

## BATCH CONTROLLER (FOR DIAPHRAGM PUMPS)

### SYSTEM DESCRIPTION

#### Batching

The Aro Mini-Batcher opens a valve when the "start" button is pressed, allowing fluid to flow through a measuring device. The unit reads the pulses from the measuring device and closes the valve when the predetermined amount of fluid has passed.

#### Prewarn

Relay "B" may be used for a prewarn signal to indicate when the end of the batch is approaching. Relay "A" may control a low flow valve and relay "B" a high flow valve to dispense fluid rapidly until a certain point where the high flow valve closes and allows the batch to finish slowly, assuring accuracy.

#### Ratometer and Totalizer

At any time during the batching process, the transfer rate of the fluid, the total amount of fluid dispensed or the total number of batches delivered may be viewed. The rate may be displayed in units per hour, minute or second. The totalizer may be reset at any time using the "reset / stop" key.

#### Lock

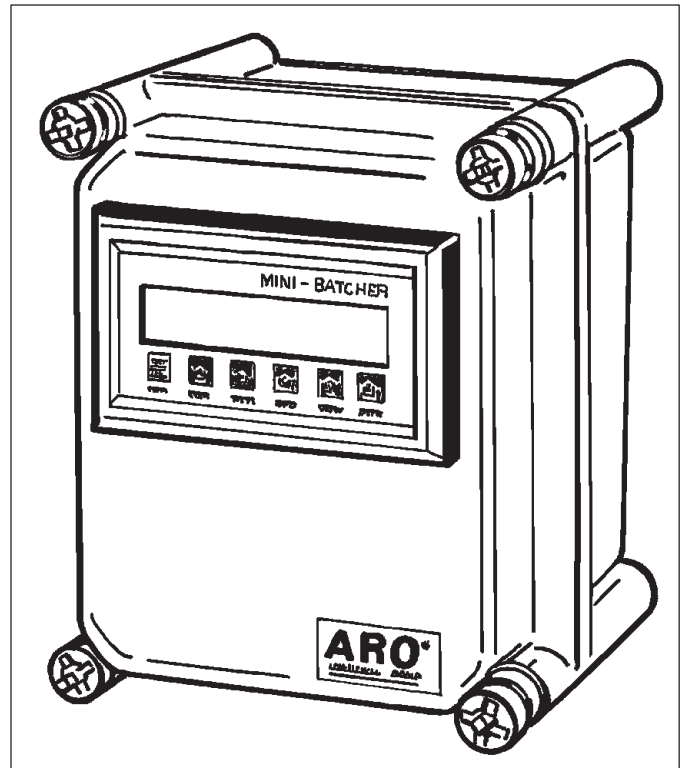
The program for the Mini-Batcher may be locked by code in two different modes. "LOCK PROG" mode allows only the preset value to be changed during operation, while the "start" and "stop" buttons function normally. The "LOCK ALL" mode does not allow any changes to the program to be made, though the preset value may be viewed and the "start" and "stop" buttons function normally.

#### Counting

Pulses to the Mini-Batcher for recording the amount of fluid dispensed may be generated several ways. If a commercial flowmeter is used, it must have a pulse output and the "high cycles" setting must be used on the meter. An Aro diaphragm or piston pump with a cycle counter may also be used with the meter on the "low cycles" setting. Discharge volumes per cycle for various Aro pumps can be found later in this document. Any type of proximity switch may also be used to generate the pulsed output required by the unit.

#### Power Requirements

The standard Mini-Batcher may be powered by either 110 VAC or 12 - 15 VDC for maximum installation flexibility. Other voltages are also available.



### SPECIFICATIONS

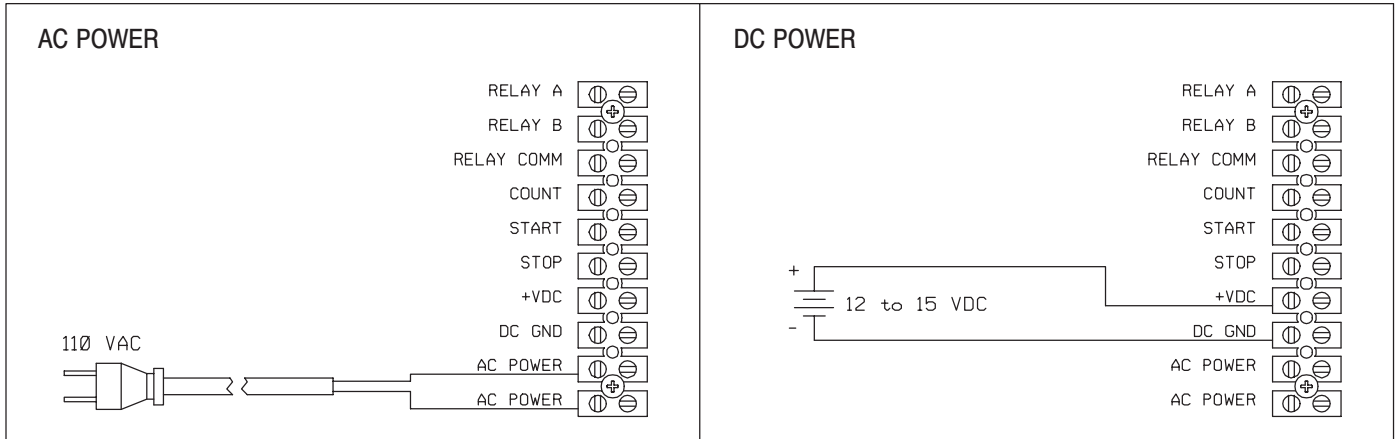
<b>Model Number</b>	67161-1 standard 67161-2 front panel pushbuttons
<b>Input Power</b>	110 VAC @ 6.5 VA or 12 - 15 VDC @ 3.75 W
<b>Output Power</b>	12 VDC @ 50 mA <sup>①</sup>
<b>Input Levels</b>	ON: 4 - 30 VDC OFF: 0 - 1 VDC
<b>Relays</b>	(2) Normally Open 10 A @ 240 VAC
<b>Display</b>	6 Digit, .55" LED
<b>Operating Temperature</b>	32° - 130°F (0° - 54°C)
<b>Maximum Humidity</b>	90% Noncondensing
<b>Enclosure</b>	U.L. Listed Type 4

① This output power should only be used for counters, meters or other minimal current draw devices.

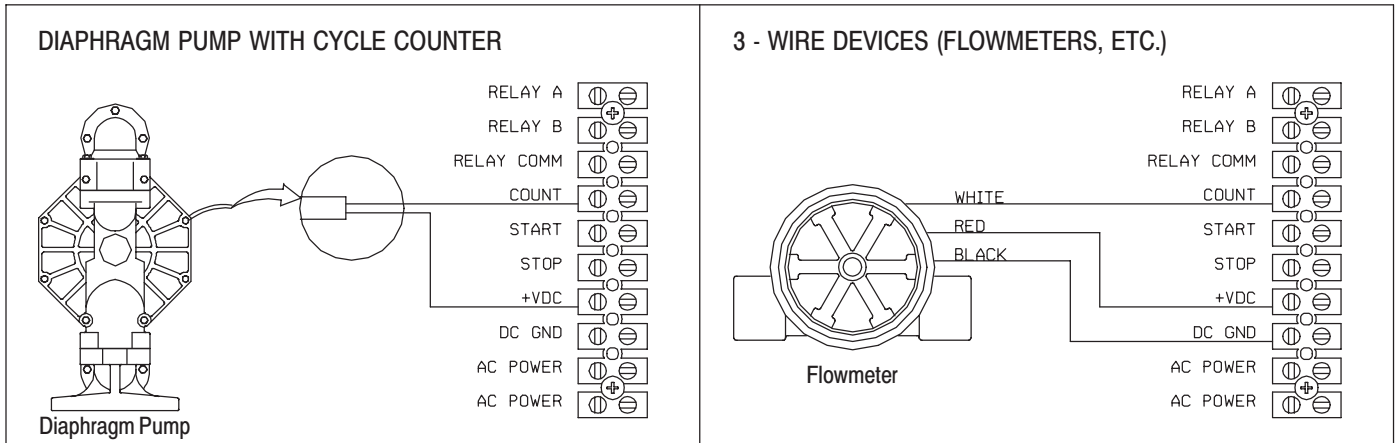
# WIRING

All of the wiring connections in the Mini-Batcher are made at the terminal strip located at the back of the unit.

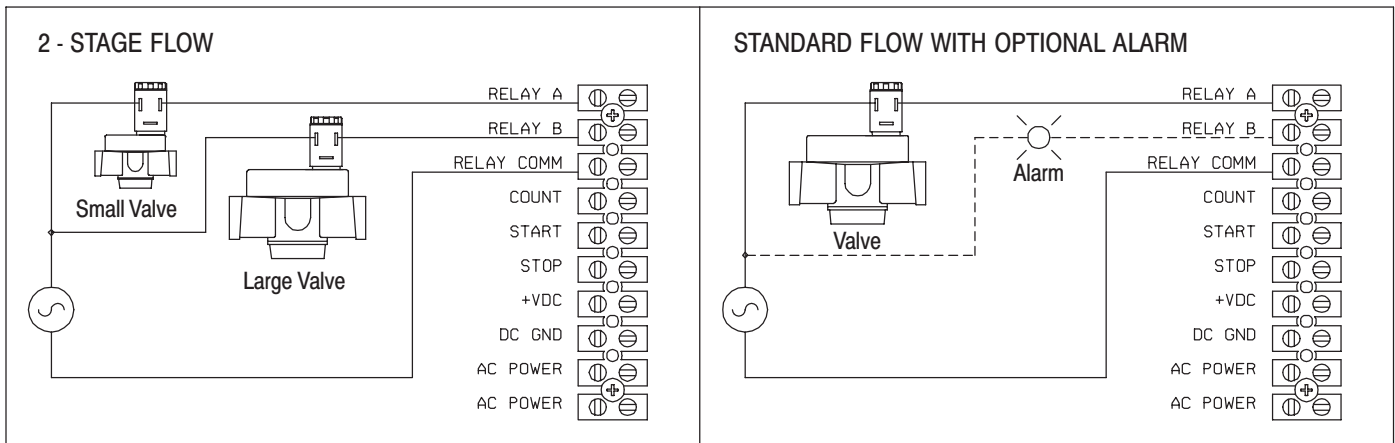
## Power to the unit



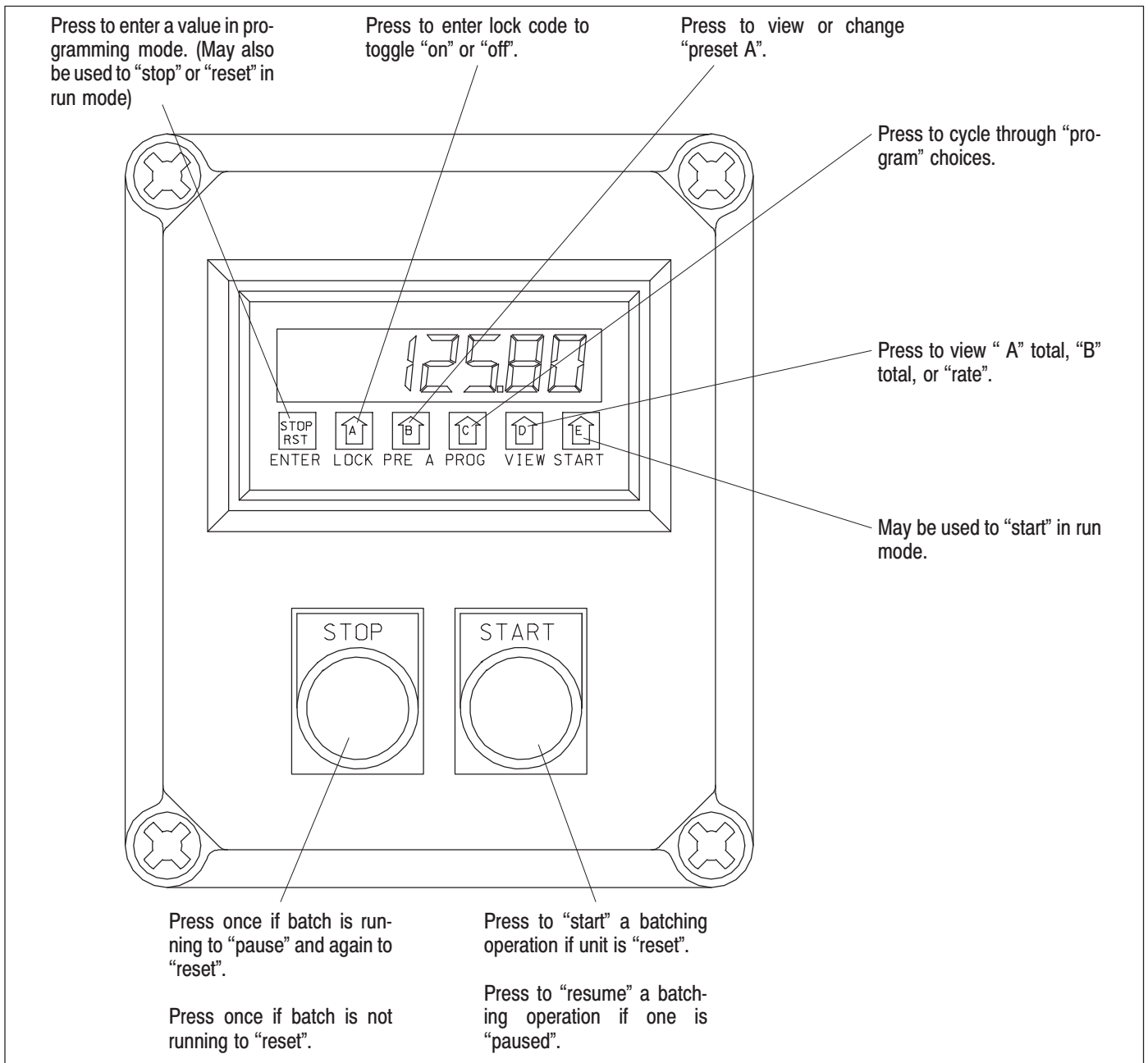
## Wiring the Count Input



## Using Outputs



# PROGRAMMING



## PROGRAMMING (continued)

	<u>PRESS</u>	<u>DISPLAY</u>	<u>REMARKS</u>
<b>STEP 1</b> SETTING PRESET B	<input type="checkbox"/>	<i>PrEb</i>	This section of the menu is used to set Preset B value.
	<b>PROG</b>		
	<input type="checkbox"/>	#####	This is Preset B. To change, press the arrow key under the digit(s) to change. Press "enter" to enter the displayed value.
	<b>ENTER</b>		
<b>STEP 2</b> SETTING SCALING FACTOR	<input type="checkbox"/>	<i>PrEb</i>	This section of the menu is used to set up the scaling factor for the count input.
	<b>PROG</b>		
	<input type="checkbox"/>	<i>FACTOR</i>	
	<b>PROG</b>		
	<input type="checkbox"/>	<i>dP FAC</i>	This sets the decimal for factor A. Press the arrow key under the digit where the decimal is desired. To clear the decimal, press the arrow key furthest to the right.
	<b>ENTER</b>		
	<input type="checkbox"/>	#####	This is the scaling factor for the count input. To change, press the arrow key under the digit(s) to change. Press "enter" to enter the displayed value.
	<b>ENTER</b>		
<b>STEP 3</b> SETTING THE COUNTER	<input type="checkbox"/>	<i>PrEb</i>	This section of the menu sets up the counter information.
	<b>PROG</b>		
	<input type="checkbox"/>	<i>FACTOR</i>	
	<b>PROG</b>		
	<input type="checkbox"/>	<i>Count</i>	
	<b>PROG</b>		
	<input type="checkbox"/>	<i>rST0</i> or <i>SEtPr</i>	
	<b>ENTER</b>		
	<input type="checkbox"/>	<i>dPLoC</i>	This sets the decimal location for the "A" and "B" counters. Press the arrow key under the desired digit location. To clear the decimal, press the arrow key furthest to the right. Press the "enter" key to enter the displayed location.
	<b>ENTER</b>		
	<input type="checkbox"/>	<i>GrTot</i> or <i>bATot</i>	This section sets the second counter operation. Press the program key to choose "GR TOT" (grand total) or "BA TOT" (batch total). Press the "enter" key to enter the displayed choice.
	<b>ENTER</b>		
	<input type="checkbox"/>	<i>Hi CPS</i> or <i>LoCPS</i>	Press the "PROG" key to choose "HIGH CPS" (0 - 9.99 KHz) or "LOW CPS" (0 - 40 Hz). Press the "enter" key to enter the displayed choice.
	<b>ENTER</b>		

## PROGRAMMING (continued)

**STEP**  
**4**  
**SETTING**  
**THE RATE**

<b>PRESS</b>	<b>DISPLAY</b>	<b>REMARKS</b>
<input type="checkbox"/> <b>PROG</b>	<i>PrEb</i>	
<input type="checkbox"/> <b>PROG</b>	<i>FAcTOr</i>	
<input type="checkbox"/> <b>PROG</b>	<i>CounT</i>	
<input type="checkbox"/> <b>PROG</b>	<i>rATE</i>	This section of the menu is used to set up the rate information.
<input type="checkbox"/> <b>ENTER</b>	<i>SECS</i> <i>minS</i> <i>or</i> <i>HourS</i>	Press the "PROG" key to choose SECS (rate per second), minS (rate per minute) or HourS (rate per hour). Press "enter" to enter displayed choice.
<input type="checkbox"/> <b>ENTER</b>	<i>nor ##</i>	This sets the normalizing (averaging) factor. Press the arrow keys under the desired digits to change. Press "enter" to enter displayed value.
<input type="checkbox"/> <b>ENTER</b>	<i>FiGur #</i>	This sets the number of significant figures to be displayed. Press the arrow key under the digit to change. Press "enter" to enter displayed value.
<input type="checkbox"/> <b>ENTER</b>	<i>dLY##</i>	This sets the delay time (2 - 24 sec.) that the unit will "look" for valid input data before the display falls to "0". Press the arrow key under the digits to change. Press "enter" to enter displayed value.

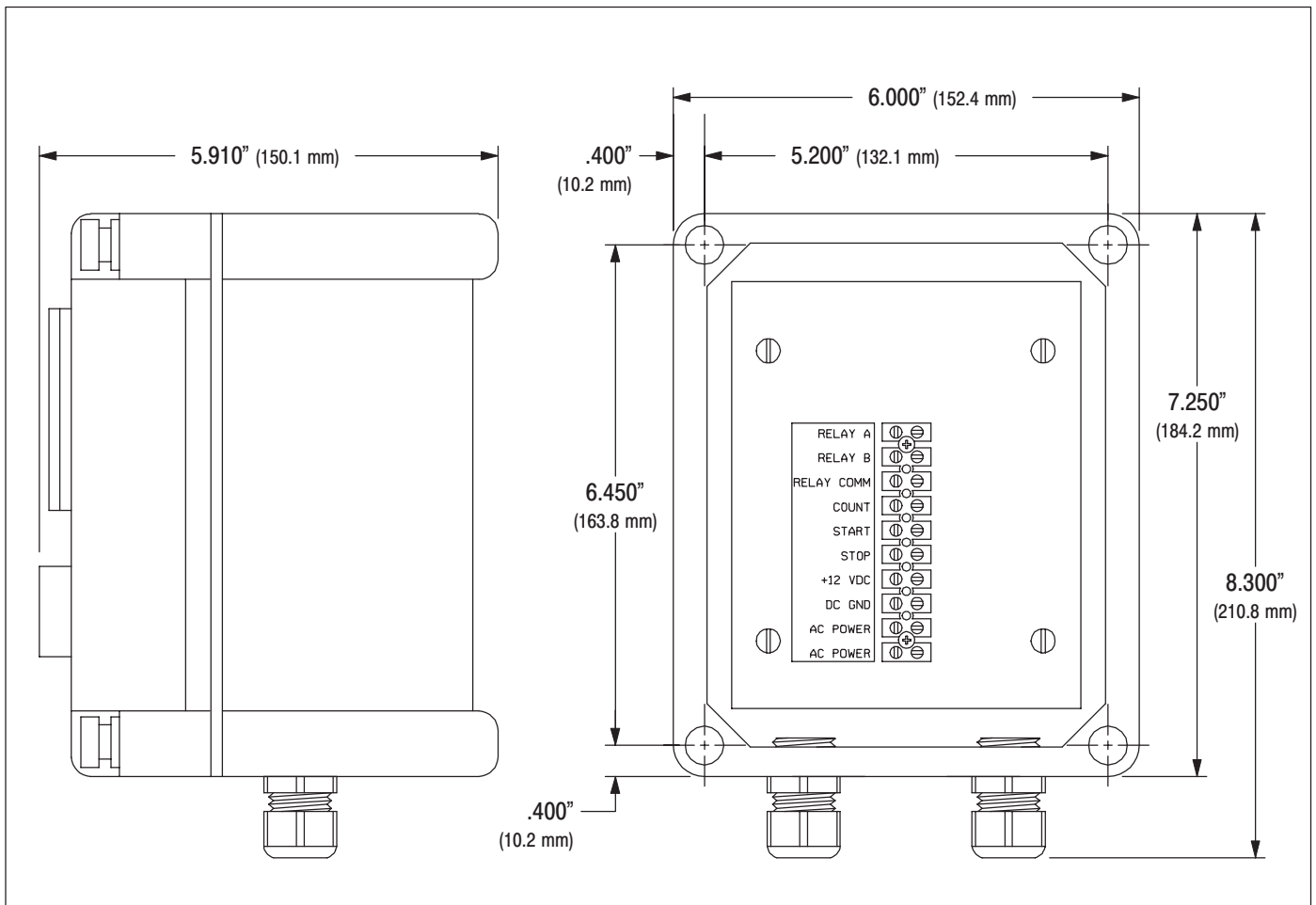
**STEP**  
**5**  
**SETTING**  
**LOCK**

<input type="checkbox"/> <b>PROG</b>	<i>PrEb</i>	
<input type="checkbox"/> <b>PROG</b>	<i>FAcTOr</i>	
<input type="checkbox"/> <b>PROG</b>	<i>CounT</i>	
<input type="checkbox"/> <b>PROG</b>	<i>rATE</i>	
<input type="checkbox"/> <b>PROG</b>	<i>LoC</i>	This section of the menu is used to set up the lockout type and code number.
<input type="checkbox"/> <b>ENTER</b>	<i>LCPG</i> <i>or</i> <i>LCALL</i>	LC PG = Locks program but presets and reset are accessible (see description). LC ALL = Locks all keypad buttons except "start", "stop" and "view". Press the "PROG" button to toggle between choices. Press "enter" to enter displayed choice.
<input type="checkbox"/> <b>ENTER</b>	<i>Code</i> <b>flashes</b> <b>followed by:</b> <b>#####</b>	After "code" flashes, the display will show the existing lock code. To change the code, press the key under each digit to be changed. Press "enter" to enter displayed value. See the following to turn lock on or off.

## PROGRAMMING (continued)

	<u>PRESS</u>	<u>DISPLAY</u>	<u>REMARKS</u>
<b>STEP 6</b> SETTING THE RELAYS	<input type="checkbox"/>	<i>PrEb</i>	
	<b>PROG</b>		
	<input type="checkbox"/>	<i>FActor</i>	
	<b>PROG</b>		
	<input type="checkbox"/>	<i>Count</i>	
	<b>PROG</b>		
	<input type="checkbox"/>	<i>rALE</i>	
<b>PROG</b>			
<input type="checkbox"/>		<i>LoE</i>	
<b>PROG</b>			
<input type="checkbox"/>		<i>rELAY</i>	This section sets up the relay information.
<b>PROG</b>			
<input type="checkbox"/>		<i>tot or PrEuu</i>	Press the "PROG" key to choose "TOT" (relay B assigned to total) or "PREW" (relay B assigned to prewarn). Press "enter" when the desired choice is displayed.
<b>ENTER</b>			
<input type="checkbox"/>		<i>b ##.##</i>	This will only appear if "TOT" is selected. This is the duration (.01 - 99.99 seconds) that relay "B" will remain energized. If 00.00 is selected, the relay will latch until reset.
<b>ENTER</b>			
SETTING THE PRESETS	<input type="checkbox"/>	<i>PrEA</i> followed by last PRE A entered	PRE A = Preset A (batch amount). The set point at which output "A" will drop out after started. If the displayed value is not the desired preset, press the key(s) under the digit to be changed.
	<b>PRE A</b>		
<input type="checkbox"/>		<i>PrEb</i>	PRE B = Preset B
<b>PROG</b>			a) tot selected      The set point at which output "B" will energize. b) PrEw selected    The number of counts before batch ends that output "B" will drop out.
			If the displayed value is not the desired preset, press the key(s) under the digit to be changed.
SETTING THE LOCK STATUS	<input type="checkbox"/>	<i>Code flashes followed by: □</i>	Key in the lock code (see programming step 4) by pressing the keys under the digits to be changed. Press the "enter" key to enter the displayed code.
	<b>LOCK</b>		
<input type="checkbox"/>		<i>LoE or unLoE</i>	After the code is entered, the unit will display "LOC" (unit is locked) or "UN LOC" (unit is unlocked). This message will be displayed for approximately 3 seconds before the unit returns to the run mode.
<b>ENTER</b>			

## DIMENSIONAL DATA



## DISPLACEMENT PER CYCLE

	Gallons	Ounces	in. <sup>3</sup>	cc	Liters	Specific Gravity = 1.000	
						Grams	Kg
1/4" Non-Metallic	0.014	1.792	3.234	53	0.053	53	0.053
1/2" Non-Metallic	0.040	5.120	9.240	151	0.151	151	0.151
1" Non-Metallic	0.170	21.760	39.270	644	0.643	644	0.644
1" Metallic	0.160	20.480	36.960	606	0.606	606	0.606
1-1/2" Non-Metallic	0.720	92.160	166.320	2725	2.725	2725	2.725
1-1/2" Metallic	0.730	93.440	168.630	2763	2.763	2763	2.763
2" Non-Metallic	0.720	92.160	166.320	2725	2.725	2725	2.725
2" Metallic Ball Valve	1.400	179.200	323.400	5300	5.299	5300	5.300
2" Metallic Flap Valve	1.400	179.200	323.400	5300	5.299	5300	5.300
3" Metallic	2.800	358.400	646.800	10,599	10.598	10,599	10.599

2 strokes per complete cycle – 1" metallic will displace 0.080 gallons per stroke.





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