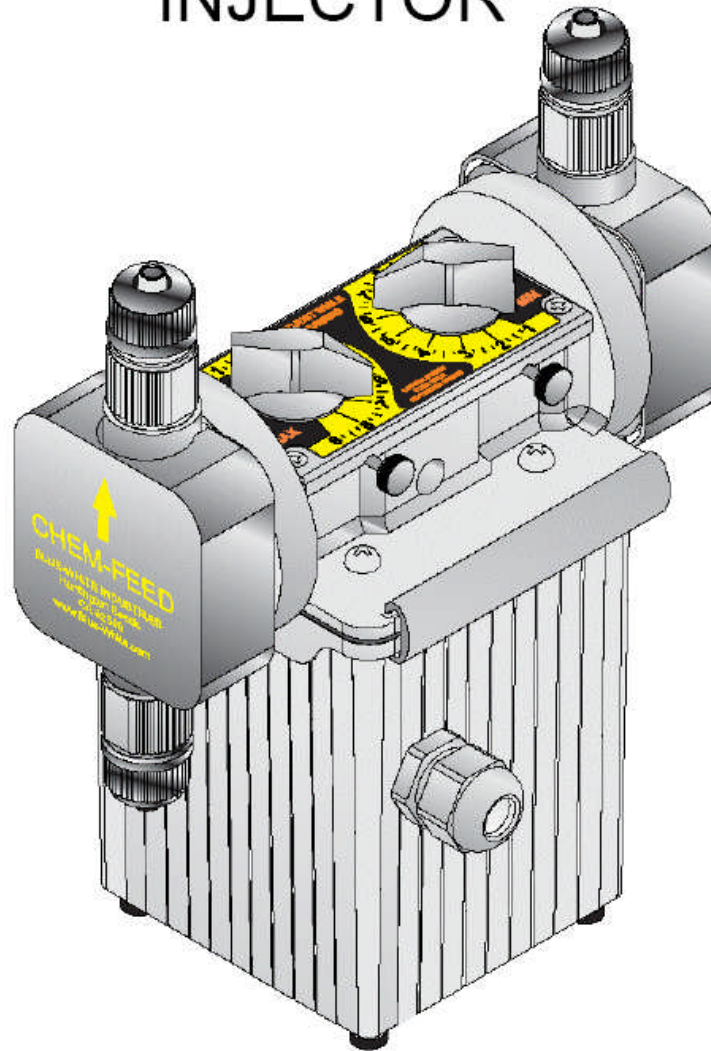


CHEM-FEED[®]

INJECTOR



MODEL C-1700N
Positive Displacement Injector Pump
Operating Manual

C-1700N**TABLE OF CONTENTS**

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1.0 Introduction

Thank you for purchasing the C-1700N positive displacement metering pump. The C-1700N is designed to inject chemicals into piping systems. The pump has been tested by NSF International for use with 12 1/2% Sodium Hypochlorite. All models are equipped with two top mounted mechanical flow rate adjustment knobs. Optional on/off cycling timers are available.

2.0 Specifications

| | |
|----------------------------------|---|
| Maximum Working Pressure | 125 psig / 8.6 bar* |
| Maximum Fluid Temperature | 130 F / 54C |
| Output Accuracy | +/-10% of maximum (water @ 70F, 0 psig, and 5' suction lift) |
| Ambient Temperature Range | 14 to 110F / -10 to 43C |
| Enclosure | NEMA 3R (acceptable for outdoor use) |
| Duty Cycle | Continuous |
| Maximum Viscosity | 1,000 Centipoise |
| Maximum Suction Lift | up to 10 ft. water |
| Power Requirements | 115V60Hz 45 Watts 220V50Hz 45 Watts 230V60Hz 45 Watts 24V60Hz 45 Watts |
| Dimensions | 9-1/16" high x 4-1/2" wide x 7-5/32" deep |

Weight

7.5 lb.

3.0 C-1700N Features

- Double-ball ceramic check valves.
- PVDF (Kynar) valve assemblies.
- Viton o-rings.
- High outlet pressure capability of 125 PSIG.*
- Easy access, top mounted mechanical feed rate adjustment.
- Ball bearing supported motor drive shaft.
- Permanently lubricated ball bearing motor.
- 20:1 adjustment turn down ratio.
- Acceptable for outdoor use. (NEMA 3R; IP23)
- Corrosion resistant Valox housing.
- Easy servicing.
- Includes suction tube foot valve & strainer, suction tube weight, suction tubing, discharge tubing and injection fitting with internal back-flow check valve and mounting hardware.

* Most models.

4.0 How To Install the C-1700N

CAUTION: PROPER EYE AND SKIN PROTECTION MUST BE WORN WHEN INSTALLING AND SERVICING THE C-1700N

Note: All diagrams are strictly for guideline purposes only. Always consult an expert before installing the C-1700N into specialized systems.

The C-1700N should be serviced by qualified persons only.

4.1 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.
- Keep the outlet (discharge) tubing as short as possible. Longer tubing increases the back pressure at the pump tube.
- Do not mount the pump directly over your chemical container. 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 can reduce the time required to prime the pump. Install a shut-off valve, pinch clamp or other means to halt the gravity feed to the pump during servicing.
- Your solution tank should be sturdy. Keep the tank covered to reduce fumes.
- Be sure your installation does not constitute a cross connection with the drinking water supply. Check your local plumbing codes.

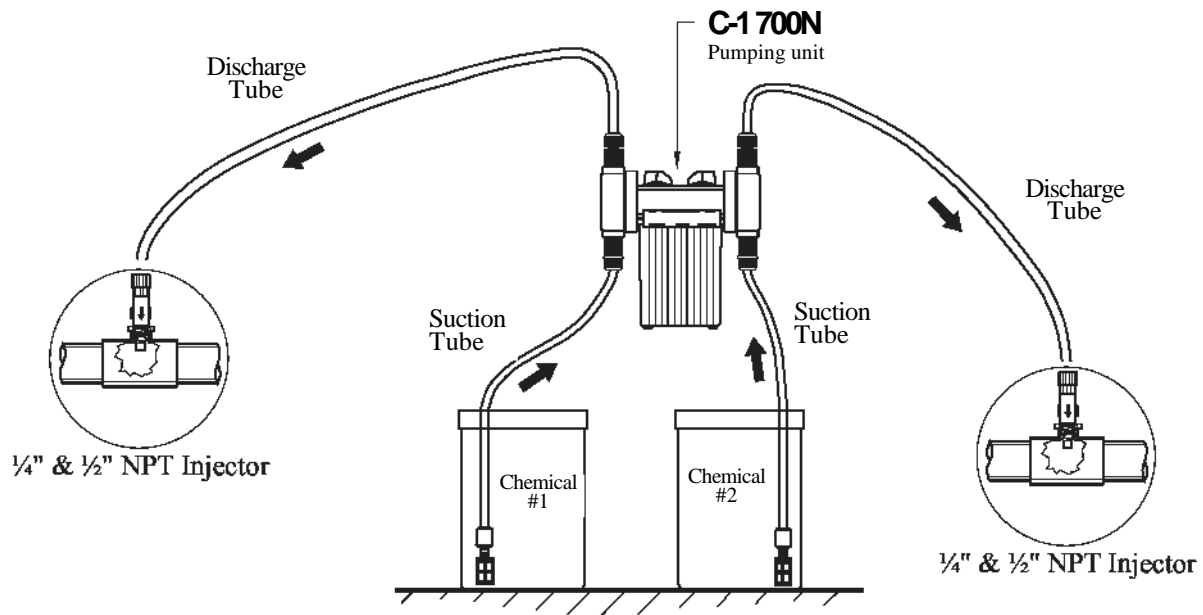
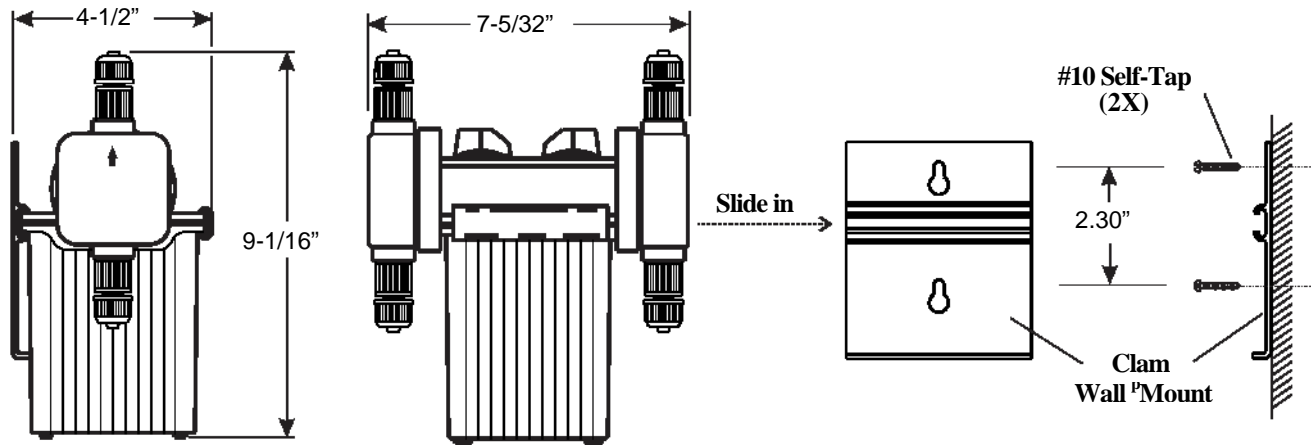


FIG. 4.2 TYPICAL INSTALLATION

4.2 Electrical Connections

4.2.1 Input Power Connections

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.

WARNING -RISK OF ELECTRICAL SHOCK

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

The C-1700N 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.

MOTOR LEAD WIRES

| INPUT VOLTAGE | HOT LEAD WIRE | NEUTRAL LEAD WIRE | GROUND LEAD WIRE |
|---------------|------------------|-------------------|------------------|
| 115V 60Hz | BLACK or YELLOW* | BLUE | GREEN |
| 220V 50Hz | BLUE or YELLOW* | BROWN | GREEN |
| 230V 60Hz | BLACK or YELLOW* | RED | GREEN |
| 24V 60Hz | BLUE | WHITE | GREEN |

* Yellow leadwire : thermally protected motor

Black or Blue leadwire: standard impedance protected motor

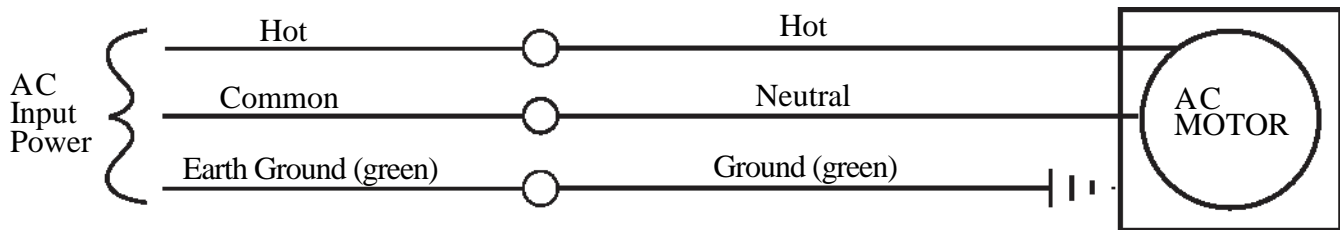


FIG. 4.4 WIRING DIAGRAM - STANDARD MODELS

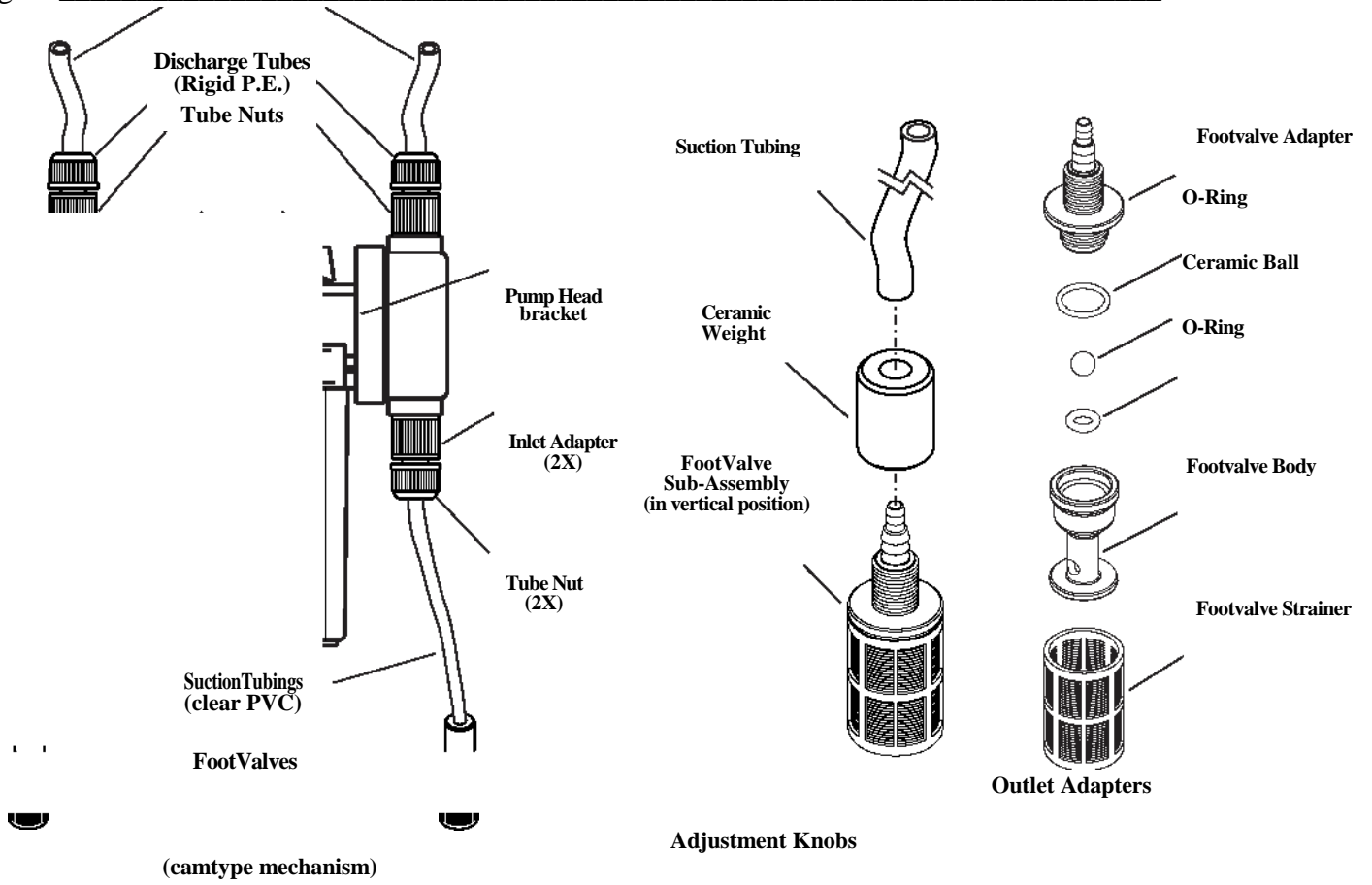


FIG. 4.7 FOOTVALVE ASSY.

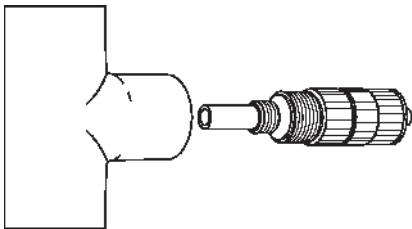
4.3.4 Injection/Check Valve Fitting Installation - The Injection/Check valve fitting is designed to install directly into either 1/4" or 1/2" female pipe threads.

Install the Injection/Check valve directly into the tee fitting. Do not install the fitting into a pipe stud and then into the tee. The solution must inject directly into the flow stream.

Use Teflon thread sealing tape on the pipe threads. Push the opaque outlet (discharge) tubing onto the compression barb of the Injection/Check valve fitting. Use the tube nut to secure the tube. Hand tighten only.

Injection/Check valve fitting will require periodic cleaning, especially when injecting fluids that calcify such as sodium hypochlorite. These lime deposits and other build ups can clog the fitting increasing the back pressure and interfering with the check valve operation. See section 6.0.

FIG. 4.8
INJECTION/CHECK VALVE
TEE INSTALLATION AND EXPLODED VIEW

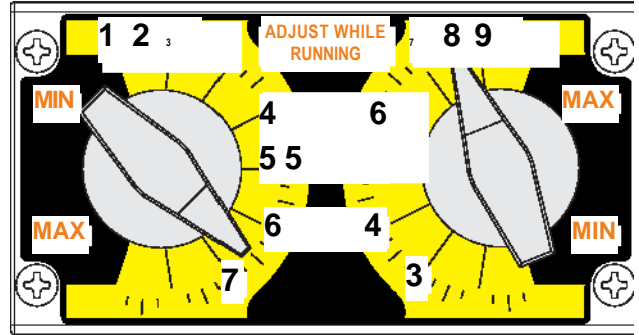


5.0 How To Operate The C-1700N

5.1 Adjusting the Pump Output- Standard models (fig. 5.1) - The C-1700N flow rate(s) can be adjusted within a range of 5% -100% of maximum output (20:1 turndown ratio) by means of two mechanical, cam type mechanisms. The mechanism adjusts the pump's stroke length to an infinite number of settings within the flow range. Because the pump's output is reduced by increasing the pressure of the system being injected into, the amount of suction lift, and the viscosity of the fluid being injected, 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 set screw.
2. Turn the adjustment knob to the desired setting.



3. Re-tighten the set screw.

9 8

LOOSEN SCREW
TURN KNOB
RE-TIGHTEN SCREW

21

FIG. 5.1

5.2 Adjusting the Pump Output - DELUXE Models (fig. 5.2)

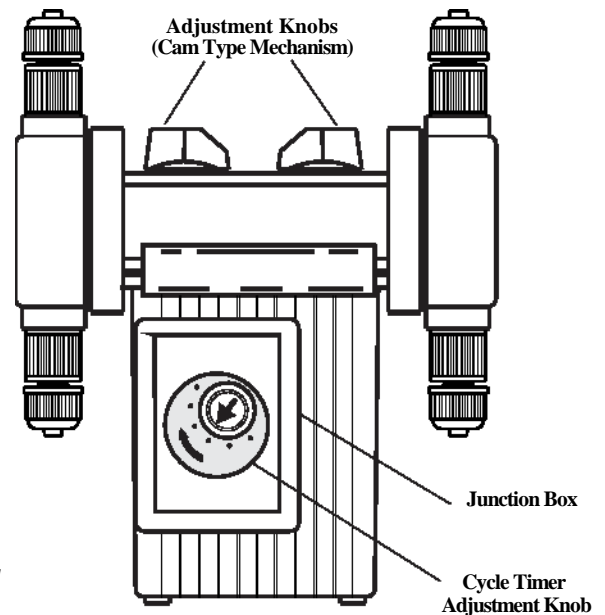
In addition to the two cam type mechanism adjustments (section 5.1), the pump output of the C-1700N deluxe unit equipped with an optional electronic cycle timer board can also be fine tuned by adjusting the timer adjustment knob. The total-time cycle is factory preset and is not user adjustable. The on-time cycle is adjustable from 5% to 100% of the total cycle time. Example: If the total-time cycle is 5 seconds and the on-time cycle is adjusted for 20 percent, the pump will run for 1 second and turn off for 4 seconds (5 second total cycle). This cycle is repeated until either the cycle time is changed or the input power is disconnected from the pump.

Note: When the input power is disconnected from the C-1700N, the unit will maintain the last adjusted settings. When power is restored to the pump, the C-1700N will begin to pump using the last time cycle setting.

To adjust the On-Time:

Turn the timer adjustment knob located on the junction box cover.

Clockwise increases the time on.



5.3 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 Fittings and Footvalves/Strainers are clean and working properly.
2. With the injector installed under normal operating conditions, place the Footvalve/Strainer in a large graduated cylinder.
3. Fill the graduated cylinder with the solution to be injected and run the injector until all air is removed from the suction line and the solution enters the discharge tubing.
4. Refill the graduated cylinder, if necessary, and with the Footvalves completely submerged in the solution, note the amount of solution in the graduated cylinder.
5. Run the injector for a measured amount of time and note the amount of fluid injected. A longer testing time will produce more accurate results.

6.0 How to Maintain the C-1700N

**CAUTION: PROPER EYE AND SKIN PROTECTION MUST BE WORN
WHEN INSTALLING AND SERVICING THE C-1700N**

6.1 Routine Inspection and Maintenance

The C-1700N 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.

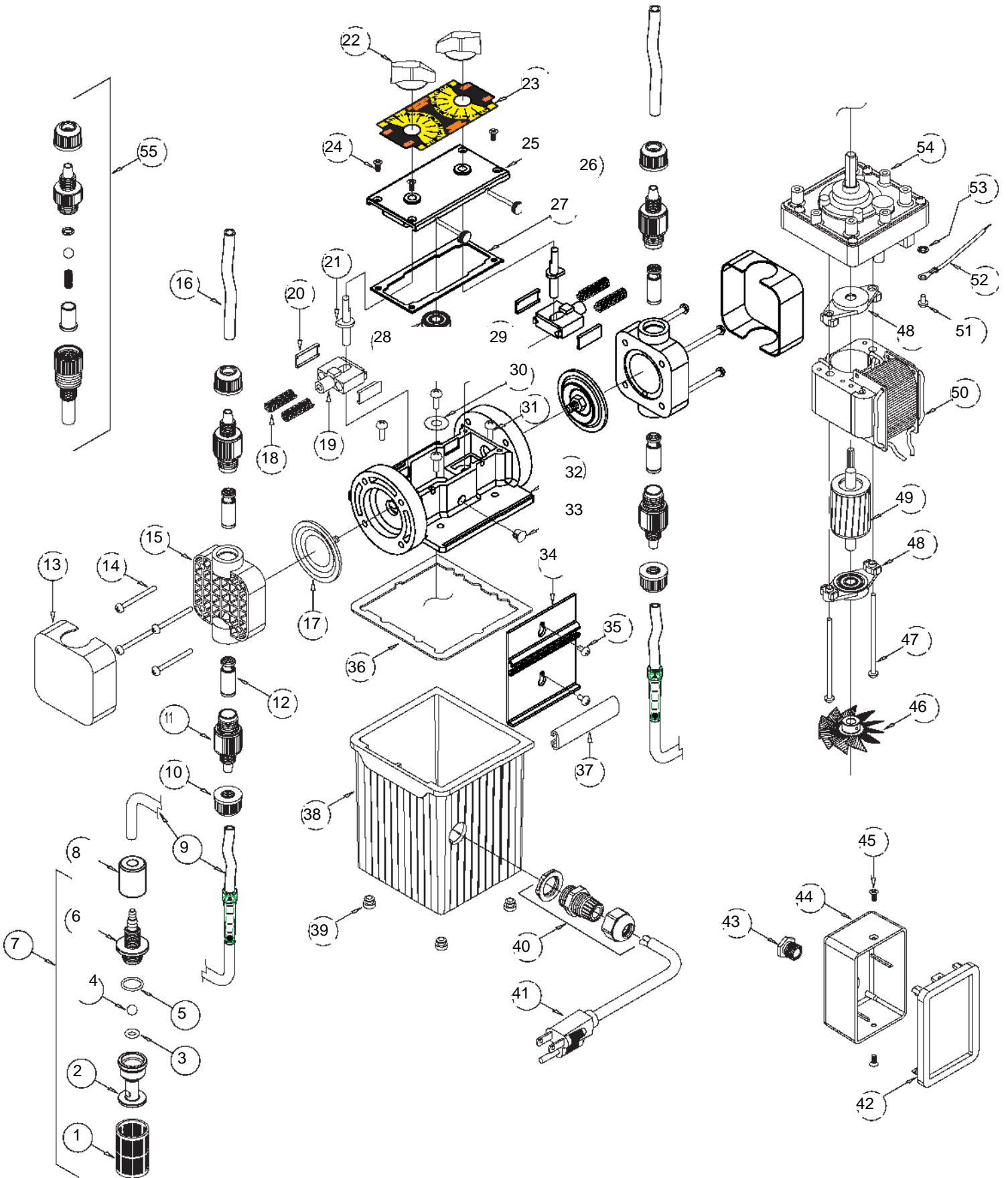
Cracking, crazing, discoloration and the like during the first week of operation are signs of severe chemical attack. If this occurs, immediately remove the chemical from the pump. Determine which parts are being attacked and replace them with parts that have been manufactured using more suitable materials.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

6.2 How to Clean the C-1700N

The C-1700N will require occasional cleaning, especially the Injection fittings, the Footvalves/Strainers, and the pump head valves. The frequency will depend on the type and severity of service..

- g' When changing the diaphragm, the pump head chamber and pump head cover should be wiped free of any dirt and debris.
- g' 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 section 4.3.4. Fig. 4.8.
- g' Periodically clean the suction strainers. Fig.4.7
- g' Periodically inspect the air vents located under the motor compartment and under the pump head. Clean if necessary.

Replacement Parts Drawing



C-1700N PARTS LIST

| Qty | Item | Part No | Description | Qty |
|-----|-------|-----------|--|-----|
| 2 | 29 | 70000-131 | Drive Cam S/A #1 .125" | 1 |
| 2 | | 70000-133 | Drive Cam S/A #2 .055" | 1 |
| 2 | | 70000-132 | Drive Cam S/A #3 .187" | 1 |
| 2 | | 70000-722 | Drive Cam S/A #4 .100" | 1 |
| 2 | 30 | 90011-014 | Spacer, Rotor | 1 |
| 2 | 31 | 90011-122 | Screw 10-32 x .50 PHL PAN | 4 |
| 2 | 32 | 76000-937 | Motor Mount, Large Diaphragm | 1 |
| 2 | 33 | 90008-138 | Plug .312 Hole Black | 1 |
| 2 | 34 | 90002-106 | Clamp C-17N Wall Mount | 1 |
| 2 | 35 | 90011-122 | Screw 10-32 x .50 PHL PAN | 2 |
| 2 | 36 | 90006-597 | Gasket, Motor Mount | 1 |
| 2 | 37 | 76000-630 | Slide Clamp | 2 |
| 2 | 38 | 76000-939 | Motor Cover C-17N 115V | 1 |
| 4 | | 76000-940 | Motor Cover C-17N 220/230V | 1 |
| 4 | 39 | 90003-513 | Bumper Feet | 4 |
| 4 | 40 | 70000-589 | Connector Liq-Tite w/nut | 1 |
| 4 | 41 | 90010-110 | Cord 18/3 SJTW/A 115v | 1 |
| 4 | | 90010-128 | Cord 18/3 SJTW/A European BLK | 1 |
| 4 | | 90010-133 | Cord 18/3 SJTW/A 230v BLK | 1 |
| 4 | 42 | 71000-133 | Cover, Junction Box with Gasket and Label | 1 |
| 4 | 43 | 90007-515 | Bushing, Junction Box Connector, Alum. | 1 |
| 2 | 44 | 76000-522 | Junction Box, Valox | 1 |
| 2 | 45 | 90011-129 | Screw, Cover, 6-32 X .25 Phil Pan SS Black | 2 |
| 2 | 46 | 90006-598 | Fan, 1.80" Diameter, Alum. | 1 |
| 2 | 47 | 90011-022 | Screw, Motor, 8-32 X 2.5" Phillips Steel | 2 |
| 4 | 48 | 70000-028 | Bearing Bracket With Bearing | 2 |
| 2 | 49 | 70000-027 | Rotor Assembly With Shaft And Spacers | 1 |
| 2 | 50 | 70000-018 | Stator S/A, 115V60Hz Standard Blue-Black | 1 |
| 2 | | 70000-019 | Stator S/A, 115V60Hz Thermal Blue-Yellow | 1 |
| 2 | | 71000-019 | Stator S/A, 220V50Hz Standard Brown-Black | 1 |
| 2 | | 71000-020 | Stator S/A, 220V50Hz Thermal Brown-Yellow | 1 |
| 2 | | 70000-020 | Stator S/A, 230V60Hz Standard Red-Black | 1 |
| 2 | | 70000-021 | Stator S/A, 230V60Hz Thermal Red-Yellow | 1 |
| 4 | | 70000-072 | Stator S/A, 24V60Hz Standard Blue-White | 1 |
| 2 | 51 | 90011-024 | Ground Screw 8-32 x .25 Hex SL ST | 1 |
| 4 | 52 | 90010-127 | Lead Wire, ground, Green | 1 |
| 2 | 53 | 90011-078 | Washer, Ground Screw, #8 Intrl/Star | 1 |
| 2 | 54 | 71000-268 | Gearbox, 14 RPM | 1 |
| 2 | | 71000-269 | Gearbox, 30 RPM | 1 |
| 2 | | 71000-270 | Gearbox, 45 RPM | 1 |
| 2 | | 71000-271 | Gearbox, 60 RPM | 1 |
| 1 | | 71000-272 | Gearbox, 125 RPM | 1 |
| 4 | 55 | 70000-439 | Injection Valve S/A 37T VIT 1/2 PSI | 1 |
| 1 | (N/s) | 90010-153 | Cycle Timer 5 Sec. 24V-115V-230V 50/60 Hz | 1 |
| 2 | (N/s) | 90010-151 | Cycle Timer 1 Min. 24V-115V-230V 50/60 Hz | 1 |
| 1 | (N/s) | 90010-152 | Cycle Timer 10 Min. 24V-115V-230V 50/60 Hz | 1 |
| 1 | | | | 1 |

| <u>Item</u> | <u>Part No</u> | <u>Description</u> |
|-------------|----------------|---|
| 1 | 90002-086 | Screen, FootValve, P.P. |
| 2 | 90002-214 | Body, FootValve, PVDF |
| 3 | 90003-126 | O-ring Seat, FootValve, Viton |
| 4 | 90003-129 | O-ring Seat, FootValve, E.P. |
| 5 | 90008-062 | Ball, FootValve, Ceramic |
| 6 | 90003-014 | O-ring, FootValve, Viton |
| 7 | 90003-015 | O-ring, FootValve, E.P. |
| 8 | 90002-215 | Adapter, FootValve, PVDF |
| 9 | 71000-324 | FootValve S/A, C-340E, EP |
| 10 | 71000-325 | FootValve S/A, C-340V, VT |
| 11 | 90008-068 | Ceramic weight, C-346 |
| 12 | 70000-638 | Tube Indicator Glass 3/8 x 5FT |
| 13 | 76000-171 | Tube Suction 1/4 x 5FT |
| 14 | 90002-077 | Tube Nut, .37T, P.P. |
| 15 | 90002-047 | Tube Nut, .25T, P.P. |
| 16 | 71000-204 | Adapter S/A Bullet .37T Viton |
| 17 | 71000-205 | Adapter S/A Bullet .37T EP |
| 18 | 71000-224 | Adapter S/A Bullet .37T Silicon |
| 19 | 71000-225 | Adapter S/A Bullet .25T Viton |
| 20 | 71000-226 | Adapter S/A Bullet .25T EP |
| 21 | 71000-227 | Adapter S/A Bullet .25T Silicon |
| 22 | 71000-195 | Cartridge Bullet Valve S/A, Double-Ball |
| 23 | 70004-074 | Cover P/Head, HD Chem-Feed logo |
| 24 | 70004-071 | Cover P/Head, HD Noir logo |
| 25 | 70004-086 | Cover P/Head, HD Micro logo |
| 26 | 90011-141 | Screw 10-32 x 1.25 |
| 27 | 90002-146 | P/Head Noir Molded, P.P. |
| 28 | 76000-168 | Tubing D/Charge, 3/8 x 5FT |
| 29 | 76000-169 | Tubing D/Charge, 1/4 x 5FT. |
| 30 | C-406 VT-17N | Diaphragm S/A 2.0 17N, Viton/TFE |
| 31 | C-406T-17N | Diaphragm S/A 2.0 17N, EP/TFE |
| 32 | R-106VT-17N | Diaphragm S/A 1.6 17N, Viton/TFE |
| 33 | R-106T-17N | Diaphragm S/A 1.6 17N, EP/TFE |
| 34 | 90006-022 | Return Spring C-1700N |
| 35 | 76000-288 | Stirr-up |
| 36 | 90002-001 | Slide Bearing |
| 37 | 90001-132 | Offset Cam #1 .125" |
| 38 | 90001-133 | Offset Cam #2 .055" |
| 39 | 90001-134 | Offset Cam #3 .187" |
| 40 | 90001-141 | Offset Cam #4 .100" |
| 41 | 90002-017 | Dial Knob |
| 42 | 90012-220 | Label, Top Cover |
| 43 | 90011-168 | Screw #6 x .62 PH oval 'A' |
| 44 | 76000-938 | Top Cover |
| 45 | 90011-121 | Thumb Screw 6-32 x 1.125 |
| 46 | 90006-599 | Gasket, Top Cover |
| 47 | 90004-005 | Bearing, Top Cover |