
BETA
TECHNOLOGY, INC.

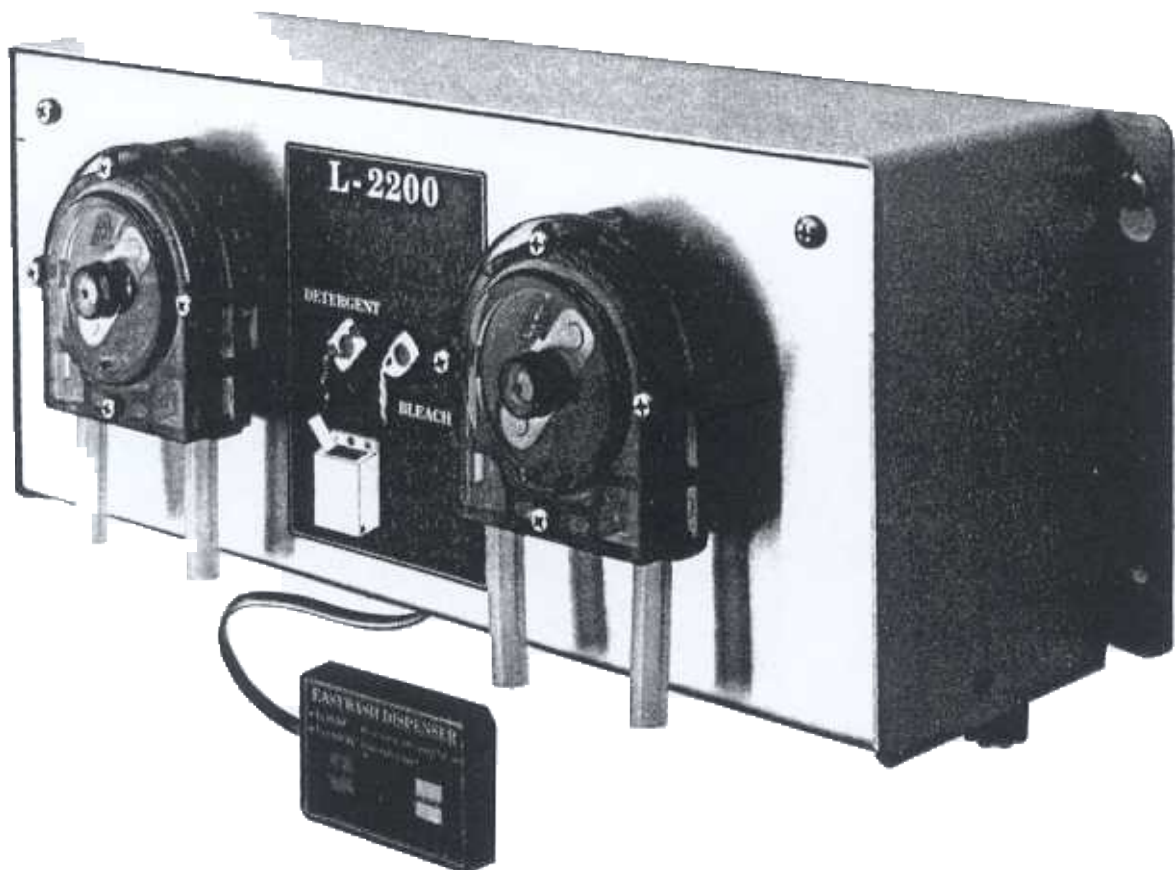


SANTA CRUZ, CA 95060

L-2200 CLEAN FEED

Operating Instruction and
Installation Manual for

LAUNDRY CHEMICAL INJECTION SYSTEM



L-2200 Clean Feed
Laundry Chemical Injection System
Installation, Operation
&
Instruction
Manual

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SPECIFICATIONS

Size: 6 1/4" H x 14 1/4" W x 5 1/4" D

Weight: 14 pounds

Cabinet: Splash resistant brushed stainless steel

Mounting: Wall mounted via external flanges

Power: 115 volts AC (+/- 10%), 60 Hz

Current: 3 amps maximum

AGC 250 Volt 3 Amp

Contact the factory for information on the availability of 230 volt 50 Hz (export) units and 230 volt 60 Hz units.

Pumps:

Peristaltic
Dual Roller
Self Priming
Self Checking
Smoked clear plastic molded housings

Pump Speed: 106 RPM (shaded pole AC motor)

Pump Displacement:

Approximately 8.5 ounces per minute (250 milli-litres)

Displacement based on 1 centipoise (water), viscous product displacement will be less.

Pump Run Times:

Adjustable from approx. 1 second (minimum) to approx. two minutes (maximum)

Note: Specifications are subject to change without notice

WARRANTY

This Beta Technology Inc. unit is warranted against defects in materials and workmanship. This warranty applies for one year from the date of delivery and covers all parts of the unit except the pump squeeze tubing. Units will be repaired or replaced which are proven to be defective during the warranty period provided they are returned to Beta Technology, Inc. No other warranty is expressed or implied. Warranty does not cover equipment abuse or misuse, nor does it cover any consequential liability resulting from performance of the equipment.

SPECIAL NOTE

Material in this manual is subject to change without notice. Manual revisions will be made on an as needed basis. Special circumstances involving important design, operation or application information will be released via the Beta Technology Technical Service Bulletin System.

INTRODUCTION

The L-2200 dispenser series includes two models; the L-2200 Clean Feed laundry chemical dispensing system is designed to inject a preset quantity of liquid detergent and bleach into commercial "home type" washing machines (Maytag, Whirlpool, Kenmore, Norge, Speed Queen, etc.). The Clean Feed model is primarily designed for use in On Premise Laundries (OPL's) such as nursing homes and motels. The L-2200 Detergent - Sanitizer Dispenser model is designed primarily for injecting detergent and sanitizer (bleach) chemicals into pot and pan sinks. The L-2200 units require no electrical wiring connections other than providing main power. Standard units come with a pre-attached power cord that simply plugs into a 115 volt wall socket. Then, set the dosage quantity for each pump and make the simple physical connections required to connect the chemical feed lines to the washer or pot and pan sink. The L-2200 series incorporates a remote control pump activation switch box that is typically mounted on or close to the washer and connected to the dispenser with a standard 4 wire "plug-in" telephone cable. Simply press the appropriate switch to inject the preset chemical dose when desired. With a maximum pump feed time of approximately two minutes (approx. 17 ounces of chemical), the L-2200 is ideally suited for washers up to about a 50 pound capacity or any typical pot and pan sink. Precision analog electronic timing combined with our proven peristaltic pump design will ensure accurate and reliable performance.

INSTALLATION

1. Mounting:

- A. Mount the unit on a vertical surface (usually a wall) near the washer using the two upper keyhole mounting slots and the two lower bolt mounting holes on the external flanges. Mounting hardware is provided in the installation kit.
- B. Mount only in the horizontal position.
- C. Keep away from extreme heat and moisture.
- D. Mount on a vibration free surface.

Note: There is 40 feet of 1/4 inch polyflo tubing provided in the installation kit. That should be more than enough tubing for typical installations.

2. **Connecting The Chemical Suction Lines:** Slide the 1/4 inch polyflo tubing (provided in the installation kit) about 1/2 inch or so up into the suction (left) side of each pump's squeeze tube. Secure the connection with a tie wrap (supplied in the installation kit). Route and secure the other end into the appropriate chemical supply drum. Drum guides are provided in the installation kit to ensure that the supply lines reach down to the bottom of the drum.

Note: When connecting your supply lines to the pump squeeze tube, make sure you have no air leaks or the pump may not pull the product from the supply drum.

3. Connecting The Chemical Output Lines: Slide the 1/4 inch polyflo tubing about 1/2 inch or so up into the output (right) side of each pump's squeeze tube. Secure the connection with a tie wrap (supplied in the installation kit). Route the output lines to the injection point on the washing machine. There are diagrams provided in the installation kit that show how to access the washer drum via the washer water fill assembly or the overflow outlet hose. These diagrams should provide information on most of the "home type" washers. For the pot & pan sink units, there is a diagram showing a typical installation.

4. Power Wiring: Plug the unit into a standard 115 volt wall socket. The power cord is 8 feet long.

5. Connecting The Remote Control Switch Box: The remote switch box with a 12 foot 6 inch standard plug in telephone cable is included in the installation kit.

A. Remove the adhesive backing on the rear of the switch box and **mount in a dry location** easily accessible to the operator. **Switch failure can occur if the switch unit gets wet.**

B Plug the cable into the "jack" located on the bottom/center of the unit. If a longer telephone cable is required, any Radio Shack store carries female to female adaptors and various lengths of telephone cable with male plugs at both ends.

6. Setting Pump Feed Times (Calibrating Doses):

A Use a philips head screwdriver to remove the 2 front panel screws (upper left and right corners) and gently lower the hinged front panel.

B Use a 1/8 inch standard screwdriver to gently adjust the detergent and bleach pump Run Time dials to the amount of time desired. Turn left to decrease the run time or right to increase the run time. **CAUTION:** The dial rotation is from about "7 o'clock" to about "5 o'clock". Excessive force when turning the dials can strip the adjustment screws.

C Hold your calibrated measuring container either at the end of the output supply tube or directly under the output of the pump itself.

D. Press the appropriate switch (detergent or bleach) on the remote switch box until the light comes on and the pump begins to run (about 1 second). Verify that the desired quantity is displaced. If necessary, adjust the run time dial and repeat the procedure.

OPERATION

- 1. Activating The Pumps:** Press the detergent or bleach switch on the remote switch box to turn on the pumps at the time you want to inject the chemicals.
- 2. Canceling The Pumps:** To stop a pump that has been activated, press the switch again.

CAUTION: To avoid damaging the linen, allow the washer drum to fill with water before pressing the switches to inject the chemicals (especially the bleach).

ACCESSORIES AND SPARE PARTS

The items listed in this section provide you with a quick reference for some of the major parts you will probably want to keep in stock. Consult the reference drawing in the back of the manual for a complete breakdown of all L-2200 parts. To order parts from the drawings, simply find the part on the drawing, locate it in the parts list using the item number, and order using the part number listed in the part number column.

Pump Tubings: The L-2200 normally comes equipped with BetaTube squeeze tubes unless otherwise specified. However, for chemical compatibility purposes we do have other types of tubing available. For detailed information on chemical compatibility consult Beta Technology Technical Service Bulletin 86-1012 (published in November, 1986), or contact the factory. The following list describes the various 9 inch tubes, the pump roller assemblies and the part numbers to order them by:

<u>Tubing Type</u>	<u>Tubing Part #</u>	<u>Color</u>	<u>Roller Part #</u>
Standard Silicone	03-05324-010	Clear	03-05333-780SM
Molded Nordel	41-06071-051	Black	03-05333-780SM
C-FLEX	03-05324-240	White	03-05333-780SM
BetaTube	03-05324-280	Tan	03-05333-780SM
Nordel (straight)	03-05324-100	Black	03-05333-780SM
Viton	03-05324-020	Black	03-05333-770SM
*Hi Volume Silicone	03-05324-080	Clear	03-05333-780SM

* The Hi Volume tube can provide you with a about 11.5 ounces per minute instead of 8.5 ounces per minute.

PARTS LIST

<u>Item</u>	<u>Part#</u>
L-2200 Circuit Board (all models)	50-08397-00
Complete 115 Volt Pump Motor Assembly (with BetaTube)	13-07863-10101
115 Volt Motor (motor only)	26-S-1121
Pump Roller Assembly	03-05333-780SM
Front Pump Housing	37-06654-01
Rear Pump Housing (includes 4 hex insert nuts)	13-06914-03
Pump Housing Bolts (front housing, 4 required)	30-S-1479
Pump Housing Bolts (short internal, 2 required)	30-S-1047
Pump Housing Bolts (long internal, 2 required)	30-S-1048
8 Foot Power Cord (115 Volt Standard Plug In)	40-08124-08
1/4 inch polyflo tubing (order by the foot)	41-S-1166
Fuse (AGC 250 Volt 3 Amp)	62-S-1208
Remote Control Switch Unit (Clean Feed Model)	03-08505-00
Remote Control Switch Unit (Detergent - Sanitizer Model)	03-08505-02

MAINTENANCE

1. General Cleaning: Keep the unit wiped clean of any residual chemical buildup that might corrode the stainless steel cabinet.

2. Replacing The Squeeze Tube:

A. When To Replace: Due to the many variables involved, (i.e. chemical compatibility, quantity of product pumped, viscosity of product, vacuum and pressure considerations, etc.) we cannot specify a set time to replace the squeeze tubes. We recommend closely monitoring* the time it takes for the original tubes to reach the end of their flex life (elastomeric memory), then simply plan on replacing the tubes on a routine basis well before the next expected replacement date arrives. This seems to be the preferred method of ensuring customer satisfaction, and certainly seems to be better than answering a service call just to change a squeeze tube.

***Note:** When the pre-set displacement begins to drop (i.e. pump was originally set to displace 5 ounces and now displaces only 4 ounces), that is an indication that the squeeze tube needs to be replaced.

B. How To Lubricate And Replace Tubes:

1. Remove the 4 bolts that secure the front pump housing to the rear pump housing. The front housing can then be easily removed by hand.
2. Remove the old tube and clean the inside of both housing halves to remove any residue.

3. Apply a light coating (a finger tip dose is fine) of lubricant to a new piece of tubing before inserting it into the pump housing. Only the portion (inside radius) of the tubing that will make contact with the rollers need to be lubricated. Occasional lubrication during the life of the tube may help to extend tubing life.
4. Carefully insert the new tube so that it fits tightly against the rear pump housing half. To ensure proper tube placement, rotate the roller assembly once or twice while holding the tube in place. Then, press the front housing against the rear housing so that the bolt holes mate up and screw in the 4 bolts. Only 6 to 8 inch pounds of torque are required to tighten the pump housing.

Special Lubrication Note: Use vaseline to lubricate Silicone and Viton tubes. Use a silicone lubricant such as Dow Corning F-111 to lubricate Nordel and BetaTube tubes. C-FLEX and Latex tubes do not require lubrication.

CAUTION: Too large an application of lubricant or using an incompatible lubricant can cause premature squeeze tube wear.

3. **Caring For The Roller Assembly:** Whenever you change a squeeze tube, use a standard 3/32 inch hex driver to make sure that the roller is tight on the motor shaft. Use a few drops of "3 in 1" oil to lubricate the roller sleeves and the roller pins. Remove the roller assembly before lubricating and wipe off any excess oil because it may attack the tubing and cause premature wear.

TROUBLESHOOTING

Note: See reference drawing # 01-08504-00 (sheet 2 of 2) for a complete L-2200 wiring diagram.

1. Fuse Blows Or Other No Power Situations:

- A. Unplug the power cord from the wall socket.
- B. Unplug the blue wire and the yellow wire from the circuit board.
- C. Replace the fuse and plug in the power cord. If the fuse blows, replace the transformer. If not, verify that approximately 24 volts AC is present across the blue and the yellow wires. If 24 volts is present, go step D. If not, use your volt meter to check that the wall socket is really supplying 115 volts. If so, replace the transformer after checking for loose or disconnected wires going into the transformer.

- D. Unplug the power cord and reconnect the blue and yellow wire to the circuit board. Unplug the 3 insulated connectors from the front of the circuit board, (these provide power to the motors). Plug the power cord in. If the fuse blows, replace the circuit board. If not, go on to Step E.
- E. Check that the fuse is not blowing right after you press the switch. If one of the motors is "shorted", if the gears are "frozen" or if the squeeze tube/roller assembly is "jammed up" in the pump housing, the new fuse will blow as soon as the pump begins to run. With the motor completely disconnected, take a resistance reading across the 2 motor wires to verify that the motor is okay. Consult the chart below for correct ohm (Ω) readings:

<u>Motor Type</u>	<u>Correct Ω Reading</u>	<u>Problem Ω Reading</u>	<u>Action</u>
115 volt 60 Hz	about 7 Ω	zero = shorted	replace
115 volt 60 Hz	about 7 Ω	infinite = open	replace*

* Since the motors have an automatic thermal cutoff switch, if you read an "open" across the motor wires and the motor is very hot, it is possible that the motor may be okay after it cools down. Check this out before replacing the motor.

2. Pump Will Not Run When Switch Is Pressed

- A. Check that the roller assembly "setscrew" is not loose and the motor shaft is simply spinning without turning the roller.
- B. Does the indicator light come on and go off after the proper amount of time elapses? If not, try another switch unit. If the new switch unit does not cure the problem, replace the circuit board. If the indicator light does work correctly, go on to Step C.
- C. With the motors connected as per normal (pull the insulated connector plugs up enough to clip your volt meter leads on to the terminals), take a voltage reading across the 2 appropriate* motor terminals ON the circuit board. You should read 115 volts until you activate the pump by pressing the appropriate switch. You should then read ZERO volts until the preset run time elapses. When the pump stops, you should again read 115 volts. If not, replace the circuit board.

*Measure voltage across the CENTER terminal and the RIGHT terminal for the motor on the RIGHT side of the cabinet and measure voltage across the CENTER terminal and the LEFT terminal for the motor on the LEFT side of the cabinet.

3. Pump Runs Continuously:

- A. If a pump begins running as soon as the Power cord is plugged in or if the pump does not stop when the preset run time elapses, replace the circuit board.

4. Pump Will Not Pull The Chemical Out Of The Supply Container: There are 3 basic reasons why the pump would not be able to pull product.

- A Too much vacuum created - this is easily recognized by the fact that the tubing will completely flatten out (collapse) inside the pump housing when the pump starts to run. It can be caused by the following conditions:

1. Supply line in the chemical pail sucking up against the side or bottom of the drum.
2. A crimp in the intake supply line.
3. Pulling a viscous product too far a distance or against too high a head (vertical rise)

- B An air leak somewhere along the input supply run. Most often, this is caused by inadequate sealing of the supply line into the squeeze tube. An air leak will also cause the pump to lose it's prime capability.

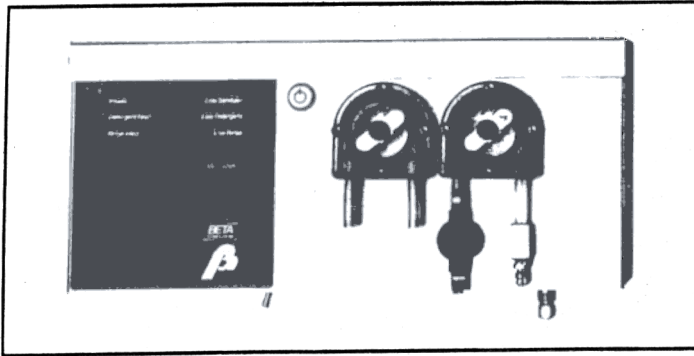
- C. Pump tube flex life has ended and the rollers can no longer squeeze the tube properly. Replace the pump tube.

TECHNICAL ASSISTANCE

If you require additional information or assistance in troubleshooting your L-2200 unit, please do not hesitate to call the Beta Technology, Inc. Technical Service Department. Outside California dial "Toll Free" 800-538-0760. Inside California dial 408-426-5890.

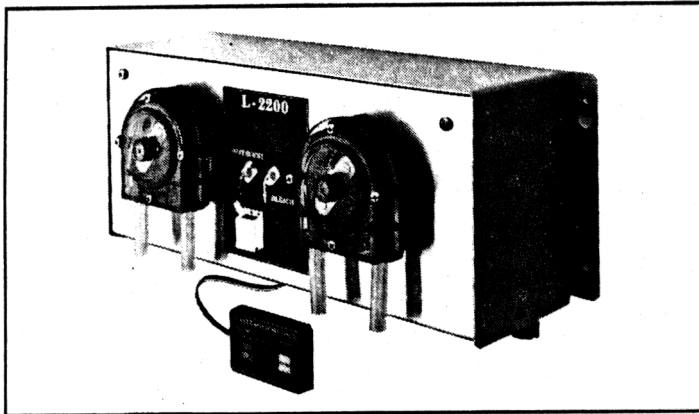
RETURNING EQUIPMENT FOR REPAIR

If you need to send an item back to be repaired or replaced, please call or write to obtain a Returned Product Report (RPR number) before sending it back. When you call, simply ask for the Repair Department and they will provide you with a number. Then, please write the RPR number on the outside of the box before sending it back. It is also very helpful to our repair department if you include a note inside the box explaining the nature of the problem. Failure to obtain a RPR number before sending an item in for repair or replacement might delay the return of your equipment.



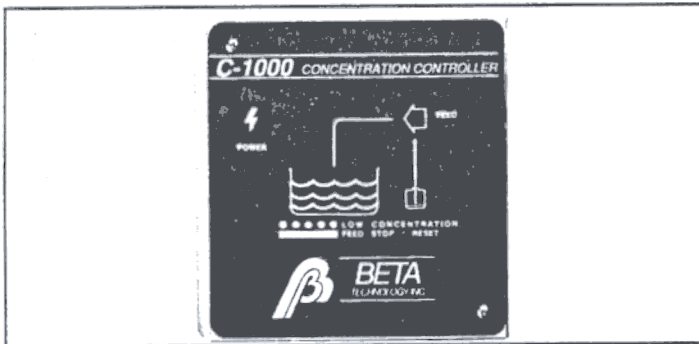
H-9000 BETA PARAGON WAREWASH DISPENSER

Uses the exclusive BetaSet detergent adjustment system. Provides digital display of actual detergent strength, and is temperature compensated for extra accuracy. Universal application, up to three pumps, or solenoid option, includes peristaltic rinse pump, adjustable for 24, 110, 208 or 220V. Complete with temp. comp. probe and installation kit.



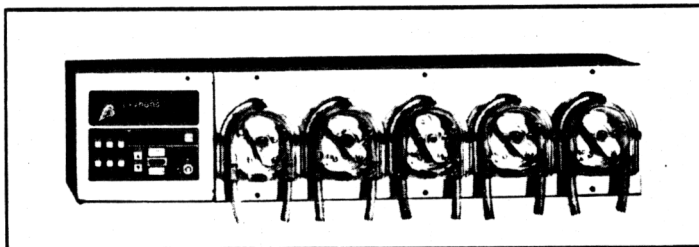
L-2200 BETA CLEAN FEED DISPENSER

Has two peristaltic chemical pumps for automatic transfer of liquid detergent and bleach/softener from the shipping container, directly into the washing machine. The quantities can be preset by the installer. Unit plugs into any 115V outlet. Provides convenience, safety, and cost control.



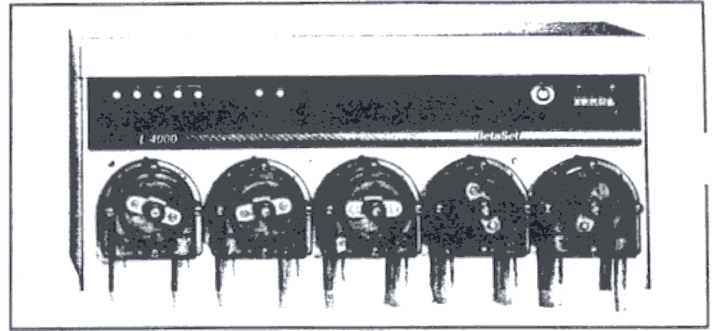
C-1000 CONCENTRATION CONTROLLER

Controller with ultraloc set point, low concentration audible and visual alarm plus overfeed stop. Dual range circuit for maximum flexibility. Includes on/off switch and probe.



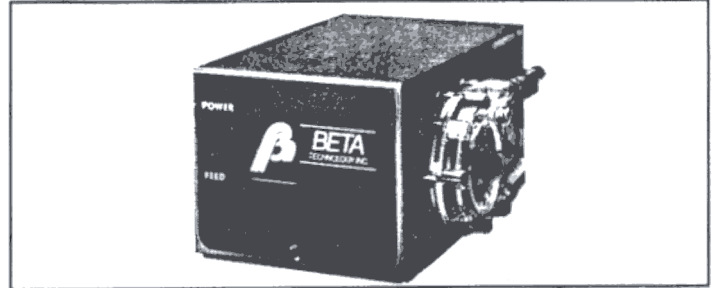
L70,000 COMPUTER LAUNDRY DISPENSER

Computer-controlled dispenser with digital timing set, adjustable ranges 0-10 mins in 1-sec increments, 3 time sets for each pump, adjustable delays, integral load counter, stopwatch time set, auto-sequence feature for non-programmable washers, full digital status display, safe 24V operation, available with 50oz or 80z/min. pumps.



L-4000 MICROPROCESSOR LAUNDRY DISPENSER

Flexible design allows retrofit of up to 5 pumps. All pumps are programmable for two product amounts, individual delays. An auto-resetting bleach defeat is included. All programming is pushbutton controlled from the front panel. Signal inputs can be 24 or 240V, and may be selectively qualified. A relay mode is built in for microprocessor controller connection. Available as 110 or 220V, in stainless steel lockable cabinet.

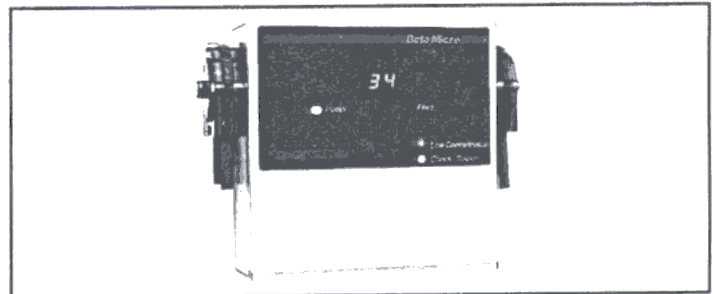


R-2122 RINSE INJECTOR

Peristaltic rinse pump with variable flow rate 2-20ml/min. adjustable, manual on/off/prime switch, automatic activation by rinse line pressure, stainless steel enclosure. Available with low supply alarm option.

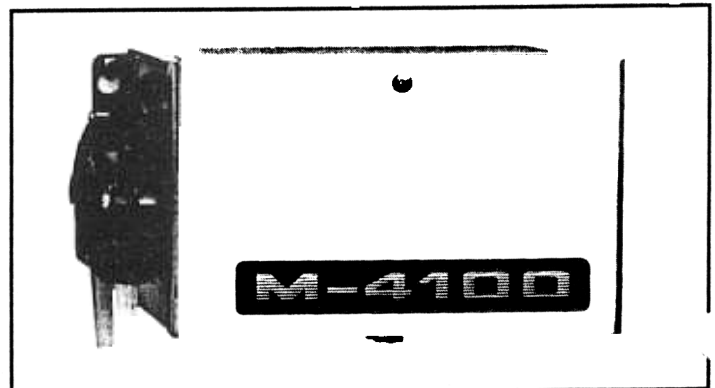
S-2140 SANITIZER PUMP

For chemical sanitizing applications. 7-70ml/min. adjustable flow rate, pressure or electrical activation, manual on/off/prime switch, stainless steel enclosure. 24V.



H-4000 BETA MICRO WAREWASHER DISPENSER

A combined detergent controller and rinse injection system. Controls liquid or powder dishwashing detergents and adds them as needed to the wash tank of conventional dishwashing machines. Provides the power of microprocessor technology in an economical compact package.



M-4100 BETA INTERVAL TIMER DISPENSER

Programmable dispenser used for dosing grease traps with biological or chemical treatments as part of a maintenance system. Integral self-priming peristaltic pump for product delivery. A 24-hour or 7-day timer provides up to 48 doses per day, (24-hour timer).