CMA DISHMACHINES

MODEL L-1C

SERVICE & PARTS MANUAL

Rev 1.00 A

c UL us LISTED COMMERCIAL DISHWASHER 864T

NSF

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MODEL CMA-L-1C

1. Specifications

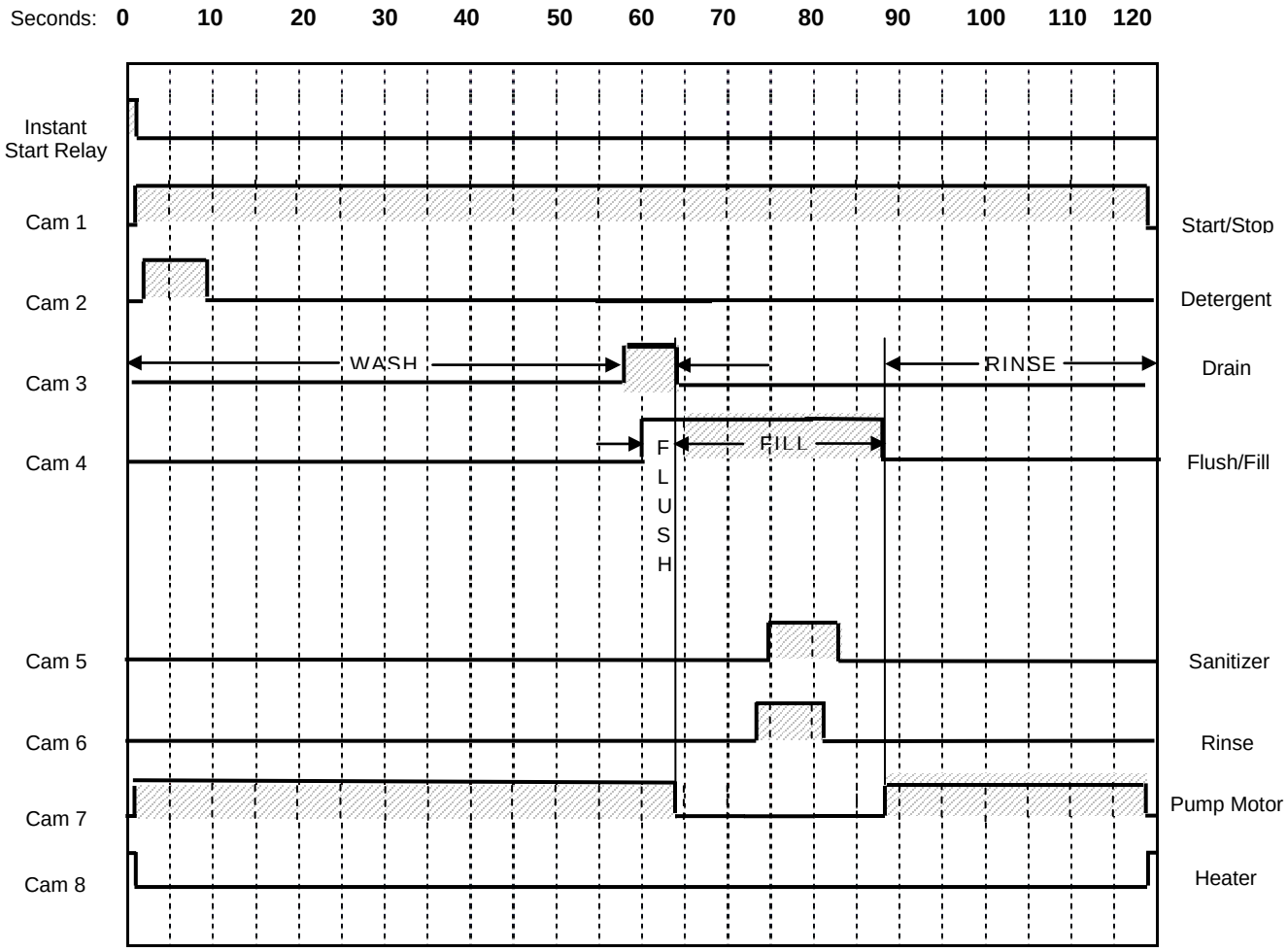
1.1. L-1C

		METRIC EQUIVALENT
WATER CONSUMPTION		
PER RACK	1.7 GAL.	6.44 L
PER HOUR	34 GAL.	129 L
OPERATING CYCLE		
WASH TIME-SEC	58	58
RINSE TIME-SEC	32	32
DWELL TIME-SEC	30	30
TOTAL CYCLE	2 MIN.	2 MIN.
OPERATING CAPACITY		
RACKS PER HOUR	30	30
WASH TANK CAPACITY	1.7 GAL.	6.44 L
PUMP CAPACITY	35 GPM	132.5 LPM
WATER REQUIREMENTS	140°F	60°C
WATER INLET	½”	1.27cm
DRAIN CONNECTION	1”	2.54 cm
CYCLE TEMPERATURES		
WASH-°F (Min)	140°F	60°C
FRAME DIMENSIONS		
DEPTH	24”	61 cm
WIDTH	24”	61 cm
L-1C HEIGHT	30-1/4”	77 cm
L-1C MAX CLEARANCE FOR GLASSES	11”	28 cm
ELECTRICAL*	115 VAC 11 AMPS	
WASH PUMP MOTOR	9 AMPS	
COMPLIANCE WITH LOCAL ELECTRICAL CODES MUST BE FOLLOWED.		
SHIPPING WEIGHT		
L-1C (Approximate)	196#	88 kg

Note: The required flowing water pressure to the dishwasher is 15-65 PSIG. If pressures higher than 65 PSIG are present, a pressure regulating valve must be installed in the water line to the dishwasher (by others). If flowing pressure is lower than 15 psi, improper machine operation may result.

1.2. L-1C Operational Cycle

The L-1C Operational Cycle has a total cycle time of 2 minutes (120 seconds). The Timing Diagram and the steps listed below detail the individual functions that are executed during each Operational Cycle.



1. With the machine powered up, toggling the START switch begins a cycle.

   a) Toggling the START switch energizes both the cam timer motor and the instant start relay. The instant start relay latches ON the power to the cam timer motor so that the START switch can be released a moment after it has been toggled without the cam timer motor losing power.

   b) After about 2 seconds, Cam 1—the Start cam—latches ON the power to the cam timer motor and drops out the instant start relay. The cam timer motor continues

to run for a total of 2 minutes, at which time it switches OFF—resetting the cam timer—and waits for the next start command.

2. Cam switch 7 controls the pump motor. The pump motor comes ON at the beginning of the operational cycle and continues to run until the end of the drain function (controlled by cam switch 3), at which time it turns off for about eight seconds allowing time for the machine to refill enough to avoid running the pump dry before the pump motor restarts and runs to the completion of the operational cycle.

   The pump motor runs the pump for the 58-second wash cycle, then pumps the water out through the drain, turns off (allowing the machine to refill with clean rinse water) and then runs the pump for the 32-second rinse cycle.

3. Cam switch 3 controls the drain function. At the end of the 58-second wash cycle, cam switch 3 energizes the drain valve solenoid allowing the pump motor to drain the wash water out of the machine. Cam switch 3 also increments the rack counter by one each cycle.

4. Cam switch 4 controls the water valve solenoid on the water supply to flush and fill the machine. At the end of the wash cycle the drain valve is opened, the pump motor continues to run (to pump the wash water out through the drain), and the Flush function begins. At first, flushing the machine because the drain valve is still open, then—with the drain valve closed and the pump motor stopped— the machine begins to fill for the rinse cycle. Once the machine has refilled sufficiently, the pump motor restarts carrying out the rinse portion of the cycle as the filling of the wash tank completes.

5. Cam switch 2 controls the detergent pump and turns ON about 5 seconds after the operational cycle is started and runs for a few seconds to provide sufficient detergent for the wash cycle. This cam can be adjusted as necessary for proper detergent dosage.
   See section **4.1.1 Cam Adjustment**

6. Cam switches 5 and 6 control the sanitizer and rinse pumps respectively. They turn ON at the beginning of the rinse cycle and run for a few seconds to provide sufficient sanitizer and rinse aid for the rinse cycle. These cams can be adjusted as necessary for proper chemical dosage. See section **4.1.1 Cam Adjustment**

7. Cam switch 8 operates the optional sustainer heater. This cam assures that the sustainer heater only turns on when the dishmachine is *not* in a cycle. This prevents the machine from drawing too much electrical current at any one time.

2. Getting Started

All sections of the manual address both the L-1C.Separate information on each glasswasher is only provided where differences exist between the two models.

2.1. Introduction to the L-1C

The L-1C Glasswashers are unique in their field; they have all the features of a standard commercial size glasswasher packed into an under-counter, standalone glasswasher.

Operation of the L-1C is extremely easy. After initially filling the glasswasher (see section **3.1.3 Filling the Glasswasher**), toggling the Fill/Start switch to the “START” position begins the Operational Cycle, which runs automatically.

To reduce service time, all electrical switches are mounted in a sliding drawer for easy access. The only external connections necessary are the power source, water supply and drainpipe.

There are also accessories that can be chosen when desired such as the optional sustainer heater and 6” legs. The optional sustainer heater with thermostat is extremely practical for maintaining wash tank temperature between cycles. The 800-watt heater will hold the wash tank temperature between 130°F and 140°F while the glasswasher is not being run. See section **5** for the parts list and accessories available for the glasswasher.

The supply water to the L-1C must be a minimum of 140°F. The pipe supplying the water must be ½” minimum. The plumbing connection is located at the back of the glasswasher. The drain is a 1" barbed fitting located at the back of the glasswasher for easy attachment of your drain hose. See section **2.2.2 Plumbing**.

This manual is structured to provide a complete reference guide to the L-1C. It is presented in a manner that all users will be able to comprehend and use as an effective tool in supporting the installation, operation and maintenance of the glasswasher. The first section provides the specifications and details of the operational cycle. The next section explains how the glasswasher is packaged and what to look for when receiving the glasswasher. After unpacking the glasswasher, this manual explains how to install and set up the glasswasher for use. Requirements are given for plumbing, wiring, and space considerations. *These attributes of the glasswasher are always taken into consideration by our well-trained sales representatives prior to the order being placed*. In the manual, guidance is also given for operation to ensure that the glasswasher will be able to run optimally.

The Operation section of the manual may be used for instruction and procedures when required. We make this portion of the manual easy to understand so that all levels of operators may be able to read and comprehend the operation of the glasswasher. The function of the glasswasher itself is mostly automatic and takes little training to put into full operation. The Operation section also includes diagnostic considerations for the glasswasher if problems occur.

CMA warranties the workmanship of the glasswasher.

At CMA we are committed to providing the best glasswashers and customer service in the food and beverage industry and your feedback is welcome.

2.2. Receiving and Installation

The dishwasher is shipped from the factory in a corrugated box on a wooden pallet. The installation guidelines give a systematic procedure for setting up the glasswasher.

1. Start by removing the box and packaging material. Check for the following component parts:

   A. Drain Screen:

      The Wash Tank Scrap Screen is shipped inside the wash cavity of the glasswasher. This screen must be in place during operation. It has been designed to perform two basic functions:

      - Strain water that is circulating through the spray arms and pump assembly.
      - A basket to catch heavy solids or broken glass that may plug the impeller.

   B. Spray Arms

      The end caps on the spray arms have been taped to protect them in shipping. Remove the tape from the spray arm end caps.

   C. Tube Stiffeners:

      The tube stiffeners must be used to prevent the feed tubes from curling up inside the chemical pail allowing the tip to rise out of the chemical. Remove the tie-wraps securing the tube stiffeners to the glasswasher to free them up for use. Be careful not to remove any of the tie-wraps securing the tube bundle.

2. Set the glasswasher in place and, using the leg adjusters, level from side-to-side and front-to-back.

Steam generated from normal operation may escape from door. Wood, laminates, veneers, etc. are unsuitable materials for use in areas exposed to dishwasher steam and detergents. Stainless steel or other moisture-resistant shields are recommended for surfaces adjacent to sides and tops of under counter dishwashers.

2.2.1. Electrical*

Prior to installation make sure the electrical supply is compatible with the specifications on the machines data plate

A 15-amp, 115 volt, 60 Hz dedicated circuit must be used to supply electrical power to the L-1C Glasswasher (see specification sheet page 1). The power connection must be such that there is sufficient length of flexible conduit or power cord to permit the glasswasher to be moved for cleaning.

DO NOT USE POWER CORD
OR GFI OUTLET
This unit **MUST BE** hard-wired to a
dedicated appropriately size circuit breaker.

WARNING: Electrical and grounding connections must comply with the applicable portions of the National Electrical Code and/or other local electrical codes.

***Note*:** For supply connections, use copper wire only rated at 90 degree C minimum.

* **Electrical and plumbing connections must be made by a qualified person who will comply with all available Federal, State, and Local Health, Electrical, Plumbing and Safety codes**

2.2.2. Plumbing*

The glasswasher is equipped with ½" female NPT connection located at the lower left-hand corner (facing the back) of the glasswasher. A 140°F water line should be plumbed to this point. The water line used must be of sufficient length and flexibility to permit the glasswasher to be moved for cleaning.

A 1" male NPT fitting is provided for the drain connection on the discharge port of the diverter valve (lower, right-hand corner of glasswasher). This fitting may be removed and user provided hardware may be used if necessary to facilitate compliance with local plumbing codes. Code requires that the drain discharge provides an air gap no less than 1" or two pipe diameters, whichever is greater, above the flood level rim of an approved floor drain.

Ask your municipal water supplier for details about your local water conditions prior to installation. Recommended water hardness is 3 grains per gallon or less.

Note: high iron levels in the water supply can cause staining and may require an iron filter. High chlorine levels in the water supply can cause pitting and may require a chloride removal system.

If an inspection of the dishwasher or booster heater reveals lime buildup after the equipment has been in service, water treatment is recommended. If water softener is already in place, ensure there is a sufficient level of salt.

2.2.3. Post Instructions

Mount the wall chart provided in a conspicuous place and instruct the operators on proper cleaning and operation of the L-1C. The instruction chart is also provided as an appendix to this manual (see appendix).

2.2.4. Installers Checklist

- ❒ **Glasswasher checked for concealed damage**
- ❒ **Hot water supply is 140° F (60 C)**
- ❒ **Incoming water supply line is ½" minimum**
- ❒ **Supply circuit breaker for glasswasher is properly sized (20 amp)**
- ❒ **Service voltage and phase type are correct to glasswasher data plate**
- ❒ **Drain hose is installed with adequate air gap**
- ❒ **Glasswasher is properly grounded**
- ❒ **Glasswasher is properly leveled**
- ❒ **Glasswasher circuit breaker is labeled "DISHWASHER"**
- ❒ **Glasswasher has been connected with correctly sized wire (12 gauge minimum)**

* **Electrical and plumbing connections must be made by a qualified person who will comply with all available Federal, State, and Local Health, Electrical, Plumbing and Safety codes**

3. Operation

3.1. Initial Setup

3.1.1. Check…

☑ Drain screen is in place

☑ Spay arms and end plugs are secure

3.1.2. Chemicals

- Assure there is a sufficient supply of chemicals before beginning a shift.

Note: Use only commercial-grade detergents and rinse aids recommended by your chemical professional. Do not use detergents and rinse aids formulated for residential dishwashers.
Low Temperatures chemical-sanitizing dishmachines must not exceed 6% sodium hypochlorite solution (bleach) as the sanitizing agent. Higher levels may damage stainless or components.
Follow the directions precisely that are on the litmus paper vial and test the water on the surface of the bottom of the glasses. Concentration should be 50 p.p.m. minimum to 100 p.p.m. maximum. If concentration is incorrect contact your chemical supplier.

3.1.3. Filling the Glasswasher

- With the power ON, the glasswasher will be automatically filled until the water level in the wash tank is about 1" deep.

3.2. General

Caution: *Do not operate the glasswasher without the drain screen in place. Debris getting into the pump impeller can damage the pump.*

1. Load a rack of properly pre-scrapped dished into the glasswasher and close the door.
2. With the glasswasher filled to the proper level, toggle the Fill/Start rocker switch to the "START" position – the glasswasher will automatically begin its cycle. The green running light will illuminate while an operational cycle is in process.
3. At the end of the shift, drain the glasswasher by holding the Drain toggle switch in the "DRAIN" position until the glasswasher is completely drained. To avoid running the pump dry, do not hold the Drain rocker switch in the "DRAIN" position any longer than necessary.
4. Remove and clean the drain screen. Remove and clean the spray arms. (See wall chart instructions or instructions provided in **Appendix A: Operator & Cleaning Instructions**).
5. Replace the drain screen and spray arms.
6. Inspect your glasswasher interior for lime deposits. If de-liming is required, a de-liming agent should be used for best results in accordance with chemical supplier's instructions.
    - Toggle De-lime switch to the "De-lime" position.
    - Allow the glasswasher to run for several minutes or until the interior lime build up has been dissolved.
    - Flip De-lime switch to the "Normal" position.

Warning: ***Close the glasswasher door before activating the De-lime Switch.*** *Skin contact with de-liming solutions can cause severe irritation and possible burn. Always wear protective clothing and goggles when handling chemicals. Contact your chemical supplier for specific safety procedures for the use of de-liming solution.*

3.2.1. Pre-Scrapping

It is essential that the operator thoroughly understand the importance of pre-scrapping the dishes before loading them. The L-1C is equipped with a removable drain screen. The drain screen can be easily removed for cleaning between Operational Cycles of the glasswasher. Properly pre-scrapping the dishes should permit the glasswasher to operate for an entire shift before needing to remove and clean the drain screen.

3.2.2. Proper Chemical Dosage

The amount of chemical delivered, whether it is detergent, sanitizer or rinse aid, is determined by its respective cam on the cam timer.

- Cam number 2 runs the detergent pump
- Cam number 5 runs the sanitizer pump
- Cam number 6 runs the rinse aid pump

These cams were set at the factory but can be adjusted after final installation to maximize efficiency of chemical use (see section **4.1.1 Cam Adjustment**.)

3.2.3. Proper Filling

The amount the glasswasher is automatically filled each cycle is determined by the number 4 cam. When the number 4 cam switch actuator rides down into the cam groove, the solenoid valve on the fill line is energized causing the glasswasher to fill. Since the cam only controls the duration of the fill, varying water pressure can vary the amount the glasswasher fills. If the water pressure at the facility where the glasswasher is installed is enough higher or lower than the water pressure was at the factory, the number 4 cam may need to be adjusted to correct the difference (see section **4.1.1 Cam Adjustment**). The glasswasher should be filling to a level about 1” deep over the entire bottom of the wash tank, or just below the lower wash arm. If the water pressure at the facility varies throughout the day, a pressure regulator may have to be installed on the water supply line to the glasswasher to maintain constant pressure.

Note: If the optional sustainer heater is installed, the wash tank must be properly filled, and the glasswasher properly leveled, or the float switch, which prevents the heater from turning on if the level is too low, will not permit the heater to turn on.

3.2.4. Water Pump

The water pump takes in water from the drain sump and pumps it to the spray nozzles at a rate of 68 gallons per minute and a pressure at the nozzles of approximately 7 to 10 PSI. After being released through the spray arms and washing or rinsing the dishes, the water runs down the pan to the sump, through the drain screen, and back to the pump.

The pump is driven by a 115 volt, 1 HP motor operating at 3450 RPM. The impeller is mounted with a right-hand thread onto a 5/8” stainless steel shaft, which is coupled to the motor armature shaft.

3.2.5. Pump Cavitation

By listening to the normal pumping sound of the motor it can be determined if there is insufficient water in the glasswasher, as you will hear a hesitation in the normal pumping rhythm, which is created by the air getting into the pump. Cam 4 can be adjusted to increase the amount of water that is automatically fed into the glasswasher during a cycle (see section **4.1.1 Cam Adjustment**).

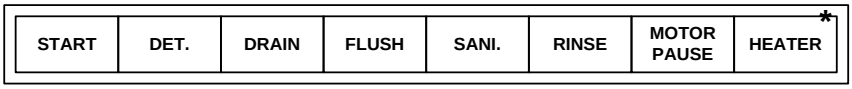
4. Maintenance

The maintenance procedures detailed in this section are to be performed by qualified personnel.

4.1. Timer assembly

The standard timer assembly consists of a ½ RPM (2 minutes per revolution) motor turning a common shaft, which, in turn, rotates eight cams. As the cams rotate, they control various functions and the sequence of the operational cycle.

The individual function of each of the 8 cams is identified by a label on the timer assembly. Cams 1 through 8 are positioned from left to right beginning with the "START" cam (cam 1).



Timer Assembly Label

*****The "HEATER" label is not present if the optional sustainer heater is not installed on the machine.

Except for cams 1, and 3, all other cams can be user adjusted. The cam positions are all set at the factory and only the cams controlling the chemical pumps (cams 2, 5 & 6) should ever need adjusting. Each micro switch on the timer assembly is turned on and off by the cam its actuator rides on. For all of the cams, except cams 1, 7 and 8, its corresponding switch is ON when its actuator is down in the cam groove. (Cams 1, 7 and 8 are reverse acting and are turned ON when the micro switch actuator is up out of the groove.) Opening the groove of any cam other than cams 1, 7 or 8 will increase the amount of time that the micro switch is held ON. The cams are slip-fit and a cam adjustment wrench is provided (a small screw driver or the edge of a table knife can also work to adjust the cams).

4.1.1. Cam Adjustment

The two sides of each cam connect to the shaft with a slip-fit so all cam adjustments are made by rotating one side of the cam on the shaft to either increase or decrease the size of the cam groove.

1. Turn off the circuit breaker providing power to the glasswasher before pulling the control drawer out to access the timer assembly.
   Caution: *One of the terminals on the main power switch remains "hot" even when the glasswasher's main power switch is turned off—so turn the power off at the circuit breaker.*
2. Remove the two 8–32 x ½" Screws securing the control drawer and slide it out to its fully extended position.
3. Using the timer assembly label, determine which cam is to be adjusted. Double check by counting over from cam 1 to the cam to be adjusted.
4. Determine which edge of the cam groove to be adjusted is the leading edge (contacts the limit switch actuator first when the shaft is rotating) and which edge of the groove is the trailing edge. The leading edge of the cam groove determines when in the cycle the control action begins and should not be changed.
5. Adjust the trailing edge of the cam groove by rotating the appropriate side of the cam in the proper direction to either increase or decrease the cam's groove; resulting in increasing or decreasing the total time that switch will be held ON.

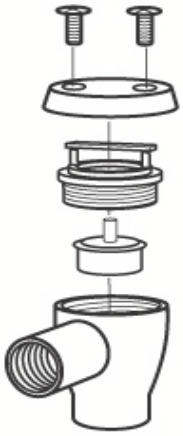
4.2. Vacuum breaker valve replacement procedure

The vacuum breaker valve is a standard plumbing code requirement for any unit that is hooked to a potable water line and generates wastewater in its operation. It must be installed above the highest point where wash or waste could be at any time.

4.2.1. Malfunctioning characteristics

1- Water leaks out air vent holes or around cover when pressure is applied.

- a- Poppet gasket eroded, needs replacing.
- b- Poppet gasket eroded, needs deliming and replacing.
- c- Cover gasket bad, replace.
- d- Low water pressure.



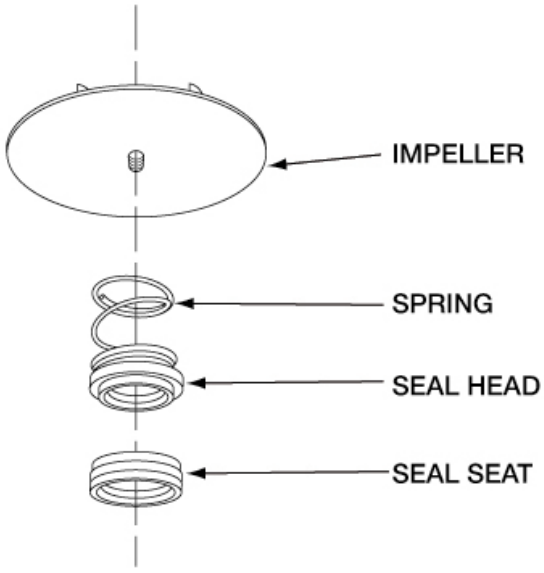
4.2.2. Replacement procedure

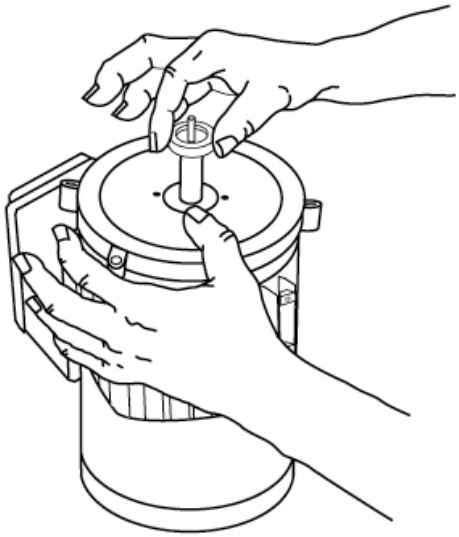
1- Poppet gasket

- a- Remove cover with small pipe wrench catching hold of outer edge of cover and unscrew counter clockwise.
- b- Lift poppet float out and inspect float and gasket.
- c- If poppet is deformed in any way, replace entire assembly and gasket.
- d- If gasket only is to be changed, pry off retainer washer and replace gasket, then replace retainer washer.

4.3. Pump seal replacement procedure

1- Turn off master switch.
2- Remove six pump mounting bolts.
3- Remove pump housing and turn so impeller is facing you.
4- Insert straight blade screwdriver in the slot of the motor shaft to keep shaft from turning.
5- Turn mounting nut counter-clockwise and unscrew from the shaft.
6- When defective seal got exposed, note how the old seal is assembled.
7- Remove old seal kit (spring, seal head and seal seat) from pump back plate. It may be necessary to clean the shaft and the pump back plate with a soft clean rag.
8- Press the new seal seat into the pump back plate.
9- Slide the seal head on the shaft as shown with spring on top.
10- Re-tighten impeller mounting nut holding the shaft with straight blade screwdriver.
11- Re-assemble impeller and pump housing.





4.1. Quick service guide

MODELS: L-1C UNDER COUNTER

TECHNICAL ISSUE	CAUSE	SOLUTION
Wash Pump motor will not shut off	Delimer switch in delime position	Flip to *NORMAL* position
	Faulty delimer switch	Replace switch, P/N 00475.30
	Faulty manual drain switch	Replace switch, P/N 03406.62
	Faulty contactor	Replace contactor, P/N 00404.82
Continues cycles	Faulty #1 micro switch (start/stop)	Replace switch, P/N 00411.00
	Faulty start/fill switch	Replace switch, P/N 03470.01
Sustainer heater not working	Faulty #1 micro switch	Replace switch, P/N 00411.00
	Low water level inside machine	Add water to tank to activate float switch, adjust water cam on timer
	Faulty float switch	Replace switch, P/N 13463.10
	Machine not level	Level machine
	Faulty ice cube relay	Replace relay, P/N 00631.00
Machine does not drain	Faulty #3 micro switch (drain)	Replace switch, P/N 00411.00
	Faulty drain valve	Replace drain valve, P/N 04103.00
Does not hold water	Faulty #3 micro switch (drain)	Replace switch, P/N 00411.00
	Clogged or defective drain valve	Clean and/ or replace drain valve, P/N 04103.00
Tank overflows overnight	Debris in water Solenoid Valve	Clean or replace valve P/N 03604.00
Water leaks out of Vacuum Breaker	Dirty or defective vacuum breaker kit assy	Clean or replace internal parts, P/N 03623.00
	Faulty check valve	Replace check valve, P/N 00715.00
Wash Pump motor not running	Faulty door switch	Replace switch, P/N 00411.00
	Faulty 7th micro switch	Replace switch, P/N 00411.00
	Faulty motor contactor	Replace contactor, P/N 00404.82
Timer does not rotate	Faulty Start/Fill Switch	Replace switch, P/N 03470.01
	Faulty #1 micro switch	Replace switch, P/N 00411.00
	Faulty timer motor	Replace motor assembly, P/N 00501.00
	Faulty #4 Micro switch	Replace switch, P/N 00411.00
Machine does not fill	Debris inside water solenoid valve or Faulty valve	Clean or replace valve P/N 03604.00
Sanitizer pump does not run	Delimer switch in wrong position	Switch to *NORMAL* position
	Faulty 5th micro switch	Replace switch, P/N 00411.00
	Faulty sanitizer pump motor	Replace motor, P/N 00416.00

4.2. Troubleshooting

PROBLEM	LIKELY CAUSE	SOLUTION
Glasswasher inoperative	Power off at circuit breaker	Reset circuit breaker
	Defective power switch	Replace power switch **P/N: 00471.10**
	Defective timer assembly motor	Replace timer assembly motor **P/N: 00501.00**
Pump Motor inoperative	Door is open	Close door
	Control drawer is pulled out	Secure control drawer
	Defective door switch	Replace door switch **P/N: 00411.00**
	Defective timer assembly (Cam 7)	Replace timer assembly***** **P/N: 00408.80**
	Defective pump motor contactor	Replace contactor **P/N: 00404.82**
	Defective pump motor	Replace pump motor **P/N: 00201.00**
Pump Motor runs with door open	Defective door switch	Replace door switch **P/N: 00411.00**
	Defective pump motor contactor	Replace contactor **P/N: 00404.82**
	Delime switch is on	Turn off delime switch
Motor runs continuously	Delime switch is on	Turn off delime switch

*The timer assembly motor (**P/N: 00501.00**) or micro switches (**P/N: 00411.00**) can be replaced independently if that is the only component that has failed.

Low spray arm water flow	Limed up spray arm nozzles	De-lime spray arm nozzles
With power on, activating start switch does not begin cycle	Defective fill/start switch (cycle light will not light either)	Replace fill/start switch **P/N: 03470.01**
	Defective timer assembly (Cam 1)	Replace timer assembly***** **P/N: 00408.80**

PROBLEM	LIKELY CAUSE	SOLUTION
Start switch requires more than 1-second activation to run cycle	Defective (Instant Start) ice cube relay	Replace ice cube relay **P/N: 00631.00**
Activating fill switch does not fill glasswasher	Defective fill/start switch	Replace fill/start switch **P/N: 03470.01**
	Defective water solenoid valve	Replace water solenoid valve **P/N: 03603.10**
Fill water won't shut off	Defective water solenoid valve	Replace water solenoid valve **P/N: 03603.10**
	Defective fill/start switch	Replace fill/start switch **P/N: 03470.01**
	Defective timer assembly (Cam 4)	Replace timer assembly* **P/N: 00408.80**
Activating drain switch does not drain glasswasher	Drain hose is kinked	Un-kink drain hose
	Defective drain switch	Replace drain switch **P/N: 03406.64**
	Defective drain valve motor (Pump will still run)	Replace drain valve motor **P/N: 04103.21**
Detergent pump does not run	Defective detergent pump motor	Replace pump motor **P/N: 00416.00**
	Defective timer assembly (Cam 2)	Replace timer assembly* **P/N: 00408.80**
Sani pump does not run	Defective sani pump motor	Replace pump motor **P/N: 00416.00**
	Defective timer assembly (Cam 5)	Replace timer assembly* **P/N: 00408.80**

*The timer assembly motor (**P/N: 00501.00**) or micro switches (**P/N: 00411.00**) can be replaced independently if that is the only component that has failed.

Rinse pump does not run	Defective rinse pump motor	Replace pump motor **P/N: 00416.00**
	Defective timer assembly (Cam 6)	Replace timer assembly* **P/N: 00408.80**
Activating detergent primer switch does not run pump	Defective sani/detergent primer switch	Replace primer switch **P/N: 03470.00**
	Defective detergent pump motor	Replace pump motor **P/N: 00416.00**
Activating sani primer switch does not run pump	Defective sani/detergent primer switch	Replace primer switch **P/N: 03470.00**
	Defective sani pump motor	Replace pump motor **P/N: 00416.00**
Activating rinse primer switch does not run pump	Defective rinse primer switch	Replace primer switch **P/N: 03470.00**

PROBLEM	LIKELY CAUSE	SOLUTION
	Defective rinse pump motor	Replace pump motor **P/N: 00416.00**
Counter does not increment	Defective counter	Replace counter **P/N: 03408.50**
	Defective timer assembly (Cam 3)	Replace timer assembly***** **P/N: 00408.80**
Running light does not light while cycle runs	Defective cycle light	Replace running light (green) **P/N: 00406.60**
Power light does not light but glasswasher runs	Defective power light	Replace power light (red) **P/N: 00406.00**
Wash tank temperature gauge displays wrong temperature	Defective temperature gauge	Replace temperature gauge **P/N: 201.01**
Delime switch does not activate pump motor	Defective delime switch	Replace delime switch **P/N: 00475.30**
	Defective pump motor	Replace pump motor **P/N: 00201.00**

*The timer assembly motor (**P/N: 00501.00**) or micro switches (**P/N: 00411.00**) can be replaced independently if that is the only component that has failed.

5. Parts Manual

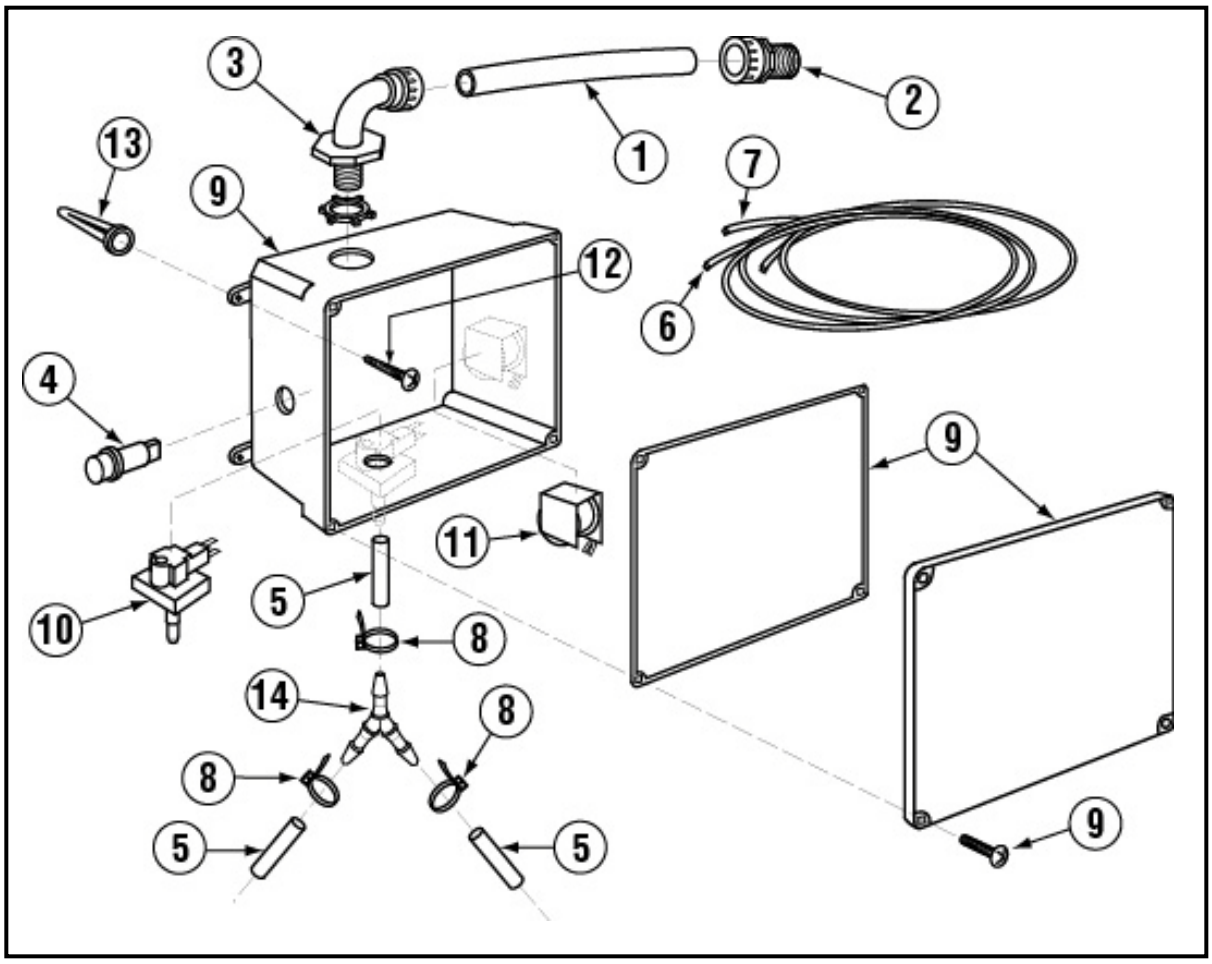
5.1. Initial Parts Kit (P/N 4001.50)

P/N	DESCRIPTION	Qty
00120.02	Bi Metal Thermometer 1.5”	1
00200.44	Pump Assy, 110/220V 60 Hz, Open	1
00206.30	Pump Seal Kit	1
00208.40	Slip Joint Nut Gasket	1
00304.04	Spray Arm Short B- L1X-L1X16	1
00308.50	Spray Arm End Plug SS	1
00404.82	Motor Contactor Relay	1
00411.00	Micro Switch	1
00415.00	Peristaltic Pump Assembly, 120V/60Hz	1
00425.51	Chemical Tubing Blue	50 ft.
00425.53	Chemical Tubing Red	50 ft.
00470.00	Toggle Switch DPDT Momentary	1
00501.00	Timer Motor, 2-Minute	1
00715.00	1/2 Ball Check Valve	1
02257.00	Squeeze Tube 8" Norprene	1
02257.22	Squeeze Tube 22" Norprene For L-1X	1
03406.64	Drain Toggle Switch	1
03415.00	Chemical Tube Bulkhead	1
03415.60	Chemical Bulkhead Assy.(Teflon)	1
03475.00	Toggle Switch DPDT 16A	1
00707.00	1/2" Water Solenoid Repair Kit J/E	1
04113.00	L-1C Drain Valve, 120V	1
04110.00	SS L1-C Drain Screen	1
04111.00	Drain Valve 115V New style	1
04303.00	Spray Arm Bearing (L1X/GLX)	1

NOTE: CMA recommends that the initial parts kit be kept on hand as a back up supply of critical parts in the event your machine should require emergency service. All the parts included in this kit are unique to the L-1C dishmachine.

5.2. Optional Sani Alarm

Part Number 12508.00



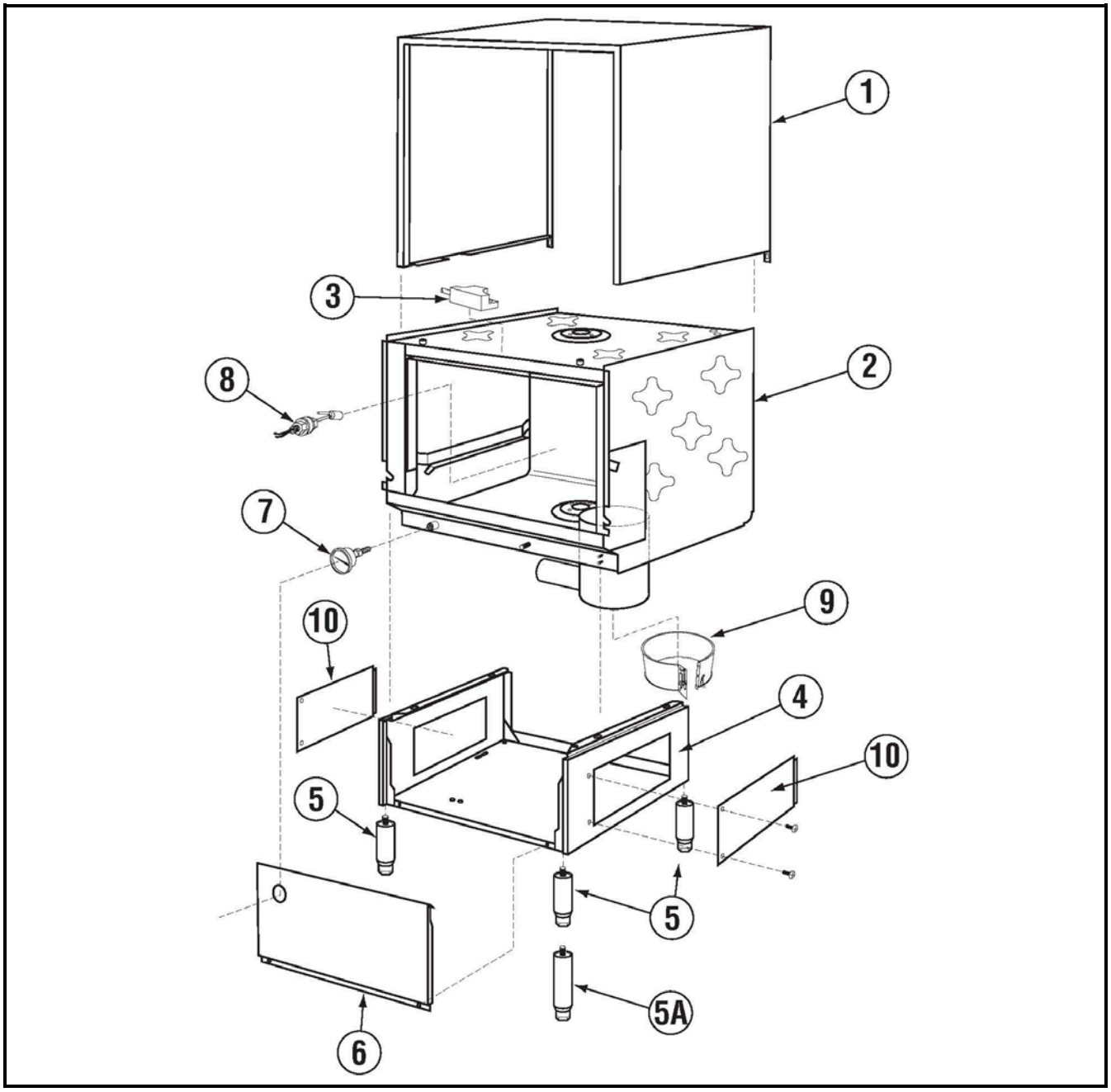
Exploded View

ITEM NO.	NO. REQ'D	P/N	DESCRIPTION
1	3	00400.00	Conduit, 3/8" Sealtite
2	1	00401.00	S.T. 3/8" Straight Connector
3	1	00402.00	S.T. 90 Degree 3/8" Connector
4	1	00406.00	Control Box Light, .5" Diameter, Red
5	1	00435.00	Squeeze Tube, 8"
6	AR	00521.00	Wire, 18 Gauge, Orange, 6 ft.
7	1	00531.00	Wire, 18 Gauge, White, 6 ft.

ITEM NO.	NO. REQ'D	P/N	DESCRIPTION
8	5	00931.00	Wire Tie, Small
9	1	12510.00	Sanitizer Alarm Box Assembly
10	1	12511.50	Sanitizer Low Level Vacuum Switch
11	1	12512.00	Sanitizer Alarm Buzzer, 120 Volts
12	4	40126.10	#10 x 3/4" Sheet metal Screw
13	4	40127.00	Wall Anchors
14	1	00426.00	Y Hose Connector, 3/16"

5.3. Exploded View Drawings

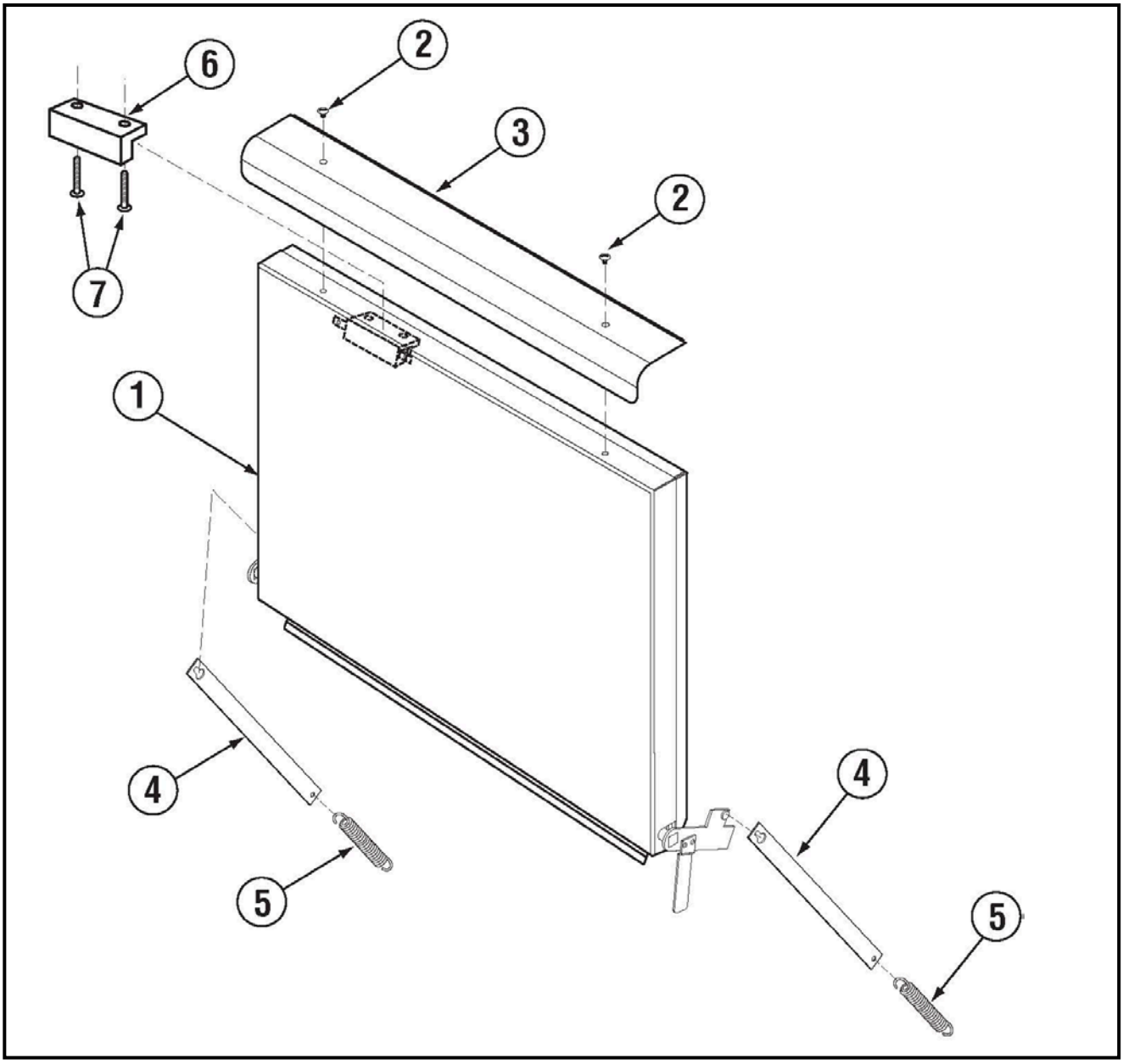
5.3.1. Cabinet Assembly



ITEM NO.	NO. REQ'D	P/N	DESCRIPTION
1	1	05967.00	L1C-NST Wrapper
2	1	05968.00	L1C-NST Body
3	1	00556.10	Reed Switch
4	1	05963.00	L1C-NST Base
5	4	01146.50	4"Leg
5A	4	01146.00	6"Leg (optional)

ITEM NO.	NO. REQ'D	P/N	DESCRIPTION
6	1	05966.00	L1C-NST Front Panel
7	1	00120.02	BiMetal Thermometer
8	1	13463.10	Liquid Level Switch (optional)
9	1	04109.11	Sump Heater (optional)
10	2	05902.20	Stand Panel

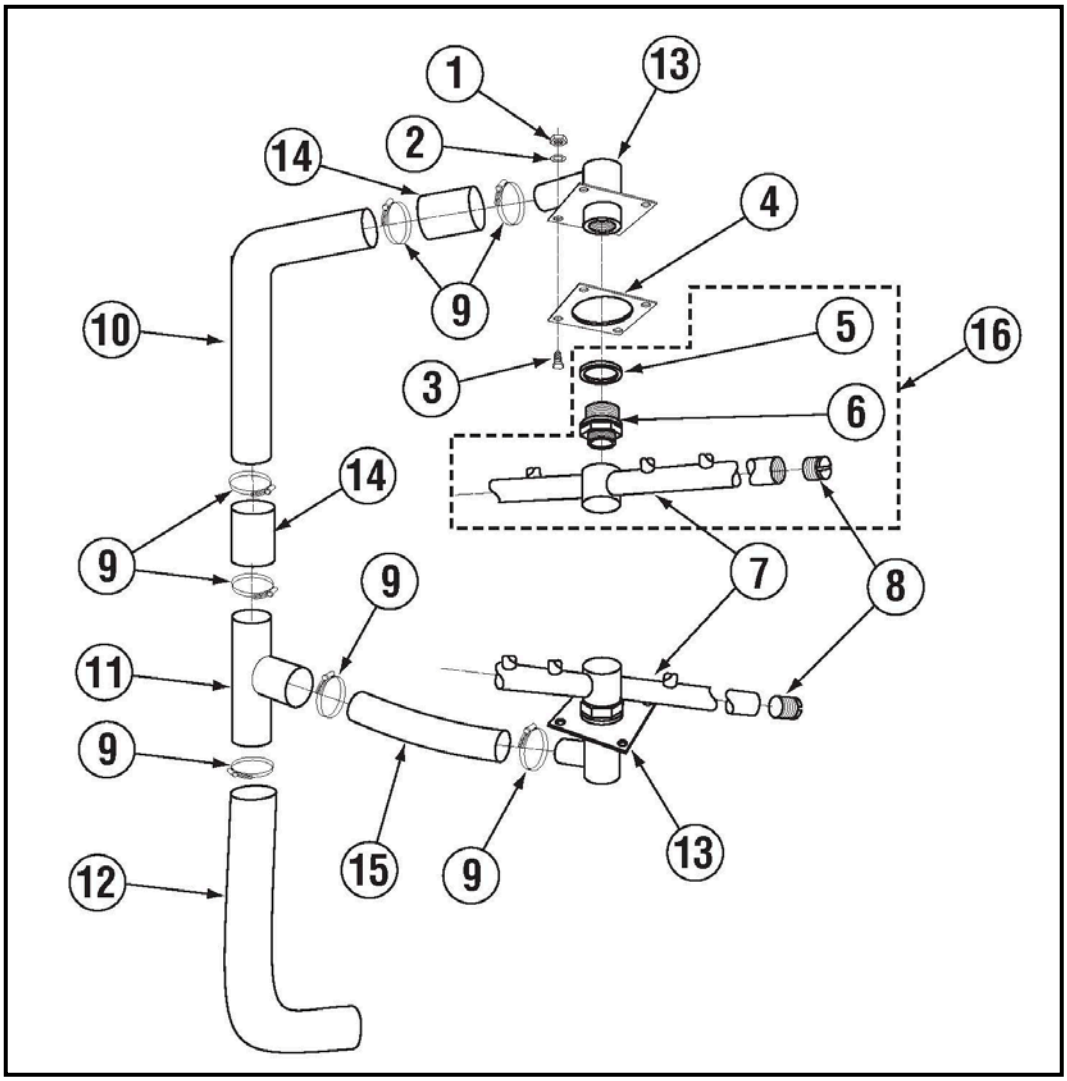
5.3.2. L-1C Door Assembly



ITEM NO.	NO. REQ'D	P/N	DESCRIPTION
1	1	05964.00	L-1C NST Door
2	2	00940.50	10-32 X 3/8 Truss Head Screw
3	1	05965.00	L-1C NST Door Handle
4	2	05913.00	Energy Mizer L-1C Door Spring Arm

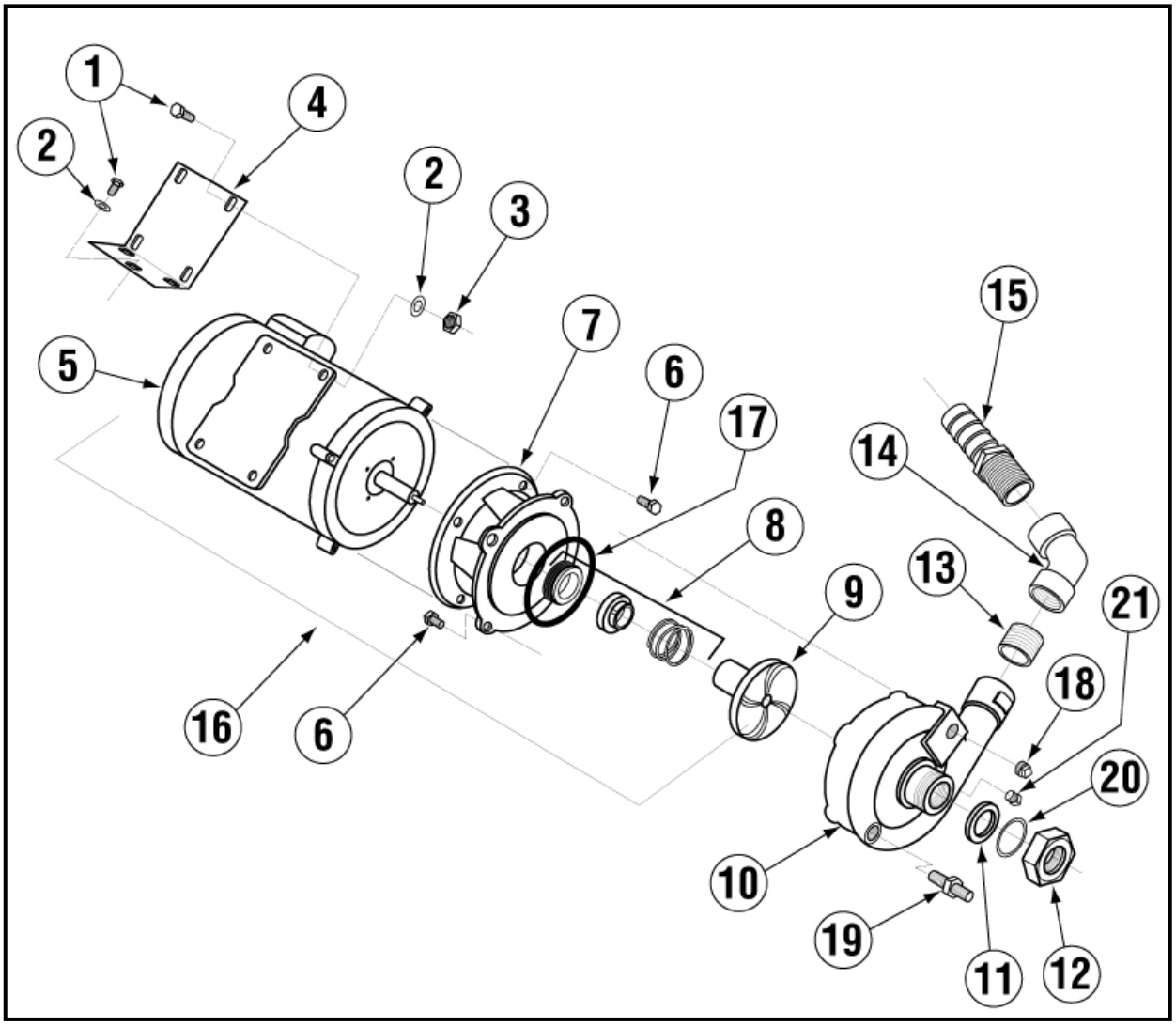
ITEM NO.	NO. REQ'D	P/N	DESCRIPTION
5	2	05932.00	Energy Mizer L-1C Door Spring
6	1	00556.60	Reed Switch Magnet
7	1	00911.00	8-32 X 1/2 Panhead Screw

5.3.3. Spray System Assembly



ITEM NO.	NO. REQ'D	P/N	DESCRIPTION
1	8	00912.00	1/4"-20 Nylon Lock Nut
2	16	00924.00	1/4" SS Washer
3	8	00929.00	1/4"-20 x 3/4" Truss Head Bolt
4	2	04306.00	Square Manifold Gasket
5	2	04305.10	Silicon Gasket
6	2	04303.00	L-1C Spray Arm Bearing
7	2	00304.04	Spray Arm
8	4	00308.50	Spray Arm End Plug
9	6	03101.00	Hose Clamp #16 1"
10	Ft	05939.50	L-1C Manifold Pipe SS
11	1	05936.00	Energy Mizer L-1C Tee 1"X1"X1"
12	1	13109.00	Drain Hose 90Deg 1"
13	2	05930.00	Energy Mizer L-1C Spray Base
14	2	03108.67	Transfer Hose 1" Reinforced 2"
15	2	03108.60	Transfer Hose 1" Reinforced
16	1	00307.10	Spray Arm Assy L1X/GL-X

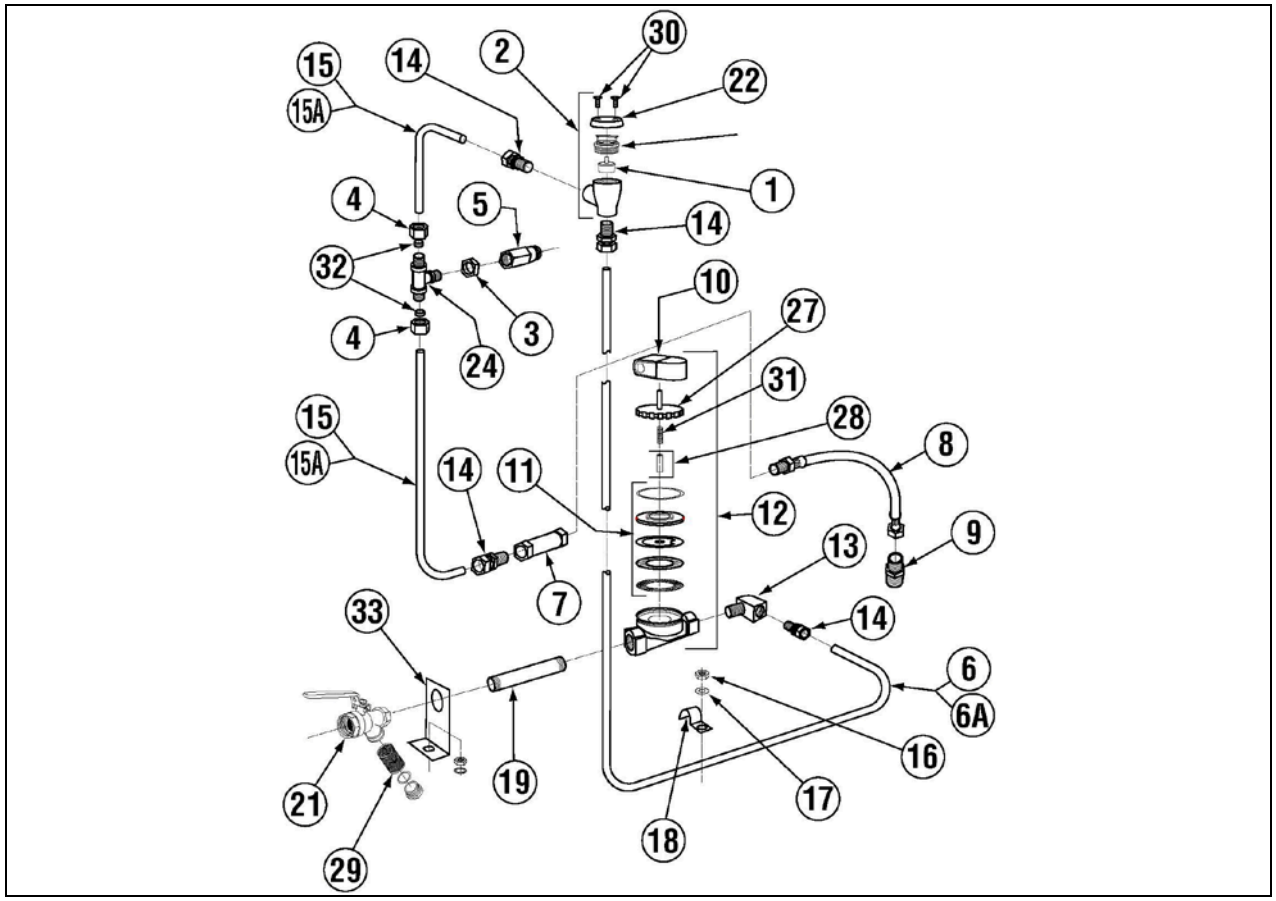
5.3.4. Pump Assembly



ITEM NO.	NO. REQ'D	P/N	DESCRIPTION
1	7	00908.00	5/16"-18 x 5/8" SS Hexhead Bolt
2	7	00926.00	5/16" SS Washer
3	4	13805.00	5/16"-18 Nylon Lock Nut
4	1	04909.00	Motor Mount
5	1	00201.00	Water Pump Motor 1 HP
6	8	00921.00	3/8"-16 x 3/4" Hex Bolt
7	1	03224.00	Pump Base (Mount)
8	1	00206.30	Pump Seal Kit New (11/07)
9	1	00203.40	Impeller Closed Domestic 4" S/S
10	1	04206.30	Pump cover for L-1X/L-1X16
11	1	00208.40	Slip Joint Nut O Ring Gasket Buna

ITEM NO.	NO. REQ'D	P/N	DESCRIPTION
12	1	00402.00	Compression Nut 2.5"
13	1	14004.00	1" close Nipple SS
14	1	04601.00	45 Degree Elbow FIP x FIP
15	1	50302.06	1" MIP x 1" Barb PVC
16	1	00200.44	Includes Items 5, 6, 7, 8 and 9
17	1	03226.00	Pump "O" Ring Gasket
18	1	00238.00	3/8" Male Plug
19	1	00214.50	1/2" Comp x 3/8" MIP Adapter
20	1	00208.21	Slip Joint Nut Friction Ring Plastic
21	1	03232.00	1/8" Male Plug

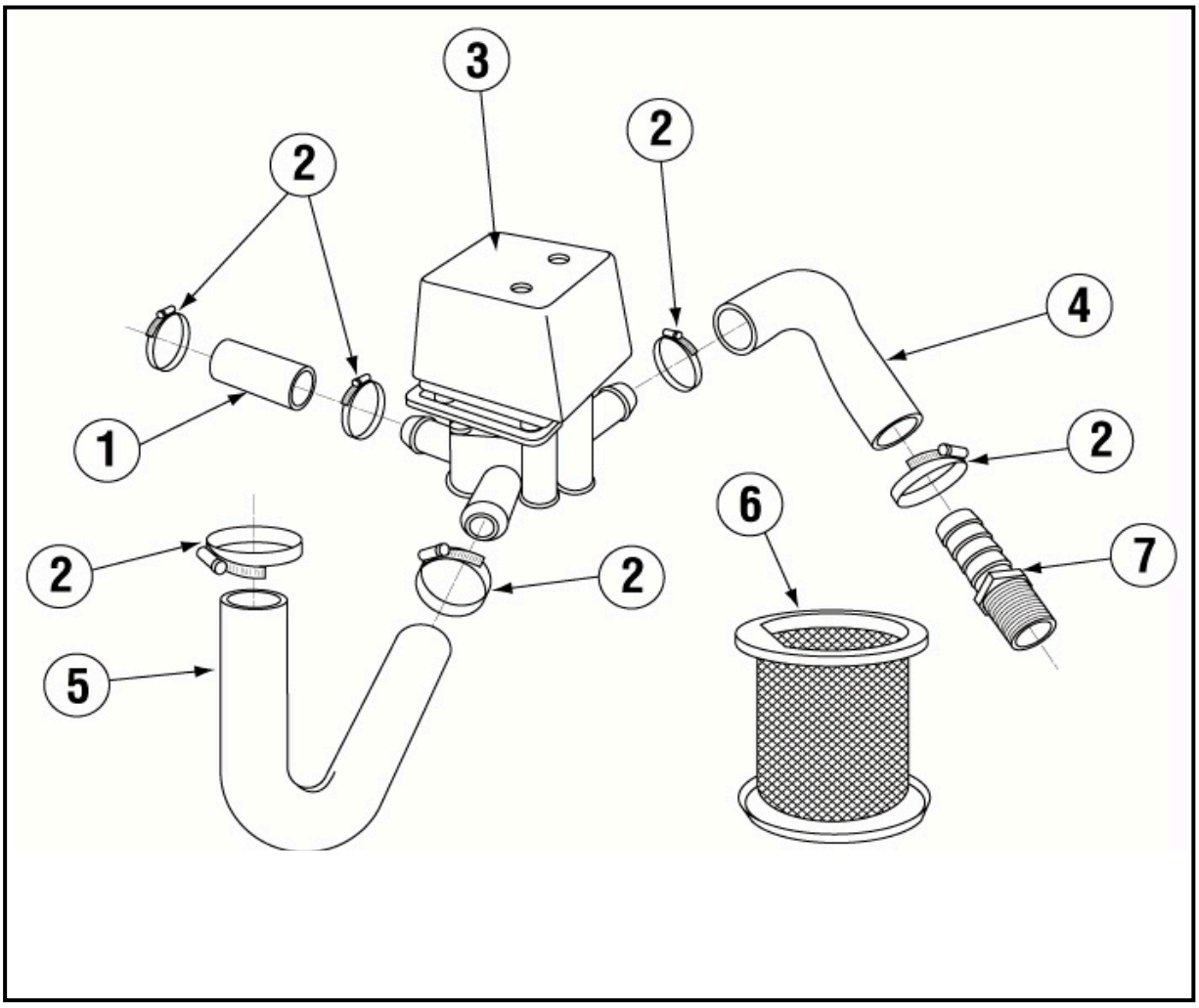
5.3.5. Plumbing System Assembly



ITEM NO.	NO. REQ'D	P/N	DESCRIPTION
1	1	03623.00	1/2" Vac. Brkr Repair Kit – WATTS
2	1	03624.00	1/2" Vacuum Breaker – WATTS
3	2	00721.00	1/2" Jamb Nut
4	2	00770.10	5/8 Compression Fitting Nut
5	1	00748.00	1/2" Sprinkler Head Assembly
6	1	04605.00	L-1X "U" Tube
6A	1	04605.60	L-1X 16"U" Tube
7	1	00715.00	Ball Check Valve
8	1	00798.00	SS Braided Hose
9	1	00214.50	1/2" Comp x 3/8" MIP FTG
10	4	00738.10	Water Solenoid Coil J/E
11	1	00707.00	1/2" Water Solenoid Repair Kit J/E
12	1	03603.10	1/2" Water Solenoid Valve J/E
13	1	00745.00	1/2" 90 Degree Street Elbow
14	6	00760.00	5/8" Comp. X 1/2" MIP Adapter
15	1	04606.00	L-1X "L" Tube
15A	1	04606.60	L-1X16 "L" Tube
16	1	00915.00	1/4"-20 Hex Nut

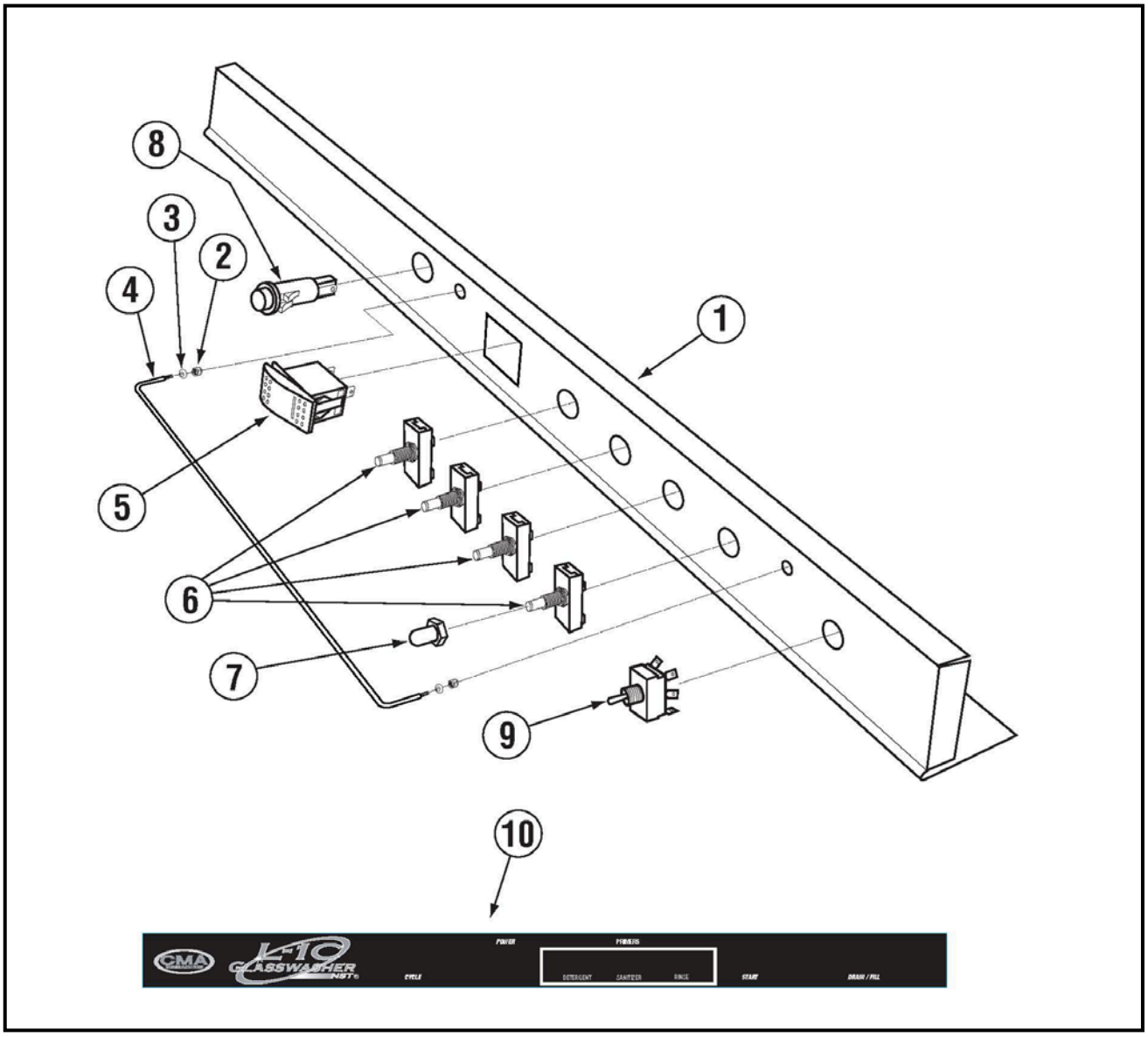
ITEM NO.	NO. REQ'D	P/N	DESCRIPTION
17	1	00924.00	1/4" SS Washer
18	1	00725.50	1/2" Plumbing Strap
19	1	00747.10	Nipple Brass 1/2" x 5"
20	1	03602.50	1/2" Y Strainer – Optional
21	1	41062.00	1/2 Strainer Ball Valve
22	1	00739.50	Vacuum Breaker Cap SS
23	1	03624.25	Vacuum Breaker Bonnet Brass
24	1	00743.12	Tee 1/2C x 1/2C x 1/2 Male
25	1	00742.00	Nipple Brass 1/2" x 1-1/2" (Optional)
26	1	00744.00	Nipple Brass 1/2" x 2" (Optional)
27	1	03603.20	1/2" Water Solenoid Bonnet
28	1	00786.00	Water Solenoid Valve Plunger
29	1	41062.10	^ 1/2 Ball Valve Strainer Only
30	2	00970.40	6-32 x 1/4" Phillips Pan Head Screw
31	1	00706.10	Plunger Spring Only
32	2	00770.20	5/8 Compression Fitting Ring
33	1	14508.50	Plumbing Support Bracket

5.3.6. Drain System Assembly



ITEM NO.	NO. REQ'D	P/N	DESCRIPTION
1	2	04105.00	Pump Hose 6.5"
2	8	03101.00	1" Hose Clamp #16
3	1	04103.00	L-1X Drain Valve (Depend-O-Drain)
4	1	03108.51	1" Goose Neck Drain Hose
5	1	03109.00	Drain Hose 90DEG 1"
6	1	04111.00	Sump Screen
7	1	50302.06	1" MIP x 1" Barb PVC

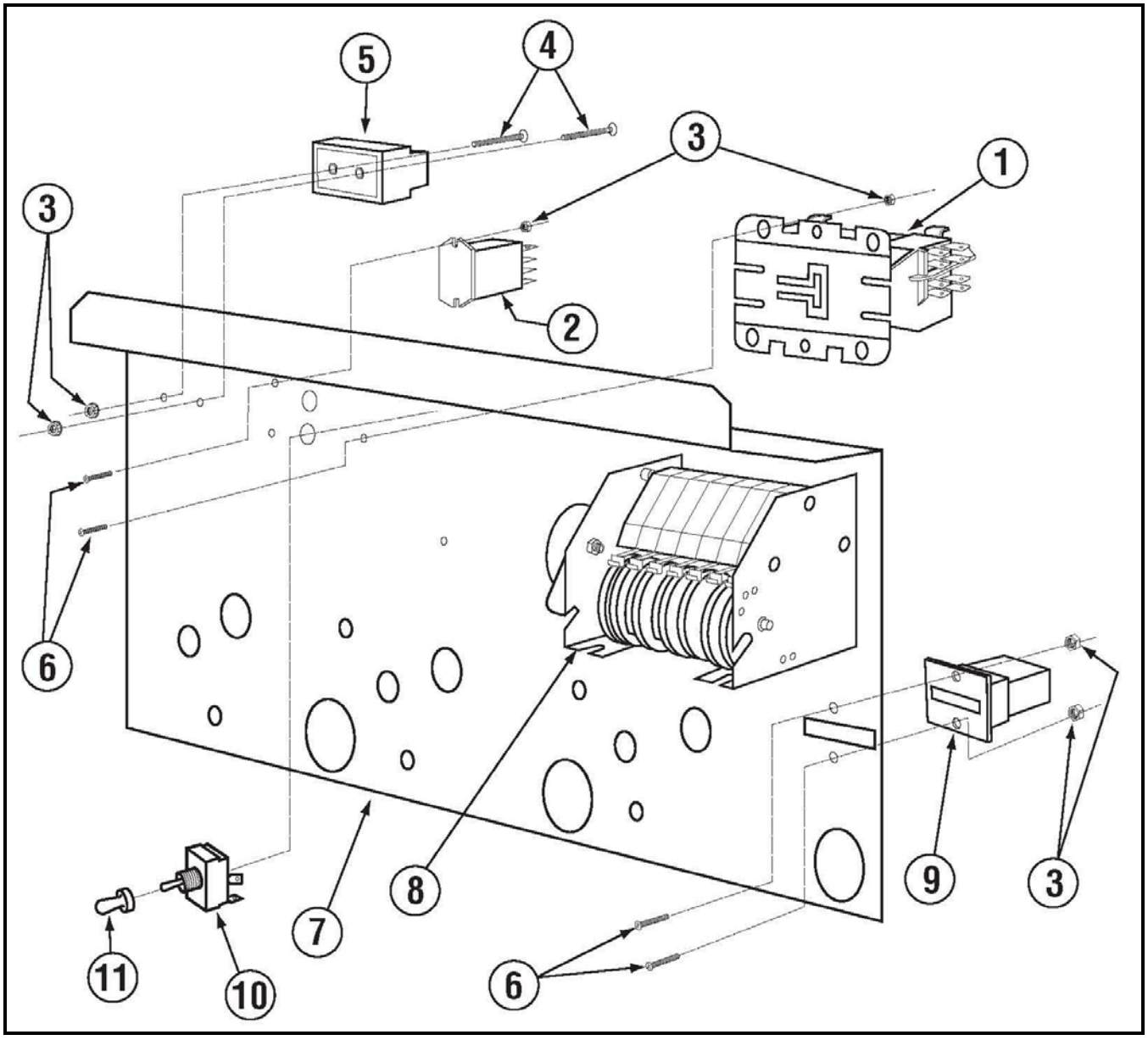
5.3.7. Control Panel



ITEM NO.	NO. REQ'D	P/N	DESCRIPTION
1	1	05960.00	L1C-NST Control Panel
2	2	03801.00	10-32 Lock Nut
3	2	04806.00	#10 Brass Washer
4	1	03485.00	Switch Guard
5	1	15524.00	Power Rocker Switch Red 115V

ITEM NO.	NO. REQ'D	P/N	DESCRIPTION
6	4	03475.00	Toggle Switch DPDT 16A, 2 pos
7	4	03476.00	Rubber Boot
8	1	00406.00	Control Box Light .5" D Red
9	1	00470.00	Toggle switch DPDT Momentary
10	1	06231.73	L1C-NST Panel Label (2013)

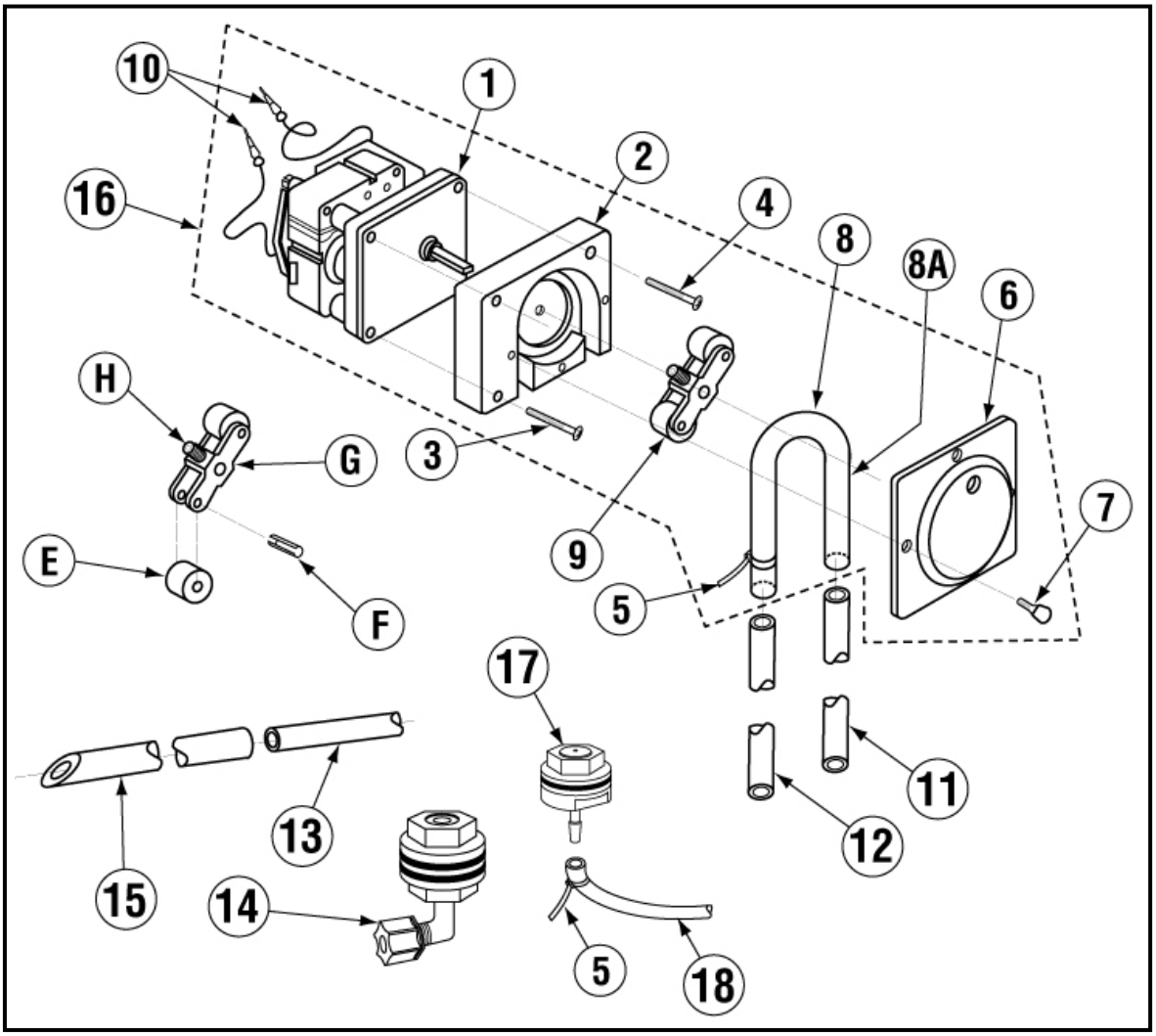
5.3.8. Electrical Panel



ITEM NO.	NO. REQ'D	P/N	DESCRIPTION
1	1	00404.82	Contactor Relay
2	1	00631.00	Ice Cube Relay
3	10	00916.00	6-32 PM Nut
4	2	01001.00	6-32 X 1 Phillips Panhead Screw
5	1	15520.50	Power Block 3 Position
6	8	00907.00	6-32 X 1/2 SS Panhead Screw
7	1	05911.00	Energy Mizer L-1C Control Panel

ITEM NO.	NO. REQ'D	P/N	DESCRIPTION
8	1	00408.80	Timer 2 Minute 8 Cam
8A	8	00411.00	Micro switch (not shown)
8B	1	00501.00	Timer Motor (not shown)
9	1	03408.50	Counter (Panel Mount – Small)
10	1	00475.30	Delimer Switch DPDT 20A,2Pos.
11	2	00470.10	Rubber Boot

5.3.9. Peristaltic Pump Assembly

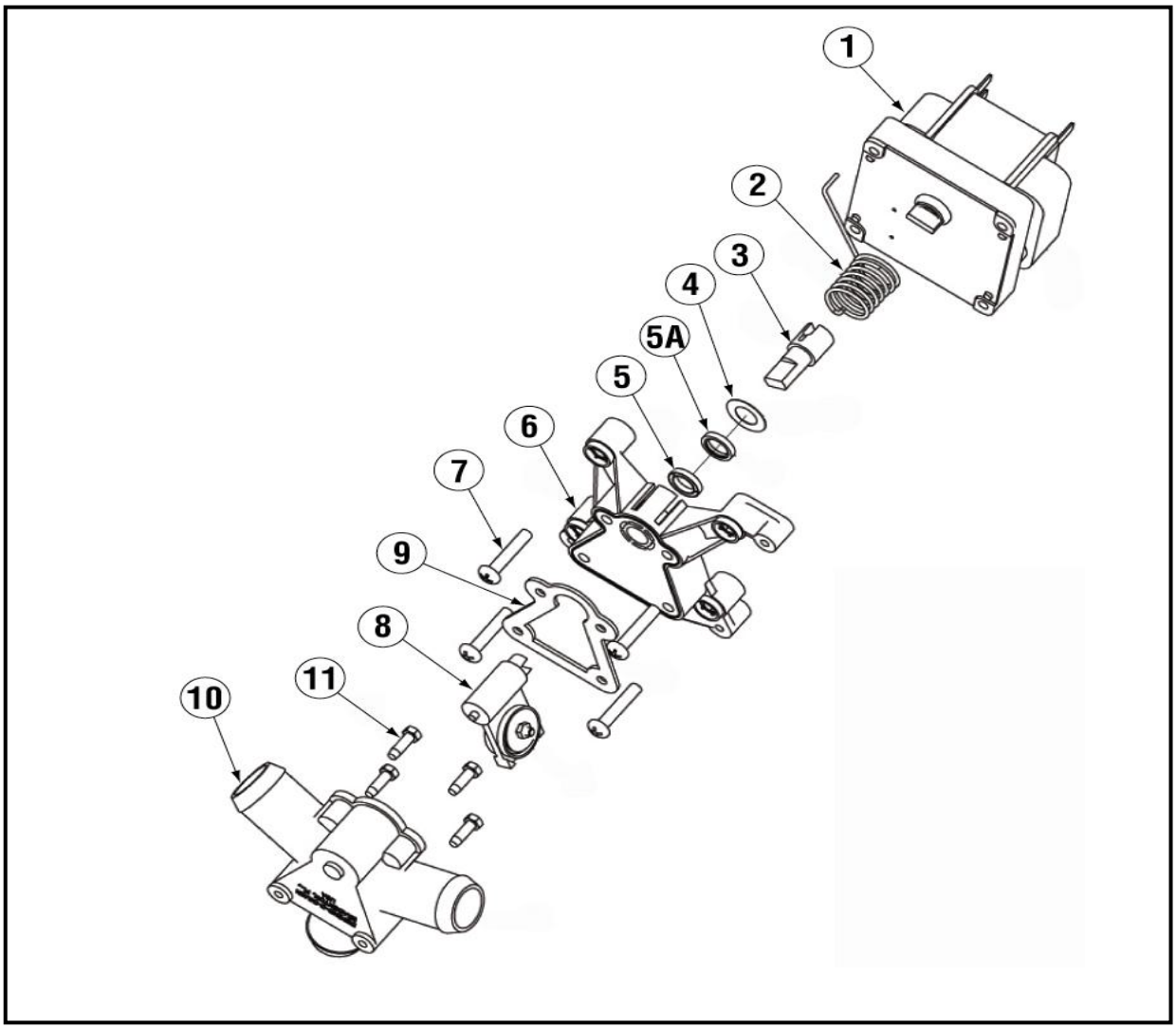


ITEM NO.	NO. REQ'D	P/N	DESCRIPTION
1	3	00416.00	Peristaltic Pump Motor
2	3	00417.10	Peristaltic Pump Block (Black)
3	6	00919.00	10-32 x 1 1/2" Pan Head Screw
4	3	00918.00	10-32 x 1 1/2" Fillister HD Screw
5	6	00932.00	Wire Tie – Large
6	7	00418.00	Peristaltic Pump Block Cover
7	12	00911.00	8-32 x 1/2" Pan Head Screw
8	2	00435.10	Squeeze Tube – Orange 8"
8A	1	00435.14	Squeeze Tube – Orange 22"
9	3	00419.00	Peristaltic Rotor Assembly
E	6	00423.00	Rotor Bearing
F	6	00422.00	Rotor Bearing Pin

ITEM NO.	NO. REQ'D	P/N	DESCRIPTION
G	3	00424.00	Rotor Bearing Carriage
H	3	00935.00	1/4"-20 x 1/4" Allen Screw
10	6	00448.00	Barrel Connector (Male)
11	AR	00425.51	Chemical Tubing (Blue)
12	AR	00425.53	Chemical Tubing (Red)
13	AR	00425.54	Chemical Tubing (White)
14	2	03415.00	Chemical Tube Bulkhead
15	2	00443.00	Tube Stiffener
16*	1	00415.00	Complete Peristaltic Pump
17	1	03415.20	Bulk Head For Sanitizer
18	1	00435.62	24" Squeeze Tube

**Item 16 includes items 1-4, 6-10.*

5.3.10. Drain Valve



ITEM NO.	NO. REQ'D	P/N	DESCRIPTION
1	1	00104.50	Drain Motor 120V
2	1	04103.14	Drain Valve Spring
3	1	04103.20	Drain Valve Drive Pin
4	1	04103.19	Drain Valve Washer (Thin)
5	1	04103.17	Drain Valve Seal Washer (V-Packer)
5A	1	04103.23	Drain Seal Bearing (White Washer)
6	1	04113.13	Drain Valve Housing Cover
7	4	04113.18	Valve Cover Screw
8	3	04103.16	Drain Valve Hinge/Seal
9	1	04103.15	Drain Valve Housing Gasket
10	1	04113.12	Drain Valve Housing
11	1	04103.18	#8 X 5/8 Self Threading Screw

Addendum for Machines Installed in the City of Chicago

"All food dispensing establishments using chlorine or other approved chemical sanitizers shall, at all times, maintain an adequate testing device."

"Dishes and other eating and drinking utensils to be washed in a dishwashing machine shall be properly scraped and pre-rinsed and shall be stacked in racks or trays so as to avoid overcrowding, and so as to permit the wash and rinse waters to reach all surfaces of each utensil."

"In machine washing, multi-use eating and drinking utensils shall be washed in water containing a suitable detergent at a temperature of 120° F to 140° F or other method approved by the Department of Health."

"The water in the wash tank shall be changed during operation as often as is necessary to keep it reasonably clean. An effective concentration of detergent in the wash water shall be maintained at all times."

"Bactericidal treatment shall consist of exposure of all surfaces of dishes and utensils being washed to a rinse of clean water, at a temperature of not less than 180° F or other method approved by the Department of Health."

"All dishwashing machines shall maintain a flow pressure not less than 15 or more than 25 pounds per square inch on the fresh water line at the machine and not less than 10 pounds per square inch at the rinse nozzles. A suitable gauge cock shall be provided immediately upstream from the final rinse sprays to permit checking the flow of the final rinse water. An easily readable thermometer accurate to a $\pm 2°$ F. shall be provided on both the wash and rinse water lines of the dishwashing machine which will indicate the temperature of the water solution there in."

"Dishwashing machines shall be thoroughly cleaned at least once each day. The pumps and the wash and rinse sprays or jets shall be so designed that a forceful stream of water will reach all surfaces of the utensils when they are properly racked. These parts shall be thoroughly cleaned at least once each day. The pumps and the wash and rinse sprays or jets shall be designed that a forceful stream of water will reach all surfaces of the utensils when they are properly racked. These pars shall be readily accessible for inspection and cleaning.

"After bactericidal treatment, utensils and containers shall be stored at a sufficient height above the floor in a clean, dry place, protected from flies, splash, dust, overhead leakage and condensation, and other contamination. Containers and utensils shall be inverted, covered, or otherwise protected from contamination until used for serving."

Drain racks, trays and shelves shall be made of non-corrodible material and shall be kept clean. In handling containers and utensils the surfaces thereof which come in contact with food or drink shall not be touched by the hands, except during the process of washing. Tables for clean and dirty dishes and food shall be so arranged that the dirty dishes will be as far removed from the food and clean dishes as may be possible.

All single service articles and utensils shall be purchased in sanitary cartons and stored in a clean, dry place until used, and after removal from the cartons, these articles shall be handled in such a manner as to prevent contamination.

Please note the following procedures must be followed for City of Chicago Approval:

1. **All low energy models must have low level sani-alarms, both visual and audio.**
2. **All models must have a City of Chicago approval data label affixed to the machine.**
3. **Chlorine sanitizer must be a minimum of 100 PPM.**

Appendix A: Operator & Cleaning Instructions

6. Electrical Diagram