enable” USB in the Communication settings window
5. Click on Connect



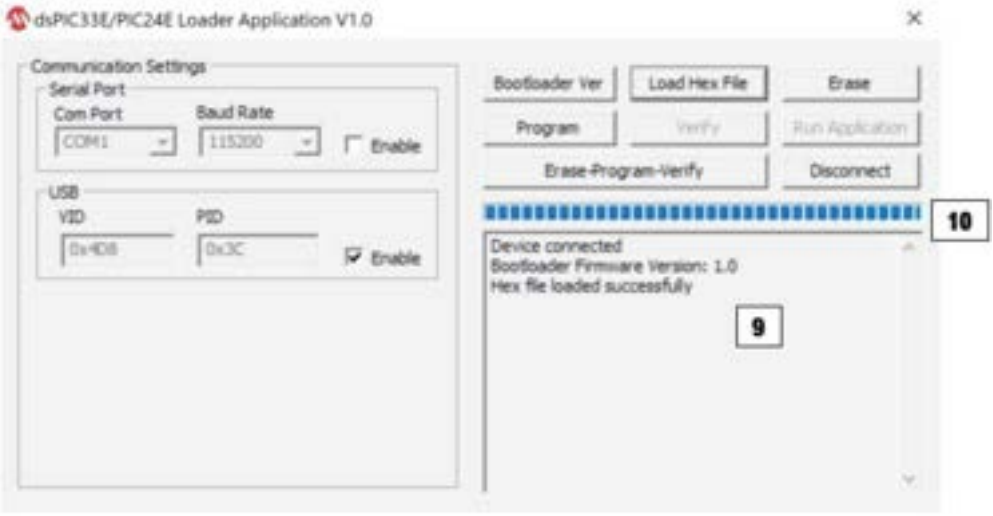
6. Select “Load Hex File”



7. Select “.HEX” file (A1x_xxx.hex) (see Blue-White website for latest firmware version)



8. Click on “Erase-Program-Verify”
9. Once Hex file is loaded successfully
10. Click on “Disconnect”



11. Your firmware has now been updated.

10.0 Warranty

LIMITED WARRANTY
Your Blue-White product is a quality product and is warranted for a specific time from date of purchase (proof of purchase is required). The product will be repaired or replaced at our discretion. Failure must have occurred due to defect in material or workmanship and not as a result of operation of the product other than in normal operation as defined in the product manual. Warranty status is determined by the product's serial label and the sales invoice or receipt. The serial label must be on the product and legible. The warranty status of the product will be verified by Blue-White or a factory authorized service center.

FLEXFLO® A1Pumps are warranted for 2 years from date of purchase (proof of purchase is required). Pumps will be repaired or replaced at our discretion.

WHAT IS NOT COVERED

- Wear parts (tubes, rollers, etc.)
- Pump removal, or re-installation, and any related labor charge.
- Freight to the factory, or service center.
- Products that have been tampered with, or in pieces.
- Damage resulting from misuse, carelessness such as chemical spills on the enclosure, abuse, lack of maintenance, or alteration which is out of our control.
- Damage by faulty wiring, power surges or acts of nature.

BLUE-WHITE does not assume responsibility for any loss, damage, or expense directly or indirectly related to or arising out of the use of its products. Failure must have occurred due to defect in material or workmanship and not as a result of operation of the product other than in normal operation as defined in the pump manual.

Warranty status is determined by the pump's serial label and the sales invoice or receipt. The serial label must be on the pump and legible. The warranty status of the pump will be verified by Blue-White or a factory authorized service center.

PROCEDURE FOR IN WARRANTY REPAIR
Warranty service must be performed by the factory or an authorized service center. Contact the factory or local repair center to obtain a RMA (Return Material Authorization) number. It is recommended to include foot strainer and injection/check valve fitting since these devices may be clogged and part of the problem. Decontaminate, dry, and carefully pack the product to be repaired. Please enclose a brief description of the problem and proof of purchase. Prepay all shipping and insurance cost. COD shipments will not be accepted. Damage caused by improper packaging is the responsibility of the sender. When In-Warranty repair is completed, the factory pays for return shipping to the dealer or customer.

PRODUCT USE WARNING
Blue-White products are manufactured to meet the highest quality standards in the industry. Each product instruction manual includes a description of the associated product warranty and provides the user with important safety information. Purchasers, installers, and operators of Blue-White products should take the time to inform themselves about the safe operation of these products. In addition, Customers are expected to do their own due diligence regarding which products and materials are best suited for their intended applications. BLUE-WHITE is pleased to assist in this effort but does not guarantee the suitability of any particular product for any specific application as Blue-White does not have the same degree of familiarity with the application that the customer/end user has. While BLUE-WHITE will honor all of its product warranties according to their terms and conditions, Blue-White shall only be obligated to repair or replace its defective parts or products in accordance with the associated product warranties.

BLUE-WHITE SHALL NOT BE LIABLE EITHER IN TORT OR IN CONTRACT FOR ANY LOSS OR DAMAGE WHETHER DIRECT, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL, ARISING OUT OF OR RELATED TO THE FAILURE OF ANY OF ITS PARTS OR PRODUCTS OR OF THEIR NONSUITABILITY FOR A GIVEN PURPOSE OR APPLICATION.

CHEMICAL RESISTANCE WARNING
BLUE-WHITE offers a wide variety of wetted parts. Purchasers, installers, and operators of Blue-White products must be well informed and aware of the precautions to be taken when injecting or measuring various chemicals, especially those considered to be irritants, contaminants or hazardous. Customers are expected to do their own due diligence regarding which products and materials are best suited for their applications, particularly as it may relate to the potential effects of certain chemicals on Blue-White products and the potential for adverse chemical interactions. Blue-White tests its products with water only. The chemical resistance information included in this instruction manual was supplied to BLUE-WHITE by reputable sources, but Blue-White is not able to vouch for the accuracy or completeness thereof. While BLUE-WHITE will honor all of its product warranties according to their terms and conditions, Blue-White shall only be obligated to repair or replace its defective parts or products in accordance with the associated product warranties.

BLUE-WHITE SHALL NOT BE LIABLE EITHER IN TORT OR IN CONTRACT FOR ANY LOSS OR DAMAGE, WHETHER DIRECT, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL, ARISING OUT OF OR RELATED TO THE USE OF CHEMICALS IN CONNECTION WITH ANY BLUE-WHITE PRODUCTS.

Users of electrical and electronic equipment (EEE) with the WEEE marking per Annex IV of the WEEE Directive must not dispose of end of life EEE as unsorted municipal waste, but use the collection framework available to them for the return, recycle, recovery of WEEE and minimize any potential effects of EEE on the environment and human health due to the presence of hazardous substances. The WEEE marking applies only to countries within the European Union (EU) and Norway. Appliances are labeled in accordance with European Directive 2002/96/EC. Contact your local waste recovery agency for a Designated Collection Facility in your area.

AUTHORIZED SERVICE CENTERS

To find an authorized service center near you, please call Blue-White Industries at (714) 893-8529 or e-mail us at customerservice@blue-white.com

NOTES:

Blue-White®

Fluid metering solutions made simple



Users of electrical and electronic equipment (EEE) with the WEEE marking per Annex IV of the WEEE Directive must not dispose of end of life EEE as unsorted municipal waste, but use the collection framework available to them for the return, recycle, recovery of WEEE and minimize any potential effects of EEE on the environment and human health due to the presence of hazardous substances. The WEEE marking applies only to countries within the European Union (EU) and Norway. Appliances are labeled in accordance with European Directive 2002/96/EC.

Contact your local waste recovery agency for a *Designated Collection Facility* in your area.

P.N. 80000-754 A1 Peristaltic Pump Manual REV 3 20260730

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