

Batch Pasteurizer

Operator Manual

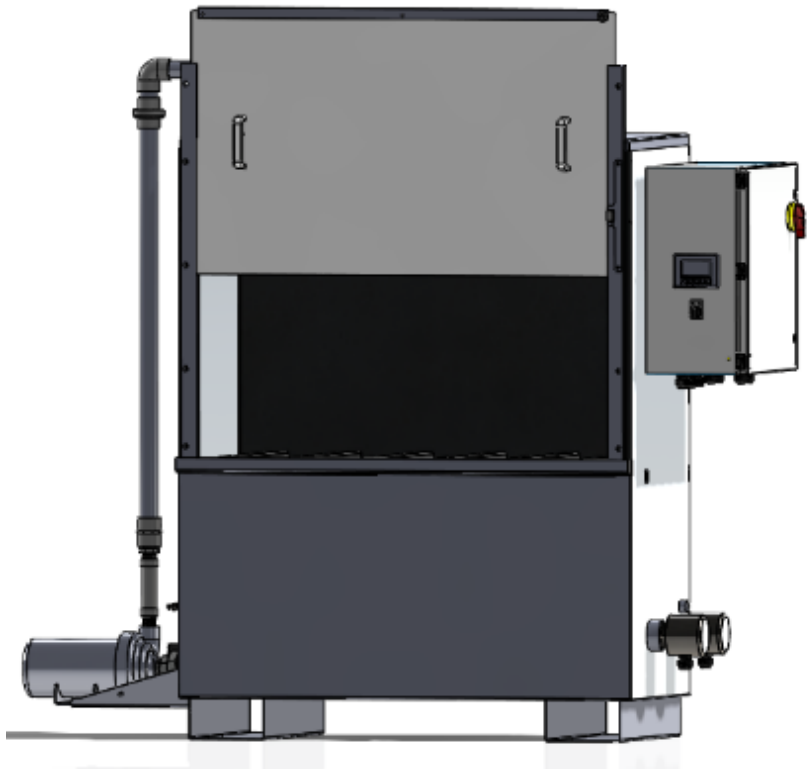


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1.0 System Description

1.1 General

Pasteurizer is sized to run up to 300 12 oz bottles per hour. Fabricated from stainless steel it is designed as a batch style pasteurizer meaning that there is not steady throughput of product in the machine. The targeted sump temperature is set, the product is placed in the machine, the timer is set and the start button is pressed. The pasteurizer will spray heated water over the product when the start button is pressed, until the pasteurization time elapses. The machine will stop when the timer runs out. Additional time between cycles may be needed at high temperatures for the sump water to recover.

1.2 Pumps, Plumbing & Level Monitoring

The pump is a three-phase fan cooled high flow pump that has an inlet located in the base of the sump of the batch pasteurizer. The outlet of the pump feeds two spray nozzles at the top of the pasteurizer. The spray nozzles provide high flow, large water droplet, square pattern to ensure that the entire process area is evenly.

Water level control is achieved by two methods. First an electronic level sensor located above the heaters, second a float switch that stops the flow of water if water is hard piped into the side of the machine. Note that hard piping a water supply to the machine is not mandatory as the machine can be filled with a hose and periodic adding of water will be needed.

The standard pump used is rated for a max temperature of 180°F, do not exceed this temperature as damage to the pump may occur.

1.3 Heaters & Temperature Monitoring

Two immersion heaters are used to heat the water and maintain the water temperature. Temperature is monitored by a thermostat in the sump water by the PLC.

The standard heaters and fuses are not rated to be used above 180°F. Do not exceed this temperature as damage to the heating elements may occur. If pasteurizing is over 170°F please note that recovery time between cycles may not be as quick as pasteurizing at 150°F. Also, 208-240V 3 phase machine may take longer to recover than 480V 3 phase machines.

1.4 PLC Control System

All input, output functions are monitored and controlled by the PLC. The HMI (**H**uman **M**achine **I**nterface) displays errors and allows for the controlling of the temperature and spray pump.

2.0 Installation & Start-Up

Installing the new Batch Pasteurizer as well as, preparing the unit for initial start-up is accomplished with only a few steps.

After the machine is removed from its shipping skid.

1. Set machine in the designated location
2. Set the roller conveyor (if purchased) level with batch pasteurizer tray supports.
3. Connect all utilities
 - a. 208 volts 3 phase 60Hz. (70 Full Load Amps)
 - b. 480 volts 3 phase 60Hz. (30 Full Load Amps)
 - i. ****NOTE** Pump rotation needs to be verified before running production. Pump should be spinning clockwise.**
 - ii. ****NOTE** Even with pump spinning in the wrong direction some water will cover the spray chamber. PRO Engineering uses a high flow square pattern spray, with pump running in correct direction the spray will cover most of the spray chamber.**
 - c. Supply water
 - i. It is recommended to place an isolation valve on the supply water line connection to the pasteurizer.
4. Set machine float to ensure proper water level,
 - a. Water level should be 4-5" above float switch.
5. Open machine drain valve and rinse machine out
6. The machine is now set up and ready for production.

2.1 Handling & Positioning

Use a fork or hand truck to handle the unit from receiving to positioning.

2.2 Leveling

The pump of the batch pasteurizer is mounted directly to the machine, and the machine sits directly on the ground. *** If floor surface is irregular, some shimming at the base of the batch pasteurizer may be needed to level the pasteurizer.

2.3 Power Connection

- ✓ POWER TO ELECTRICAL CABINET HANDLED BY INSTALLER. WORK SHOULD BE PERFORMED BY CERTIFIED ELECTRICIAN, FOLLOW ALL ACCEPTABLE LOCAL AND NATIONAL ELECTRIC CODES

2.4 Start Up

1. Open supply water valve or alternatively use hose to fill sump
2. After machine water level reaches the proper height
3. Turn on control panel and main disconnect
4. Set water temperature and time in the recipe menu on the HMI
5. Once temperature has reached the set-point the timer will start counting down to zero. Once the countdown has started you can stop the machine and place the first batch trays of product into the pasteurizer. Close the door and press "F2" on the HMI to start the pasteurizer
6. Set timer for the proper pasteurization cycle time. This time can be determined by two methods: 1) based on the pasteurizer performance estimate (or theoretical heating curve). 2) by trial and error using a temperature measurement and or recording device to determine the temperature and time of the internal product temperature measured at the cool spot. Note: pasteurization results should be verified regularly by direct measurement at time and temperature of the product cold spot. PRO Engineering Strongly suggests using a PM-4 PU Monitor for this process. The PM-4 will monitor both the spray temperature and cold spot of the product and provide data at 30 second intervals to accurately monitor and record the magnitude of pasteurization.
7. After pump stops remove the tray product and start next batch (**Caution!! product is hot when removed from the pasteurizer, use proper personal protective equipment when handling.**)
8. Product is often still pasteurizing when it is removed from the pasteurizer and must be cooled by air, or some external force (cold water, or cooler). NOTE until the product is under 120°F pasteurization is still taking place. It is important to have some method to monitor the "cold-spot" of the container as often an additional 6 or more PU (Pasteurization Units) may accumulate during this cooling phase.

2.5 Shutdown

At end of operation or daily

1. Drain water from pasteurizer
2. Turn off supply water valve
3. Turn off main control panel power

****NOTE** FOR HIGH TEMPERATURE FULL LOAD USE, MACHINE TEMPERATURE RECOVERY MAY BE NEEDED BETWEEN BATCHES**

3.0 Standard Operation

3.1 Loading Product into the System

Please see section 2.4.

3.2 PLC Control System – HMI Information

SECTION DESCRIPTION

3.2.1 HMI Setup Screen



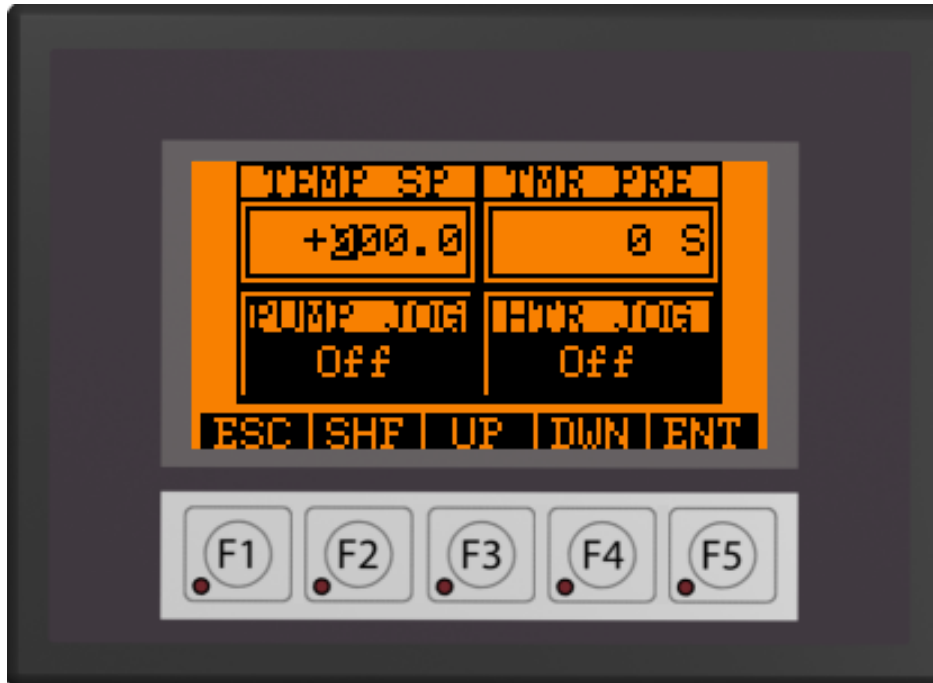
F1	SU	Opens the HMI Setup Screen
F2	STR	Operates the Auto Start Cycle
F3	STP	Stops Machine Operation
F4	RST	Allows for Machine Fault Reset
F5	RCP	Allows Access to Recipes

3.2.2 HMI Setup Screen



F1	HOM	Opens the HMI Home Screen
F2	SP	Opens the " TEMP SP " Screen allowing the operator to select a temperature set point
F3	PRE	Opens the " TMR PRE " Screen allowing the operator to select the desired cycle time
F4	PMP	Allows the operator to jog the system pump motor
F5	HTR	Allows the operator to jog the immersion heaters

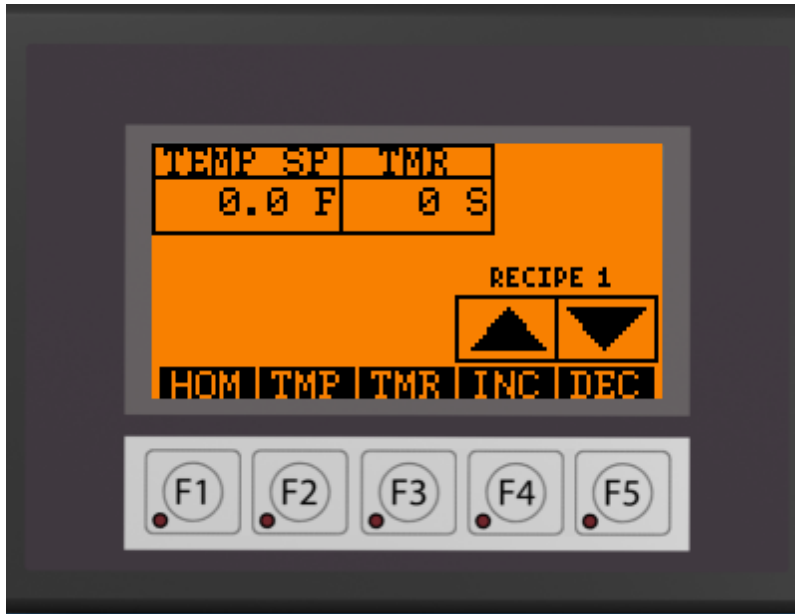
3.2.3 HMI Temperature Set-Point Screen



F1	ESC	Returns to the Set-Up Screen
F2	SHF	Shifts Indicator to Next Numerical Position
F3	UP	Increments Set-Point Up
F4	DWN	Increments Set-Point Down
F5	ENT	Finalizes Temperature Selection



Indicates temperature entered is above an acceptable level and will return to previous screen automatically.



F1	HOM	Returns to the Home screen
F2	TMP	Allows selection of the water temperature
F3	TMR	Allows selection of Time (seconds)
F4	INC	Increase Recipe
F5	DEC	Decreases Recipe

To adjust recipe temperature or time, press “F2” to activate the temperature setting, or press “F3” to adjust time setting for selected recipe.



F1	ESC	Returns to the Home screen without saving new information
F2	SHF	Shifts curser one value to the right
F3	UP	Alters selected value up one
F4	DWN	Alters selected value down one
F5	ENT	Saves value

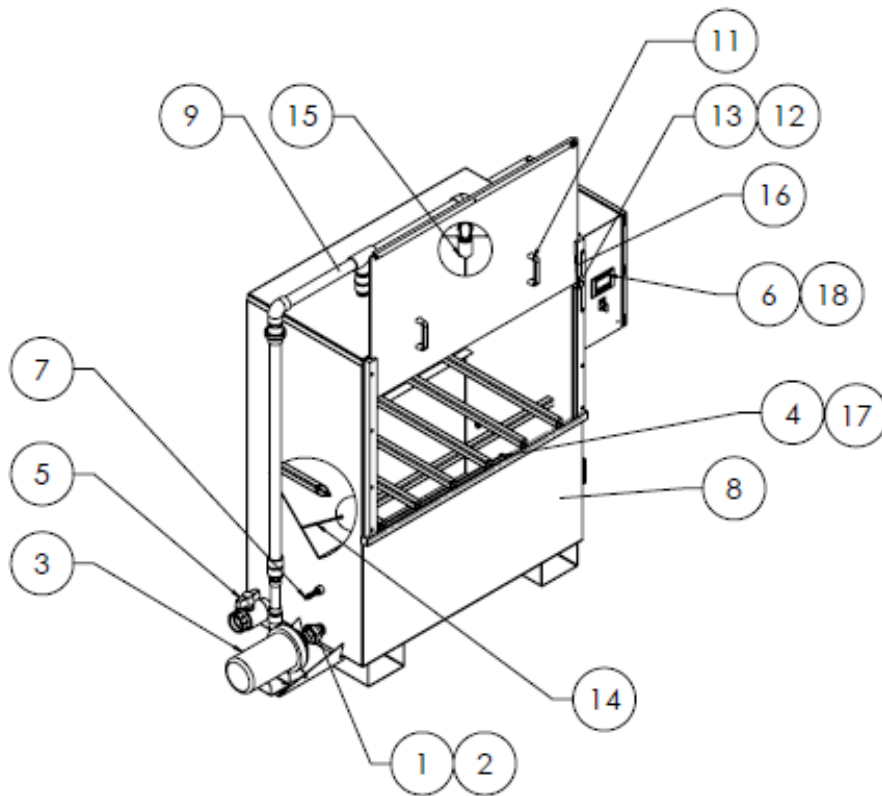
4.0 Service & Maintenance

4.1 Cleaning

The machine is equipped with a filter screen located in the pump inlet. To clean the sump, simply open the drain valve and rinse out the sump of any glass and debris that has accumulated in the tank. Remove pump screen and rinse off then reinstall pump screen to avoid letting debris enter the pump inlet possibly damaging the pump or plugging the spray nozzles. Scoop out any remaining material in the sump. The heater elements in the sump should be cleaned off with a Scotch-Brite (or similar) pad (****ensure heating elements are not hot by letting machine cool down****)

!! DO NOT SPRAY DOWN CONTROL PANEL!!

4.2 Spare Parts



	PART NUMBER	DESCRIPTION	QTY.
1	3000066	1-1/4" SST PIPE UNION	2
2	3000846	NIPPLE, SS, 1.25, SCH40, 1.62	2
3	3000286	PUMP, NPT, 1-1/4	1
4	9100527	HEATER ASSEMBLY - 480V	2
5	3000348	VALVE, BALL, NPT, 2	1
6	5000008	PLC CONTROL SYSTEM - 480V	1
7	91000114	TEMP. PROBE	1
8	8000356	WLDMT, FRM, SS	1
9	91000115	PIPING ASS'Y	1
10	70002503	GUIDE, DOOR, LH	1
11	91000618	ASSY, DOOR 1/4" LEXAN	1
12	3000363	SNSR, MAG	1
13	7000653	MNT, PLT, , SS MNT, PLT, , SS	1
14	3000351	BRASS FLOAT VALVE	1
15	8000349	SPRAY NOZZLE, 1.25 NPT	2
16	70002504	GUIDE, DOOR, RH	1
17	9100528	HEATER ASSEMBLY - 208V	2
18	5000009	PLC CONTROL SYSTEM - 208V	1

5.0 Troubleshooting

****LOCK OUT TAG OUT PROCEDURES MAY BE NEEDED** LOCK OUT AND VERIFY BEFORE PERFORMING ANY WORK ON PASTEURIZER**

5.1 Pasteurizer will not fill with water

- a. Check that the supply valve is open
- b. Check there is supply water pressure

5.2 Pasteurizer will not start

- c. Check if main disconnect is on and power to the control panel
- d. Machine power is on (switch below HMI)
- e. Water level too low
- f. Pump overload tripped
- g. PLC is receiving input
- h. Check door is closed
- i. Check timer to ensure that zero seconds is not entered into the recipe timer

5.3 Pasteurizer will not heat (or slowly heat)

- j. Check fuses for both heaters
- k. Check for any mineral build up on the heaters
- l. Check continuity in heaters to ensure a heater leg has not failed *** without power to the machine
- m. certified electrician should only be trouble shooting concerns in live control panel.

5.4 Pasteurizer pump runs but does not spray water

- n. Check if spray nozzles are plugged
- o. Check if pump inlet screen is plugged
- p. Check to ensure current loaded program has a temperature and time value displayed.
- q. Ensure pump is spinning in correct direction (clockwise)