CHEM-FEED®

INJECTOR



MODEL C-1100

POSITIVE DISPLACEMENT INJECTOR PUMP OPERATING MANUAL

Models C-1100A, C-1100C, C-1100F, C-1100X

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1.0 Introduction

Congratulations on purchasing the C-1100 Model-E positive displacement Metering Pump. The C-1100 is designed to inject chemicals into piping systems and is capable of injecting against system pressures up to 150 PSI (10.4 bar). In addition to the front mounted mechanical flow rate adjustment, the C-1100A and C-1100C models include timer circuitry, and C-1100F includes speed control circuitry designed to adjust the pump's output. This manual covers models with the following feed rate mechanisms:

1. Fixed Cycle Timer & Mechanical Stroke Length - (Models C-1100A and C-1100C) The fixed speed pumping mechanism is turned on and off by an electronic timer. The *total* cycle time is factory set. The *on-time* cycle is adjustable from 5% through 100% of the total cycle time. Model C-1100A has a 60 second cycle with a 60 second adjustable on-time. Model C-1100C has a 5 second cycle with a 5 second adjustable on-time.

2. Variable Speed Controller & Mechanical Stroke Length - (Model C-1100F) The speed of the pumping mechanism is adjustable from 5% through 100%.

3. Mechanical Stroke Length - (Model C-1100X) Mechanical adjustment only.

2.0 Specifications

Maximum Working Pressure	150 psig / 10.4 bar (most models)
Maximum Fluid Temperature	130° F / 54° C
Ambient Temperature Range	14 to 110° F / -10 to 43° C
Duty Cycle	Continuous
Maximum Viscosity	1,000 Centipoise
Maximum Suction Lift	up to 30 ft. water
Power Requirements	115V60Hz 80 Watts, 220V50Hz 40 Watts, 230V60Hz 45 Watts
Dimensions	6-1/4" H x 10-1/8" W x 9" D
Weight	8 lb. / 3.6 Kg

3.0 Features

- Double-ball, springless ceramic check valves with PVDF (Kynar) body, TFE/P (Aflas) and Viton o-ring seals.
- Easy access, front mounted mechanical feed rate adjustment.
- High outlet pressure capability of 150 psig (most models)
- Easy to adjust cycle timer or electronic motor speed control.
- 400:1 adjustment turn down ratio. (Model C-1100X turndown 20:1)
- Corrosion proof Valox housing.
- Tamper resistant electronic control panel cover.

4.0 Unpacking

Your pump package should contain the following:
1 - Injector pump
1 - Suction tube footvalve & strainer assembly
1 - Ceramic tubing weight
1 - 5' Length of clear PVC suction tubing
1 - 5' Length of opaque LLDPE discharge tubing
1 - Injection fitting with internal back-flow check valve
1 - Mounting hardware kit

5.0 Installation

CAUTION: Proper eye and skin protection must be worn when installing and servicing the pump.

☞ ***Note:*** *All diagrams are strictly for guideline purposes only. Always consult an expert before installing the pump into specialized systems. The pump should be* ***serviced by qualified persons only.***

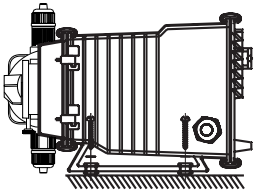
5.1 Mounting Location

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.

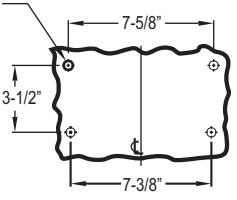
- Mount the pump to a secure surface or wall using the enclosed hardware. Wall mount to a solid surface only. Mounting to drywall with anchors is not recommended.
- Mount the pump close to the injection point. Keep the outlet (discharge) tubing as short as possible. Longer tubing increases the back pressure 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 your installation does not constitute a cross connection with the drinking water supply. Check your local plumbing codes.

INJECTOR MOUNTING

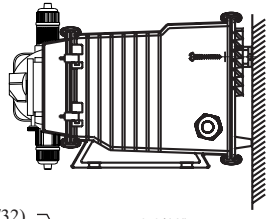
Floor Mount



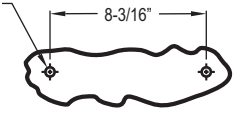
Drill .156 Dia. (5/32)
For Self-Tap Screw
#10 X 1" Phillips Steel
4 Places



Wall Mount

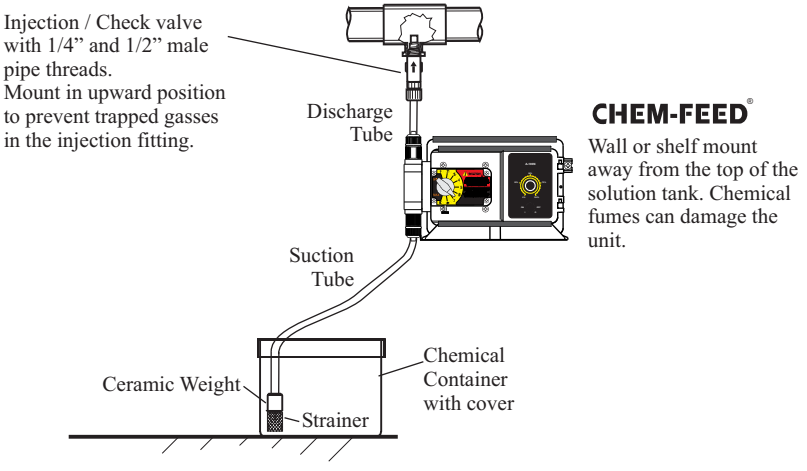


Drill .156 Dia. (5/32)
For Self-Tap Screw
#10 X 1" Phillips Steel
2 Places

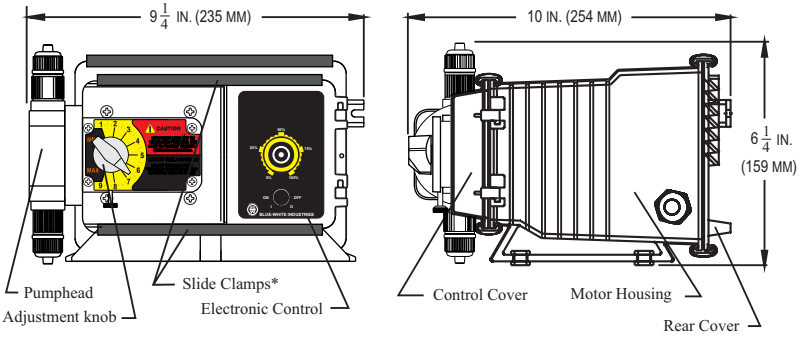


Note: For wall-mounting, drill & thread into solid wood only.

TYPICAL INSTALLATION



PARTS LOCATOR DRAWING

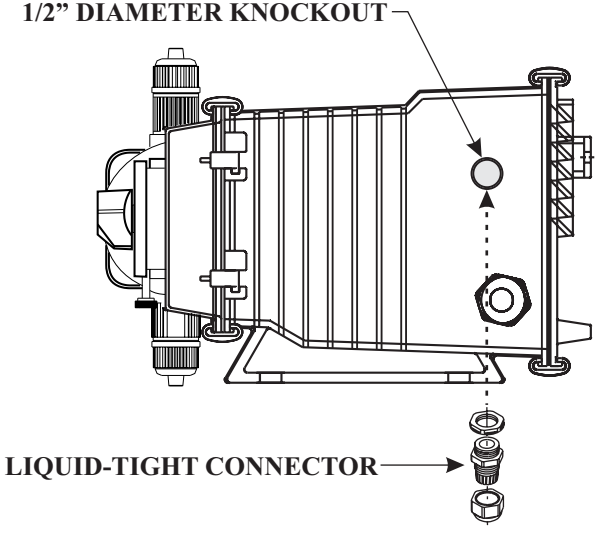


5.2 Optional circuit board signal connection installation - The pump includes three optional external signal connections:

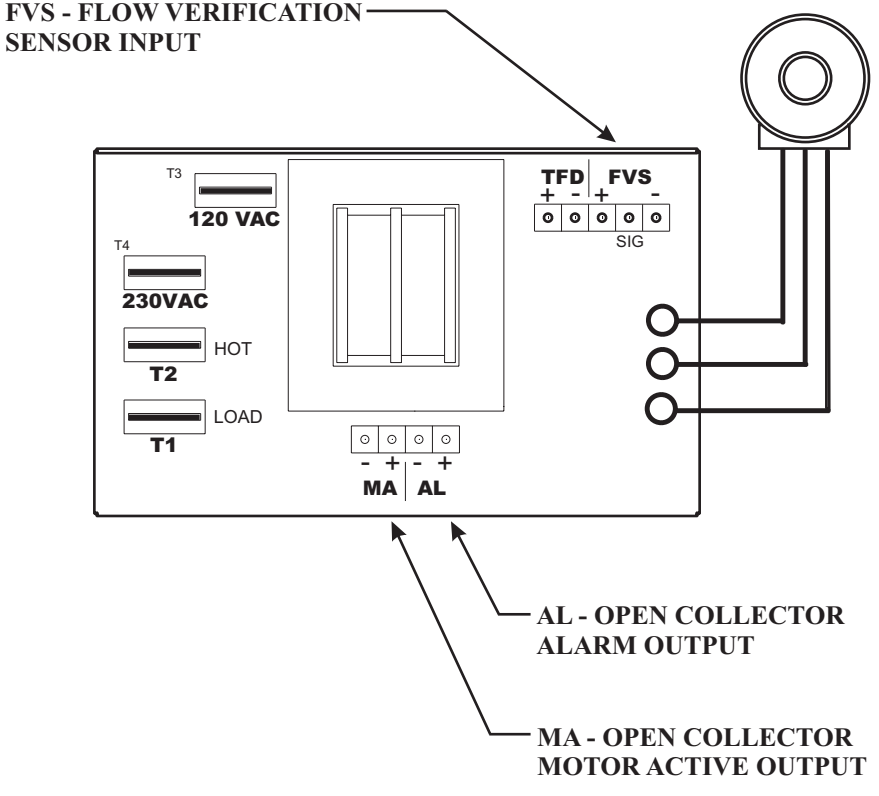
- FVS - FLOW VERIFICATION SENSOR INPUT
  Accepts a pulse signal from an optional Blue-White sensor confirming that fluid is passing through the pump. Triggers and alarm output if fluid is not detected.
- AL - ALARM OPEN COLLECTOR OUTPUT
  The output (purple wire) sinks to DC ground when an alarm condition exists. 6-30Vdc collector voltage. 50mAdc maximum sinking current.
- MA - MOTOR ACTIVE OPEN COLLECTOR OUTPUT
  The output (brown wire) sinks to DC ground when the motor is de-energized. 6-30Vdc collector voltage. 50mAdc maximum sinking current.

All signal wires must be connected to the circuit board, located inside the pump enclosure, using connector plug wiring assemblies. A liquid-tight connector must be installed in the pump enclosure wall and the signal wires passed through the liquid-tight connector and secured. See pages 8 & 9 for wiring details.

1. Remove the rear enclosure panel.
2. Remove knock-out using a screwdriver.
3. Trim edge with a knife and remove sharp edges.
4. Install the provided liquid-tight connector.
5. Connect the connector plug to the circuit board.



CIRCUIT BOARD SIGNAL CONNECTION



5.3 Input Power Connections

WARNING: Risk of electric shock.

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 either a ground wire conductor and a grounding type attachment plug (power cord) or a junction box for field wiring.

POWER CORD MODELS -To reduce the risk of electric shock, be certain that the power cord is connected only to a properly grounded, grounding type receptacle.

JUNCTION BOX MODELS -To reduce the risk of electric shock, be certain that a grounding conductor is connected to the green grounding conductor located in the junction box.

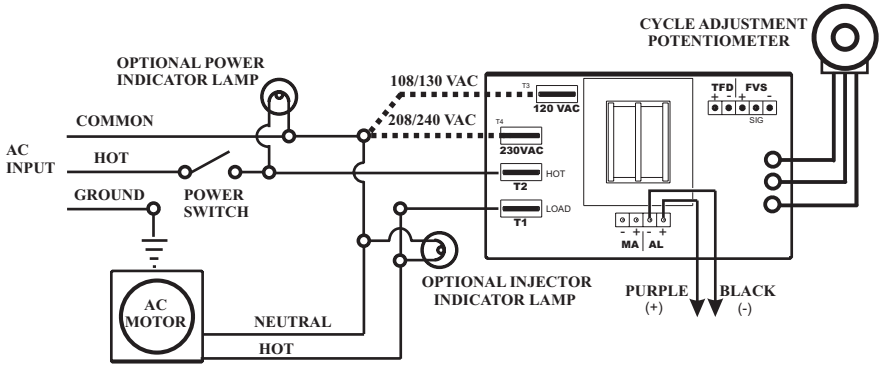
Note: *When in doubt regarding your electrical installation, contact a licensed electrician.*

MOTOR LEADWIRES

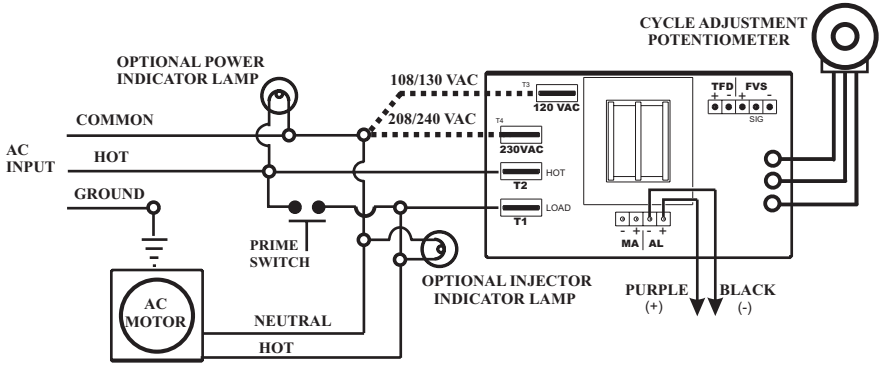
INPUT VOLTAGE	HOT LEADWIRE	NEUTRAL LEADWIRE	GROUND LEADWIRE
115VAC 60Hz	YELLOW	BLUE	GREEN
220VAC 50Hz	YELLOW	BROWN	GREEN
230VAC 60Hz	YELLOW	RED	GREEN
90VDC	(+) RED	(-) BLACK	GREEN

CIRCUIT BOARD SIGNAL IN/OUT CONNECTIONS

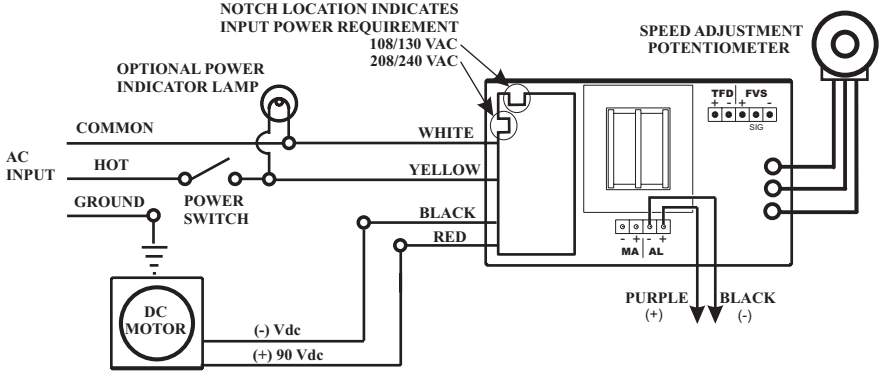
SYSTEM DESCRIPTION	WIRE COLOR CODE
FVS - FLOW VERIFICATION SENSOR INPUT Accepts a pulse signal from an optional Blue-White sensor confirming that fluid is passing through the pump. Triggers and alarm output if fluid is not detected.	**RED (**+ 20VDC) **BLACK (-)** **YELLOW** (signal)
TFD - TUBE FAILURE DETECTION SYSTEM INPUT Monitors a pair of sensors in the pumphead. Triggers an alarm output if fluid with a conductivity of greater than 500 micro-seimens is detected. Typical chemicals include chlorine, acid, caustic. The system will not detect water or silicone lubricating oil.	**GRAY** & **GRAY**
AL - ALARM OPEN COLLECTOR OUTPUT The output (purple wire) sinks to DC ground when an alarm condition exists. 6-30Vdc collector voltage. 50mAdc maximum sinking current.	**PURPLE (+)** & **BLACK (-)**
MA - MOTOR ACTIVE OPEN COLLECTOR OUTPUT The output (brown wire) sinks to DC ground when the motor is de-energized. 6-30Vdc collector voltage. 50mAdc maximum sinking current.	**BROWN (+)** & **BLACK (-)**



WIRING DIAGRAM - Model A-100NA & A-100NC



WIRING DIAGRAM - Model A-100NS



WIRING DIAGRAM - Model A-100NF

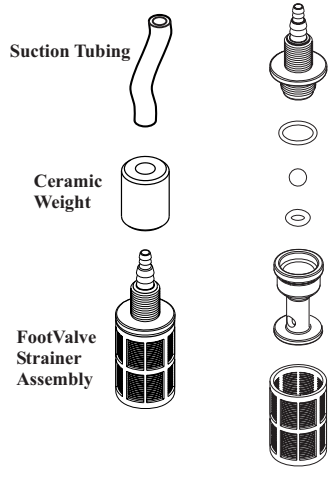
5.4 How To Install the Tubing and Fittings

CAUTION: Proper eye and skin protection must be worn when installing and servicing the pump.

- **Inlet Tubing -** Locate the inlet fitting of the pump head. Remove the tube nut. Push the clear suction tubing through the tube nut and onto the fitting barb. Hand tighten the tube nut to secure the tubing.
- **Footvalve/Strainer** - Trim the inlet end of the suction tubing so that the strainer will rest approximately two inches from the bottom of the solution tank. This will prevent sediment from clogging the strainer. Slip the ceramic weight over the end of the suction tube. Press the strainer's barbed fitting into the end of the tube. Secure the ceramic weight to the strainer. Drop the strainer into the solution tank.
- **Outlet Tubing -** Locate the outlet fitting of the pump head. Remove the tube nut. Push the opaque discharge tubing through the tube nut and onto the compression barb of the fitting. Hand tighten the tube nut to secure the tubing.

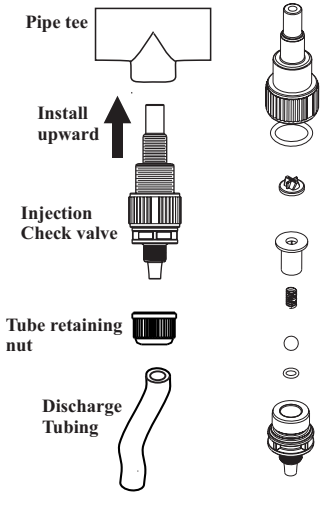
  Keep outlet tube as short as possible.

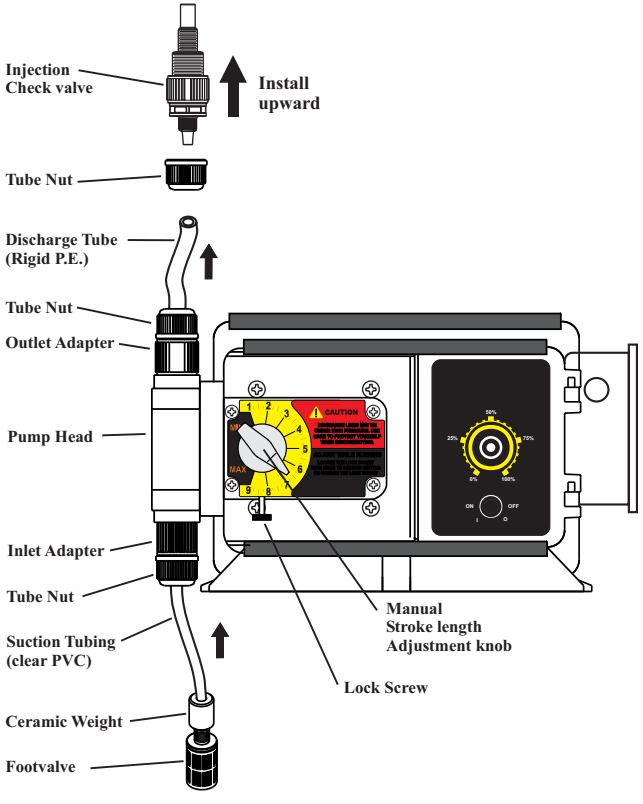
FOOTVALVE/STRAINER



- **Injection/Check Valve Fitting Installation** - The Injection/Check valve fitting is designed to install directly into either 1/4" or 1/2" female pipe threads. This fitting will require periodic cleaning, especially when injecting fluids that calcify such as sodium hypochlorite. See section 7.0. Install the Injection/Check valve directly into the piping system. **To prevent trapped gasses, install the fitting in an upward direction.** Use Teflon thread sealing tape on the pipe threads. Push the opaque outlet (discharge) tubing through the tube nut and onto the compression barb of the Injection/Check valve fitting. Hand tighten the tube nut to secure the tubing.

INJECTION/CHECK VALVE





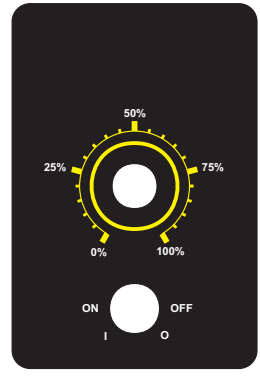
6.0 How To Operate The Pump

6.1 How to adjust the output- manual stroke adjustment The Pump flow rate can be adjusted within a range of 5% -100% of maximum output (20:1 turndown ration) by means of a mechanical, cam type mechanism. The mechanism adjusts the pump's stroke length to an infinite number of settings within the flow range.

☞ **Note:** The pump's output will reduce due to increased system pressure, increased suction lift, and increased fluid viscosity. The pump must be over-sized to allow for these factors. Sizing the pump to allow adjustment within the midrange is preferred to maintain accuracy. Consult the factory for individual pump model output curve data.

To **adjust the pump's output**:

1. With the pump running, loosen the lock screw.
2. Turn the adjustment knob to the desired setting.
3. Re-tighten the lock screw.



6.2 Fixed Cycle Timer Models -The pumping mechanism is turned on and off by an electronic cycle timer. The total-time cycle is factory preset and is not user adjustable. The on-time cycle is adjustable from 5% to 100% of the total cycle time. Example: If the total-time cycle is 60 seconds and the on-time cycle is adjusted for 25 percent, the pump will run for 15 seconds and turn off for 45 seconds (60 second total cycle). This cycle is repeated until either the power switch is turned off, the cycle time is changed or the input power is disconnected from the pump.

To adjust the pump output -

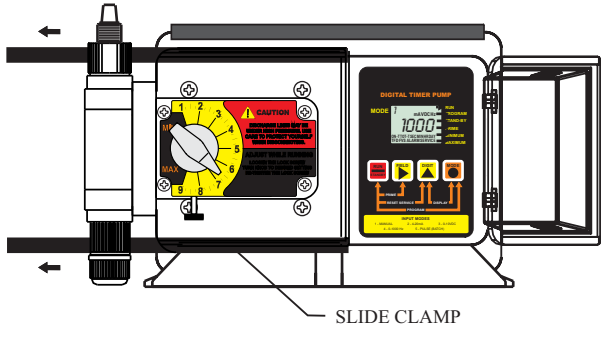
- Slide the slide clamps to the left only far enough to open the control panel door.
- Turn the adjustment knob to the desired percentage of on-time per cycle.

☞ **Note: When power is applied to the pump, the pump will either automatically begin to pump, or maintain power-off status, depending on the power switch status.**

6.3 Variable Speed Model -The speed of the pumping mechanism is adjustable from 5 % through 100%.

To adjust the pump output -

- Slide the slide clamps to the left only far enough to open the control panel door.
- Turn the adjustment knob to the desired percentage of speed.



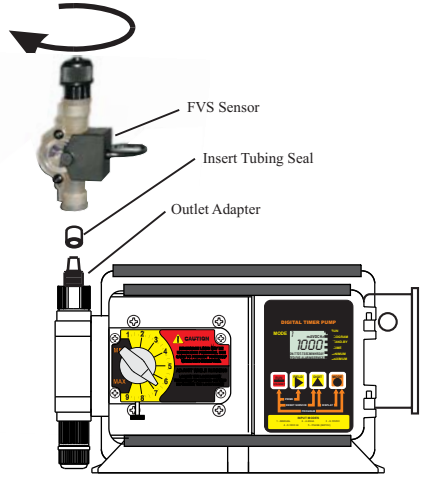
6.4 (FVS) Flow Verification System - The pump is equipped with a *Flow Verification System* which is designed to stop the pump and provide an open collector (sinking) output signal in the event the sensor does not detect chemical during pump operation. This could indicate a clogged injection fitting, empty chemical solution tank, loose tubing connection, etc. The system features an alarm delay time of 6 seconds which allows the pump to clear any gasses that may have accumulated during stopped operation. The pump will stop, and the alarm mode activated, if no pulses are received by the pump and the alarm delay time period has ended. Turn the power switch off and on to clear the alarm and restart the pump. The Flow Verification Sensor is sold as an optional accessory.

Confirm the FVS flow range - The Flow Verification Sensor (FVS) will only function within its operating range. Sensor model FV-100-6V has an operating range of 30-300 ml/min (1-10 oz/min). If the pump's output is less than 30 ml/min (0.5 ml/sec), the sensor will not detect chemical and a signal will not be sent to the pump.

SENSOR MODEL NUMBER	OPERATING FLOW RANGE (ml/min)
FV-100-6V	30-300
FV-200-6V	100-1000
FV-300-6V	200-2000
FV-400-6V	300-3000
FV-500-6V	500-5000
FV-600-6V	700-7000

Install the FVS Flow Sensor - The Flow Verification Sensor (FVS) should be installed on the outlet (discharge) side of the pump head valve. The sensor includes a PVC tubing insert, located inside the sensor's female thread connection, that is designed to seal the sensor onto the pump tube inlet adapter. Thread the sensor onto the pump tube until the tubing insert is snug against the pump tube inlet fitting - do not over-tighten.

Connect the red/white (+), black (-), and bare (signal) wires from the sensor to the red (+), black (-), and yellow (signal) wires on the plug connector. Knock-out the liquid-tite connector mounting hole on the side of the pump enclosure and install the liquid tight connector. Route the wires through the connector and tighten the connector nut. Plug the connector onto the circuit board at the pins marked "FVS". See page 6.



Open Collector Alarm Output - An open collector (sinking) output signal is provided with the FVS system. (See page 6).

7.0 How to Maintain the Pump

CAUTION: Proper eye and skin protection must be worn when installing and servicing the pump.

7.1 Routine Inspection and Maintenance

The pump requires very little maintenance. However, the pump and all accessories should be checked regularly. 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.

7.2 How to Clean the Pump

The pump will require occasional cleaning, especially the Injection fitting, the Footvalve/Strainer, and the pump head valves. The frequency will depend on the type and severity of service.

- Inspect and replace the pumphead valves as required.
- When changing the diaphragm, the pump head chamber and pump head cover should be wiped free of any dirt and debris.
- Periodically clean the injection/check valve assembly, especially when injecting fluids that calcify such as sodium hypochlorite. These lime deposits and other build ups can clog the fitting, increase the back pressure and interfere with the check valve operation. See page 8.
- Periodically clean the suction strainer. See page 8.
- Periodically inspect the air vents located under the motor housing and in the back on the rear housing cover. Clean if necessary.

7.3 Measuring the Pump's Output - Volumetric Test.

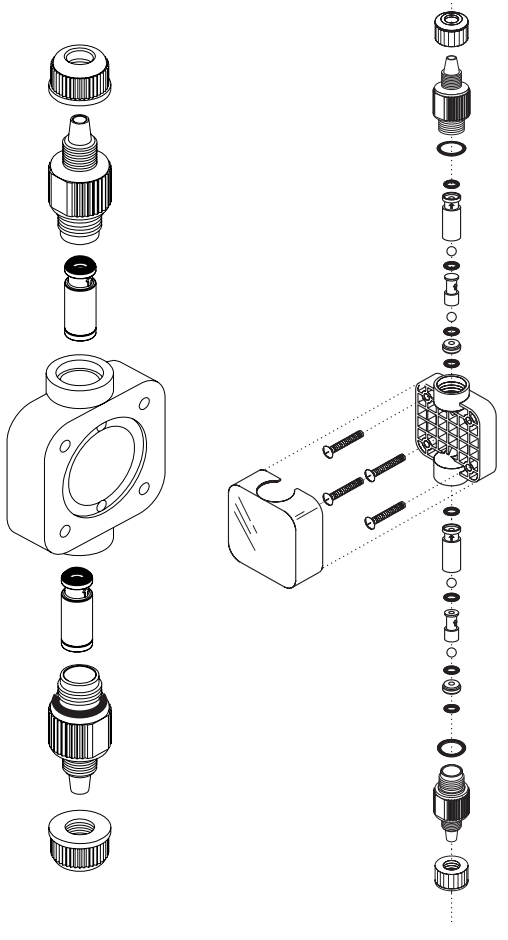
This volumetric test will take into account individual installation factors such as line pressure, fluid viscosity, suction lift, etc. This test is the most accurate for measuring the injector's output in an individual installation.

1. Be sure the Injection Fitting and Footvalve/Strainer is clean and working properly.
2. Fill a large graduated cylinder with the solution to be injected.
3. With the pump installed under normal operating conditions, place the suction tubing with the Footvalve/Strainer installed in the graduated cylinder.
4. Run the pump until all air is removed from the suction line and the solution

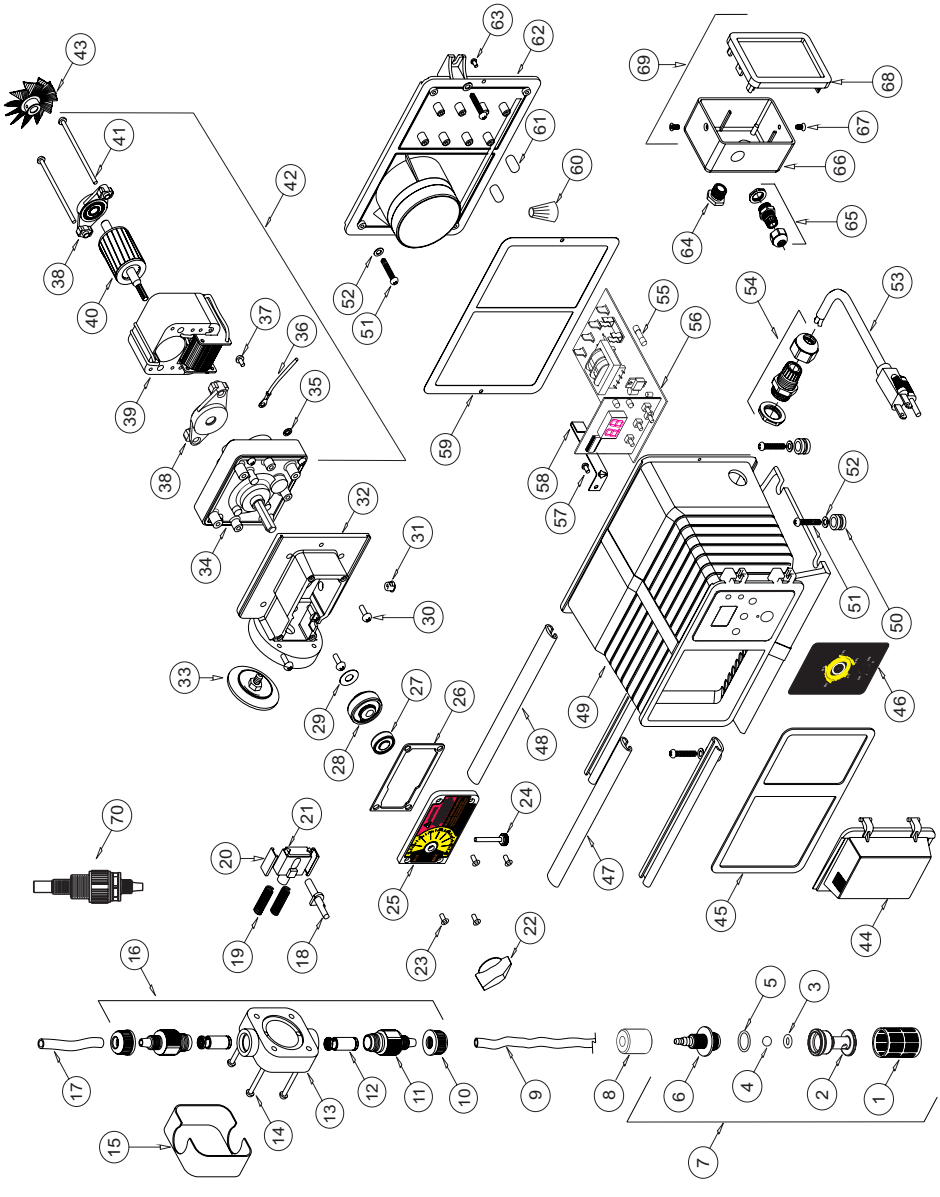
enters the discharge tubing. If the pump does not easily prime, remove the discharge tubing from injection fitting until the pump primes. Re-connect the discharge tubing to the injection fitting.

5. Remove the suction tubing from the graduated cylinder and refill the graduated cylinder if necessary. Note the amount of solution in the graduated cylinder.
6. Place suction tubing with the Footvalve/Strainer installed back into the graduated cylinder.
7. Run the injector for a measured amount of time. A longer testing time will produce more accurate results.
8. Remove the suction tubing from the graduated cylinder. Measure the amount of chemical injected.

PUMP HEAD AND VALVE EXPLODED VIEW



REPLACEMENT PARTS DRAWING



REPLACEMENT PARTS LIST

Item	Part No	Description	Qty
1	90002-086	Screen, FootValve, P.P.	1
2	90002-214	Body, FootValve, PVDF	1
3	2-108A	O-ring Seat, FootValve, Aflas	1
	90003-129	O-ring Seat, FootValve, E.P.	1
4	90008-062	Ball, FootValve, Ceramic	1
5	90003-014	O-ring, FootValve, Viton	1
	90003-015	O-ring, FootValve, E.P.	1
6	90002-215	Adapter, FootValve, PVDF	1
7	71000-324	FootValve S/A, C-340E, EP	1
	71000-325	FootValve S/A, C-340A, Aflas	1
8	90008-068	Ceramic weight, C-346	1
9	90008-116	Tubing Suction 3/8 x 5 FT	1
10	90002-077	Tube Nut, .37T, P.P.	2
11	71000-204	Adapter S/A Bullet .37T Vit	2
	71000-205	Adapter S/A Bullet .37T EP	2
	71000-224	Adapter S/A Bullet .37T Sil	2
12	71000-195	Cartridge Valve S/A, D-Ball	2
13	90002-146	P/Head Noir Molded, P.P.	1
14	90011-141	Screw 10-32 x 1.25	4
15	70004-074	Cover P/Head, HD logo	1
16	70001-149	Kit P/Head HDN 37T V. P-P	1
	70001-153	Kit P/Head HDN 37T E.P. P-P	1
17	76000-374	Tubing D/Charge, 3/8 x 10 FT	1
18	90001-132	Offset Cam #1 .125"	1
	90001-133	Offset Cam #2 .055"	1
	90001-134	Offset Cam #3 .187"	1
	90001-141	Offset Cam #4 .100"	1
19	90006-006	Return Spring	2
20	90002-001	Slide Bearing	2
21	76000-172	Stirr-up	1
22	90002-017	Dial Knob	1
23	90011-168	Screw #6 x .62 PH oval 'A'	4
24	90011-121	Thumb Screw 6-32 x 1.125	1
25	71000-363	Cover Cam S/A C-1100	1
26	90006-597	Gasket, Top Cover	1
27	90004-005	Bearing, Top Cover	1
28	90012-218	Label, Cam Cover	1
28	70000-131	Drive Cam S/A #1 .125"	1
	70000-133	Drive Cam S/A #2 .055"	1
	70000-132	Drive Cam S/A #3 .187"	1
	70000-722	Drive Cam S/A #4 .100"	1
29	90011-014	Spacer, Rotor	1
30	90011-122	Screw 10-32 x .50 PHL PAN	4
31	90008-138	Plug .312 Hole Black	1
32	76001-183	Motor Mount, Large Dia	1
33	70000-683	Diaph. S/A 2.0 15N, Vit/TFE	1
	70000-682	Diaph. S/A 2.0 15N, EP/TFE	1
34	71000-357	Gearbox, 14 RPM	1
	71000-358	Gearbox, 30 RPM	1
	71000-359	Gearbox, 45 RPM	1
	71000-360	Gearbox, 60 RPM	1
	71000-361	Gearbox, 125 RPM	1
	71000-362	Gearbox, 250 RPM	1
35	90011-078	Washer, , #8 Intrl/Star	1
36	90010-222	Lead Wire, ground, Green	1
37	90011-024	Screw 8-32 x .25 Hex SL ST	1
38	70000-028	Bearing Bracket With Bearing	2
39	71000-211	Stator 115v Blue-Wht/Yell	1
	71000-213	Stator 220v Brwn-Wht/yell	1
	71000-212	Stator 230v Red-White/Yellow	1
40	70000-027	Rotor With Shaft And Spacers	1
41	90011-022	Screw, 8-32 X 2.5" Phl Steel	2
42	70002-204	Gearmotor, 14 Rpm, 115v60	1
	70002-205	Gearmotor, 30 Rpm, 115v60	1
	70002-206	Gearmotor, 45 Rpm, 115v60	1
	70002-207	Gearmotor, 60 Rpm, 115v60	1
	70002-208	Gearmotor, 125 Rpm, 115v60	1
	70002-209	Gearmotor, 250 Rpm, 115v60	1
	70002-210	Gearmotor, 14 Rpm, 220v50	1
	70002-211	Gearmotor, 30 Rpm, 220v50	1
	70002-212	Gearmotor, 45 Rpm, 220v50	1
	70002-213	Gearmotor, 60 Rpm, 220v50	1
	70002-214	Gearmotor, 125 Rpm, 220v50	1
	70002-215	Gearmotor, 250 Rpm, 220v50	1
	70002-216	Gearmotor, 14 Rpm, 230v60	1
	70002-217	Gearmotor, 30 Rpm, 230v60	1
	70002-218	Gearmotor, 45 Rpm, 230v60	1
	70002-219	Gearmotor, 60 Rpm, 230v60	1
	70002-220	Gearmotor, 125 Rpm, 230v60	1
	70002-221	Gearmotor, 250 Rpm, 230v60	1
43	90006-581	Fan, Motor, 2.25" Dia, Alum	1
44	90002-191	Door, Controls Cover	1
45	90006-579	Gasket, Front, Neoprene	1
46	90012-224	Label percent control	1
	90012-225	Label blank (model X)	1
47	76000-999	Slide Clamp, Encl Front	2
48	76001-000	Slide Clamp, Encl Rear	2
49	90002-190	Enclosure, P/cord model 1	
	76001-035	Enclosure, J-box model	1
50	90003-559	Mounting Feet, Rubber	4
51	90011-091	Screw, #10 X 1.0" Phl ST	6
52	90011-094	Washer, #10 Stainless	6
53	90010-110	Power Cord, 115v60	1
	90010-196	Power Cord, 220v50	1
	90010133	Power Cord, 230v60	1
54	70000-589	Connector Liq-tite w/ nut .375	1
56	A-023N-B	Timer 60 sec. Model A	1
	A-023N-H	Timer 5 sec. Model C	1
	C-1817N-1	Speed control 115V model F	1
	C-1817N-4	Speed control 220V model F	1
	C-1817N-5	Speed control 230V model F	1
57	90011-146	Screw, 8-32 X .25 Phil Pan F	1
58	90006-583	Motor Retaining Clip, Ss	1
59	90006-580	Gasket, Back , Neoprene	1
60	90010-036	Wire Nut, Blue	2
62	90002-192	Enclosure Back Plate, Valox	1
63	90011-044	Screw 6-32 x .37 Swag Form	1
64	90007-515	Bushing, J-Box Conn, Alum.	1
65	90008-199	Connector Liq-tite w/ nut .187	1
66	76001-168	J-Box, Ext. Input, Valox	1
67	90011-129	Screw, 6-32 X .25 Phil SS	2
68	71000-133	Cover, J-Box w/Gasket, Label	1
69	70000-364	J-Box Assembly, Ext. Input	1
70	C-395N-6A	Inj. Valve .5-.25 MptX.37od T	1

LIMITED WARRANTY

Your new pump is a quality product and is warranted to be free of defects as set down in this policy. All parts, including rubberized goods, and labor are covered under warranty for 90 days from the date of purchase. Used peristaltic pump tube assemblies are not warranted. Parts, excluding rubberized goods, are covered under warranty for 12 months from the date of purchase.
Warranty coverage does not include damage to the pump that results from misuse, carelessness, abuse or alteration. Only the repair or the replacement of the pump is covered. Blue-White Industries does not assume responsibility for any other loss or damage.
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 the pump must be accompanied by the sales invoice or receipt to obtain warranty coverage. The warranty status of the pump will be verified by Blue-White or a factory authorized service center.

Please be advised; injection and metering devices are not intended as a means of treating water to render it suitable for human consumption. When used as hypochlorinators, they are meant to destroy bacteria and algae contamination, before it's removal by filtration. Acid and soda injectors are used for PH control (balance). Blue-White injectors are factory tested with water only for pressure and performance. ***Installers and operators of these devices must be well informed and aware of the precautions to be taken when injecting various chemicals -especially those considered hazardous or dangerous.***
Should it become necessary to return an injector for repair or service, you must attach information regarding the chemical used as some residue may be present within the unit which could be a hazard to service personnel.
Blue-White Industries will not be liable for any damage that may result by the use of chemicals with their injectors and it's components. Thank you.

PROCEDURE FOR IN WARRANTY REPAIR

Carefully pack the pump to be repaired, include the foot strainer and injection/check valve fitting. Enclose a brief description of the problem as well as the original invoice or sales receipt showing the date of purchase. The receipt will be returned with the unit. Prepay all shipping costs. COD shipments will not be accepted. Warranty service must be performed by the factory or an authorized service center. Damage caused by improper packaging is the responsibility of the sender.

AUTHORIZED SERVICE CENTERS

ARKANSAS
BT Environmental, Inc
Bill Thomason
225 Castleberry Street
Hot Springs, AR 71902
501-624-3837

CALIFORNIA (NORTHERN)
Howard E. Hutching co. (Repair Center)
7190 Penryn Plaza
Penryn, CA 95663

Pool-Tech, Inc.
3471 Mt. Diablo Blvd.
Lafayette, CA 94549
415-284-1400

Swimco Electric Co.
753 Camden Avenue
Campbell, CA 95008
408-378-2607

CALIFORNIA (SOUTHERN)
Blue-White Industries (Repair Center)
5422 Business Drive
Huntington Bch. CA 92649
714-893-8529

COLORADO
Denver Winpump
655 Depew Street
Lakewood, CO 80214-2494
303-233-1121

CONNECTICUT
Cronin-Cook & Associates
24 West Road
Vernon, CT 06066
203-875-0544

FLORIDA
AAA Electric Motor Services
1131 N.E. 45th Street
Ft. Lauderdale, FL 33334
305-772-7501

All American Pool & Patio
2021 Curry Ford Road
Orlando, FL 32806
407-898-8722

Rice Pump & Motor Repair
5788 N. Powerline Road
Ft. Lauderdale FL 33309
305-776-6049

American Pump
7580-A W. Tennessee St.
Tallahassee, FL 32304
904-575-9618

Del Ray Electric
11 N.E. 2nd Avenue
Del Ray Beach, FL 33444
407-278-3976

Jerry Lee Chemical Co.
3407 W. Old Fairfield Drive
Pensacola, FL 32505
904-432-9929

Picard Chemical
1670 S. Congress Avenue
W. Palm Beach, FL 33406
407-965-3434

V.J. Mini & Son, Inc.
1581 N. Dixie Highway
Pompano Beach, FL 33060
305-946-0920

ILLINOIS
Mullarkey Associates (Repair Center)
12346 S. Keeler Ave.
Alsip, IL 60658
708-597-5558

MARYLAND
Century Pool Service, Inc
5020 Nicholson Court, #201
Kensington, MD 20895
301-231-8999

NEVADA
Swim-In Enterprises, Inc.
1314 S. Main Street
Las Vegas, NV 89104
702-384-4223

NEW YORK
Sherwood Specialties, Inc.
412 Smith Street
Rochester, NY 14608
716-546-1211

NORTH CAROLINA
Southern Industrial Sales
1903 Herring Avenue
Wilson, NC 27893
919-237-2500

PENNSYLVANIA
Armor Electric, Inc.
1425 Selinger Avenue
Erie, PA 16505
814-838-2034

SOUTH DAKOTA
Son-Aqua Distributing
Jim Robinson
2447 W. Main Street
Rapid City, SD 57702
605-343-7716

TENNESSEE
Rock City Machine
307 3rd Avenue South
Nashville, TN 37201
615-244-1371

TEXAS
Alamo Water Refiners
13700 Hwy. 90 West
San Antonio, TX 78245
512-677-8400

EGCO Industries
8505 Director Row
Dallas, TX 75247
214-631-6885

Miracle Water Cond. Co.
Robert Shelton
1011 Oakmead Drive
Arlington, TX 76011
817-640-6188

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