

Integrated **Pasteurizer / Bottle Washer**

Calf Milk

by Westwaard

Installation & Operation Manual



by

WESTWAARD

Model:

**Integrated
Pasteurizer / Bottle Washer**

Revision Sheet

Release No.	Date	Revision Description
Rev. 0	3/12/2018	Manual Completion

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Preface

-These instructions are supplied with the product and;

- The purpose of this manual is to provide an overview of the safety, installation and operation of this product.
- This manual is designed to be modular and is only in relation to the mentioned product.
- This manual should always be kept with or near the equipment even when the equipment is sold.
- It is the responsibility of the end user to test and maintain the unit to assure continued effectiveness of the machine.
- We reserve the right to make changes due to technical developments in the data and images in this manual.

Arrangement

This manual is arranged in 5 primary sections, with pages, paragraphs, figures, and tables numbered in sequence.

Section 1 – Safety

This section contains critical information essential to the safe operation of the machine.

Section 2 – Installation

This section describes what needs to be done to install the Pasteurizer unit.

Section 3 – Panel Controls

This section identifies and describes the process to program the Pasteurizer Control Cabinet.

Section 4 – Operation

This section will walk you through the different operations modes and settings of the Pasteurizer unit.

Section 5 – Wiring Diagram / Parts List

Covers the Wiring Diagram for PLC control cabinet and the cabinets internal components for the 40, 60 & 90 gallon Pasteurizers.

Explanation of Symbols

The following symbols are used within this manual to alert the reader to important information or potentially hazardous conditions.

Safety Symbols draw attention to adjacent text and should always be read and thoroughly understood.

	WARNING! Warning signals danger to life or health of personnel. Death or serious injury may result if the danger is not avoided.
	CAUTION! Caution signals dangerous situations. Injury may result if the danger is not avoided.
	ATTENTION! Attention signals important information, risks to the product or the environment.

Section 1 - Safety

1.1 - Obligation of Care

This product has been designed and constructed while taking careful analysis and standards and other specifications to be compiled with to ensure a safe level of security.

This safety can only be achieved in practice when all of the necessary measures have been taken. It is part of the owner's obligation to plan and check these measures.

1.2 - General

The Westwaard Pasteurizer built for on farm pasteurization of "waste" milk for the use of feeding calves. It, under no circumstance, is to be used as a pasteurizer for human consumption. It is designed as an economical, reliable, easy cleaning method for the dairyman to pasteurize and distribute waste milk for calves. It is in the responsibility of the end user to test and maintain the unit to assure continued effectiveness of pasteurization.

1.3 - Precautions

- Read and understand the Operator's Manual and all safety signs before operating, servicing, adjusting, repairing, unplugging or filling the unit.
- Be sure all safety covers are in good condition and properly installed before operating.
- Properly disconnect unit from electrical power source when servicing.
- Know and respect the machinery, approach moving parts with caution.
- Understand the location and function of all machinery and controls.
- Keep hands, feet and clothing away from any moving parts.
- Never remove / leave exposed guards during operation.
- Always Lock out, Tag out machine when shutting down for maintenance.
- Always be attentive for machine malfunctions or unusual noises. These can indicate problems requiring immediate attention.
- Particular attention must be paid to any supplementary or auxiliary items wired or plumbed to the system (detergents, acids, etc).
- Keep the DOOR TO THE ELECTRICAL CABINET CLOSED! Only authorized personnel may open the door when maintenance is necessary.



Only qualified maintenance personnel should perform maintenance or troubleshooting operations!

For additional safety information you can find local safety procedures via the Web Sites below.

Location	Administrated by	Web Site
In Canada	Canadian Center for Occupational Health and Safety	www.ccohs.ca
In USA	Occupational Safety and Health Administration	www.osha.gov
In European Union	European Agency for safety and Health at Work	www.europe.osha.eu.int

Section 2 – Installation



Once unit is placed, it is important to make sure the leveling feet are installed and adjusted so that the top of vat is level. The Vat has a built in 3” slope to drain.

2.1 - Included Accessories

Each pasteurizer unit will come with three attachments that can be mounted to the dispensing hose or inside the tank. These attachments connect to the unit using a cam lock for quick and easy connections.



The agitation nozzle or Agi-wand, attaches to the quick cam connection on the inside of the pasteurizer tank. The Agi-wand is used to agitate the calf milk inside the tank to maintain a consistent temperature throughout the tank while the calf milk is pasteurized.

The spray ball is used in the cleaning cycle for proper mixing of and rinsing. The spray ball, like the Agi-wand, connects to the connection on the inside of the pasteurizer tank.



chemicals quick cam

The dispensing nozzle connects to the quick cam on the hose. The dispensing nozzle is used to transfer the pasteurized distribution to calves.



dispensing calf milk for

Dispensing Nozzle

See part manual for replacements

2.2 - Connections



ELECTRICAL SHOCK HAZARD - Before continuing ensure that all power sources to the unit are disconnected before proceeding with any wiring or electrical connections.

i.- Electrical

40 Gallon Unit	#8 SEO 4’ cord, No Plug, 40 Amp 240 VAC single phase.
60 Gallon Unit	#6 SEO 6’ cord, No Plug, 60 Amp 240 VAC single phase.
90 Gallon Unit	#4 SEO 6’ cord, No Plug, 80 Amp 240 VAC single phase.



If wiring to a 240 VAC 3 phase system, care must be taken to make sure system is not wired into the high 3 phase leg.

ii. - Water Solenoid Inputs

The Pasteurizer has three water solenoid connections that will need to be plumbed to a water supply before the unit can operate. The three solenoids are:

1. Cold Water Solenoid - for cooling through water jacket.
2. Cold Wash Water Solenoid
3. Hot Wash Water Solenoid (160°F minimum water supply)

The 40, 60 & 90 gallon units all have 1/2” hook ups and will fit most garden hose connections. Once the unit is in place and level the connections can then be plumbed. After all the connections have been properly plumbed and checked for leaks only then can the water jacket be filled.

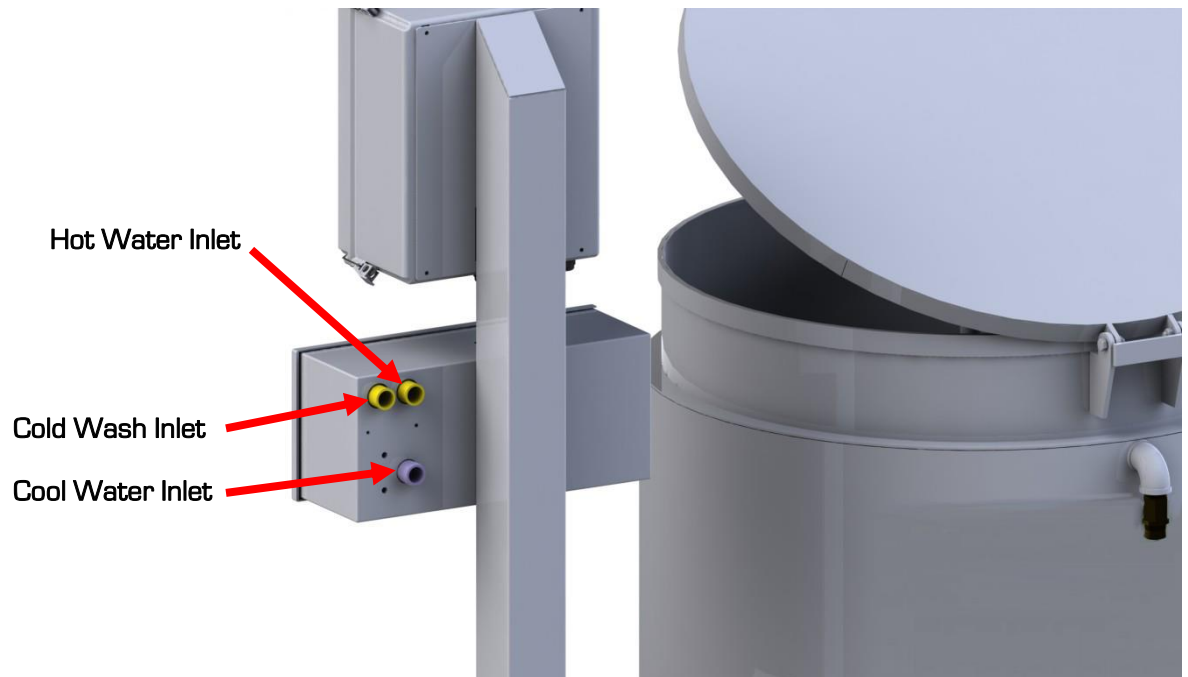
iii. – Water Line Hook-ups

Pressure relief valve

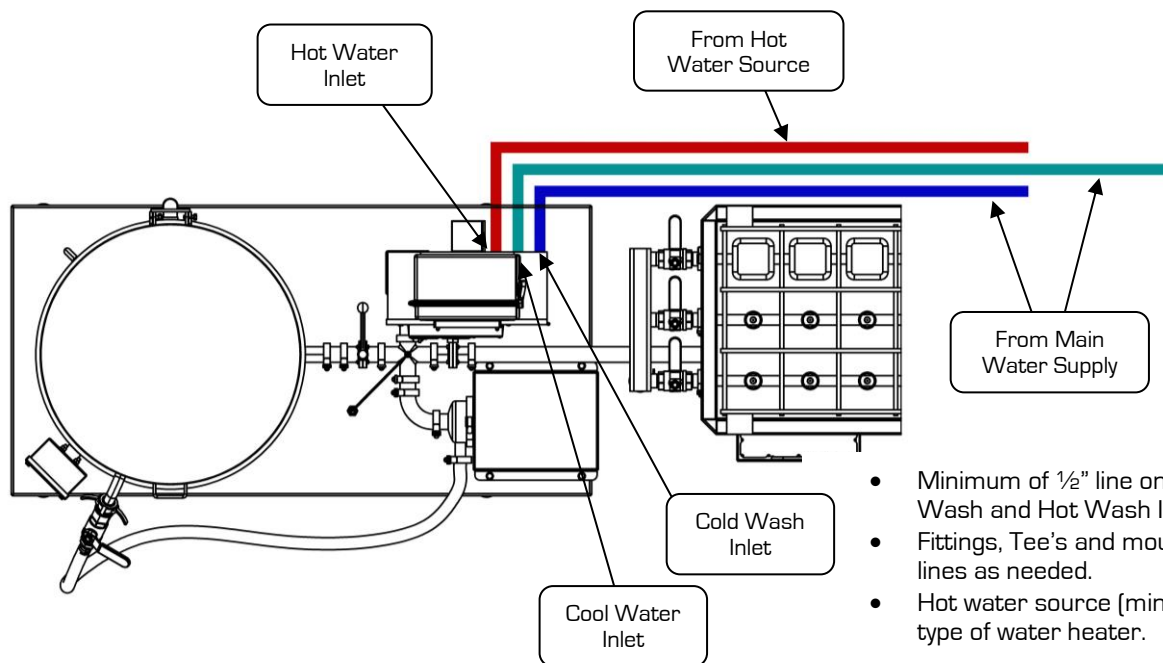
The pressure relief valve is an emergency discharge to relieve pressure build up inside the tank. Pressure build up can occur when the discharge tube has restricted flow or has been plugged. The relief valve will trigger at 4psi to prevent the tank from over pressurizing and damaging the unit.

In no way is the relief valve to be tampered with or altered.

Located on the back side of the CIP box, directly below the Control box, are the water solenoid inlets.



2.3. – In-field Hook-ups

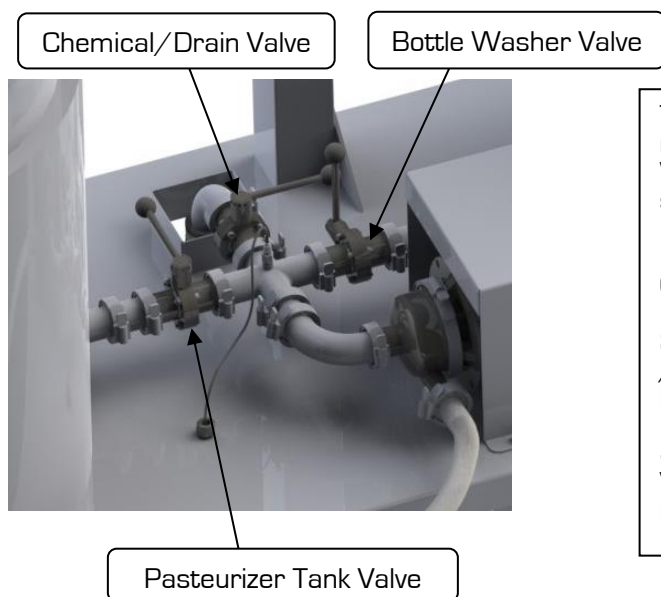


The pasteurizer water jacket must be filled with water before the first use. Running the unit without water will result in failure of the heating element in less than a minute and will require it to be replaced.

Filling the water jacket:

1. From the *Home Screen* (mode selector switch in off position) select *Settings*.
2. Press *Operation Settings*.
3. Press *Service Menu*.
4. Manually turn on *Cold Water Solenoid* by pressing the *On/Off Button* on the left hand side.
5. Wait for the water jacket to fill with water, the jacket will be full once water starts to come out of the discharge tube on the side of the pasteurizer.
6. Press the *On/Off Button* once more to turn the *Cold Water Solenoid* off.
7. Press *Back* to leave the service menu.

2.4. – Valve Operations



The Integrated Pasteurizer / Bottle Washer has three modes of operation, Pasteurize, Pasteurizer Wash &, Bottle Wash. Each require different valve positions. (Valves shown in off position)

- 1) **Pasteurize** – Pasteurizer Tank Valve **ON**
Chemical/Drain Valve & Bottle Wash Valve **OFF**
- 2) **Pasteurizer Wash** – Pasteurizer Tank Valve & Chemical /Drain Valve **ON**
Bottle Wash Valve **OFF**
- 3) **Bottle Wash** – Bottle Wash Valve & Chemical/Drain Valve **ON**
Pasteurizer Valve **OFF**

Section 3 – Panel Controls

3.1 - Understanding Screen Layout

This unit is touch screen operated, to operate simply touch the screen where you want to navigate with your index finger to be taken to the selected subject.

3.2 Programming the Controls

All the programming for the PLC is done via the settings menu. The menu is only accessible from the Home screen when the selector switch is in the off position.



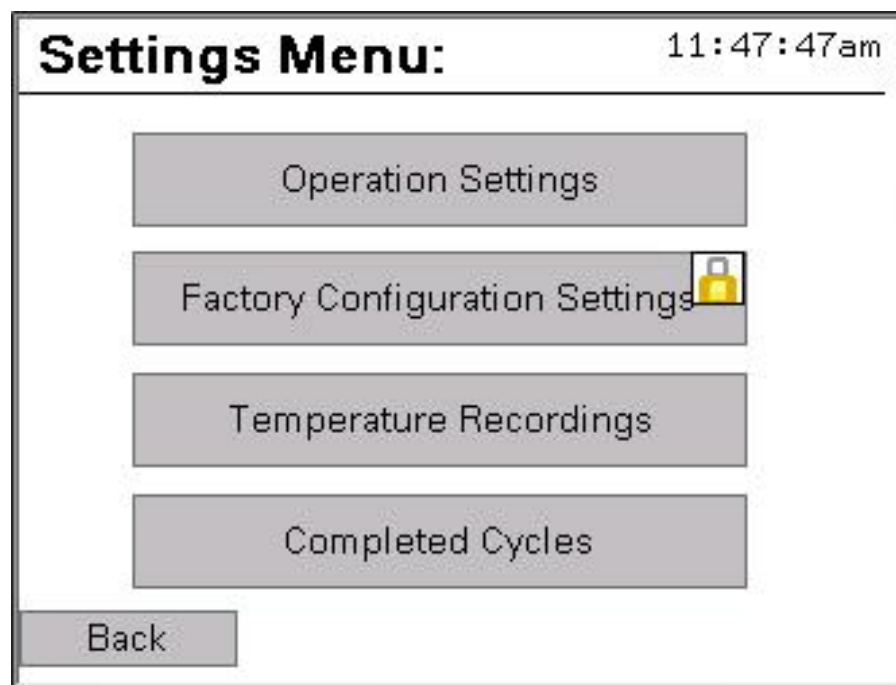
- Turn selector switch to the off position. This will take you to the home screen.
- The Main Menu screen will display the current temperature of the Pasteurizer in the bottom right hand corner.
- Press the “*Settings*” button at the bottom left of the screen to bring up the settings screen menu.

In the settings menu you can navigate to one of four other menus; Operation Settings, Factory Configuration Settings, Temperature Recordings, and completed Cycles.

Please note that the “Factory Configuration Settings” is for advanced use only and should only be changed under the advice of a dealer or trained technician.

Continue on to Operation Settings

- Press “*Operation Settings*” to bring up the Operation settings screen.



Operation Settings:

12:51:30pm

Off Password required to change settings.

General Settings

Pasteurizer Settings

Pasteurizer Wash Settings

Bottle Wash Settings

Aux Input Settings

Pump VFD Settings:

Back

Service Menu

From this screen you can change the operating parameters for the pasteurizer, the bottle washer and the variable frequency drive for the pump motor.

-Enter in **1111** for the password and press **enter**.

** This password can be changed inside *general settings*.

** If you forget the password, please contact your local dealership.

Settings Login:

12:00:00am

1 1 1 1

1	2	3	4	5	CLEAR
6	7	8	9	0	ENTER

Back

i. - General Settings Screen

From the general settings screen the end-user can customize how the screen and the content on the screen will be displayed. From this screen you can set; default language, units, home screen image, settings password, system time, and the display brightness.

Device Settings: 11:48:57am

Language: ☒ English ☐ Spanish

Units: ☒ Fahrenheit ☐ Celsius

Home Image: ☒ Holstein ☐ Jersey

Settings Password: 1111

System Time: 05/09/2014 11:48:57am **Set**

Brightness: [Slider bar]

Build Info:
V2_0 5-6-14 SCU
09/05/2014 11:32:12
10.3.2.66

Back

Callouts:

- Select to change the operating language.
- Display temperature in either Fahrenheit or Celsius.
- Press here to change current set password.
- Press here to set the time in the PLC.
Note that the real time clock can drift up to 30 seconds each month.
- You can adjust the brightness of the screen here. The screen will automatically dim after 30 seconds of inactivity on the home screen.
- The units build information will be displayed here. This can be used to determine the version that the PLC is currently running for troubleshoot & service calls.

Set Time: 11:56:54am

Current Date / Time:
05/09/2014 11:56:54

New Date / Time:
[5] / [9] / 2014 [11] : [56] : [51] **Set Time**

Back

Callouts:

- Will display the current time and date.
- Press "Set Time," once the current date and time have been entered onto the screen, to set the entered time.
- Press one of the input fields to set the corresponding internal, for either date or time.

ii. - Pasteurizer Settings Screen

The Pasteurizer Settings screen allows the user to set the time when each mode will activate during the day. Each mode must first be selected before the “Settings” button will appear. Once displayed on-screen press the “Settings” button to be taken to that modes device settings.

The unit can only operate in 1 mode at a time. Select the mode here by pressing the grey button. The grey button will turn green and a settings menu will appear on the right when the mode has been activated.

The unit can have multiple cycle types set to “On” at a time. You can toggle each cycle On or Off by pressing the green/red button.

To adjust the settings of a cycle type simply press the “Settings” button to the right to bring up that cycle types settings screen

Press to be taken to the Cycle Mode Settings screen.

Pasteurizer Settings: 3:16:38pm

Modes:

- ☒ Pre-cool Mode **Settings**
- ☐ Reheat Mode
- ☐ Manual Start Only

Cycle Types:

- ☒ On Calf Milk Pasteurize **Settings**
- ☒ On Colostrum Pasteurize **Settings**
- ☐ Off Colostrum Thaw
- ☐ Off Temperature Hold

Back

Pre-Cool Mode Settings

Pre-cool mode sets when the pasteurizer will begin to cool the calf milk. This can be set to any time of the day and if desired multiple start times can be activated and set. The pre-cool temperature and cycle agitation time can also be set here for the Pre-Cool mode.

Temperature that the calf milk will maintain while waiting for pasteurization inside the tank.

The unit can have 3 different start times set. This allows the unit to pasteurize for feeding three times a day. For example, if you fill the unit at 10pm, it will pre-cool until 5 am at which point pasteurization will start. If you fill the unit at 7am, it will pre-cool until 6pm which at that point pasteurization will start. You can also turn off the second &

Cycle agitation will agitate the milk prior to pasteurization while waiting for the pasteurize start time.

Precool Settings: 1:50:38pm

Precool Temperature: 57.0 °F

Pasteurize Start Time 1: 5 : 00 AM

☒ **Enable Second Start Time**

Pasteurize Start Time 2: 6 : 00 AM

☒ **Enable Third Start Time**

Pasteurize Start Time 3: 7 : 00 AM

☒ **Cycle Agitation**

On Time: 15 sec **Off Time:** 300 sec

Back

Reheat Mode Settings

Reheat mode sets when the pasteurizer will begin to reheat the calf milk inside the tank. This can be set to any time of the day and if desired multiple start times can be activated and set. The reheat temperature and cycle agitation time can also be set here for the Reheat mode.

Reheat Settings: 1:51:48pm

Reheat Temperature: 110.0 °F

Reheat Start Time 1: 5 : 00 AM

☒ **Enable Second Start Time**

Reheat Start Time 2: 6 : 00 AM

☒ **Enable Third Start Time**

Reheat Start Time 3: 7 : 00 AM

☒ **Cycle Agitation**

On Time: 15 sec Off Time: 300 sec

Back

Set temperature that the calf milk will reach before feeding to the calves.

The unit can have 3 different start times set. This allows the unit to pasteurize for feeding three times a day. For example, if you fill the unit at 10pm, it will immediately pasteurize then cool down and maintain this cool temperature until 5 am at which point the unit will reheat to the set reheat temperature.

Cycle agitation will agitate the milk after pasteurization has occurred, waiting for the reheat start time.

Calf Milk Cycle Settings

Calf Milk settings will allow for the customization of the pasteurizer heating process and will allow the user to adjust the temperature, pasteurize time, cool temperature and cycle agitation. These settings can be changed, though it is not recommend due to the Pasteurized Milk Ordinance.

Calf Milk Settings: 1:54:34pm

Pasteurize Temperature: 145 °F

Pasteurize Time: 30 min

Cool Temperature: 110 °F

☒ **Cycle Agitation:**

On Time: 15 sec

Off Time: 300 sec

Back

Set to change how hot the pasteurizer will become.

Set to change the duration that the milk will be heated.

This must be set at least 4°F above supply water temperature.

Cycle agitation will agitate the milk during pasteurization to maintain a consistent heat throughout the calf milk.



Pasteurized Milk Ordinance states, milk must be heated to 145°F and held there for 30 minutes. Any changes from these settings may result in non-pasteurized milk.

Colostrum Cycle Settings

Colostrum is an excellent source of nutrients and immune proteins that convey protection to the neonatal calf. Setting up the colostrum settings will allow for a constant temperature for feeding calves without having to worry about overheating the colostrum and destroying antibodies and proteins.

Colostrum Settings:

3:17:37pm

Pasteurize Temperature: 140.0 °F

Pasteurize Time: 60 min

Cool Temperature: 110.0 °F

Cycle Agitation: On

On Time: 15 sec

Off Time: 300 sec

Back

Set to change how hot the pasteurizer will become.

Set to change the duration for heating the colostrum.

This must be set at least 4°F above supply water temperature.

Cycle agitation will agitate the milk during pasteurization to maintain a consistent heat throughout the calf milk.



Exceeding a temperature higher than 140°F with colostrum will cause proteins to Solidify resulting in a pudding like substance and loss in nutrients.

Colostrum Thaw Cycle Settings

The main concern regarding thawing frozen colostrum is to thaw the ice without degrading the immune proteins. This is best done with warm (not hot) water (< 120°F, 50°C) and allowing to thaw for about one hour. Colostrum Thaw settings allows the operator to set the thawing temperature and time for the colostrum.

Colostrum Thaw Settings:

3:18:11pm

Thaw Temperature: 110.0 °F

Thaw Duration: 60 min

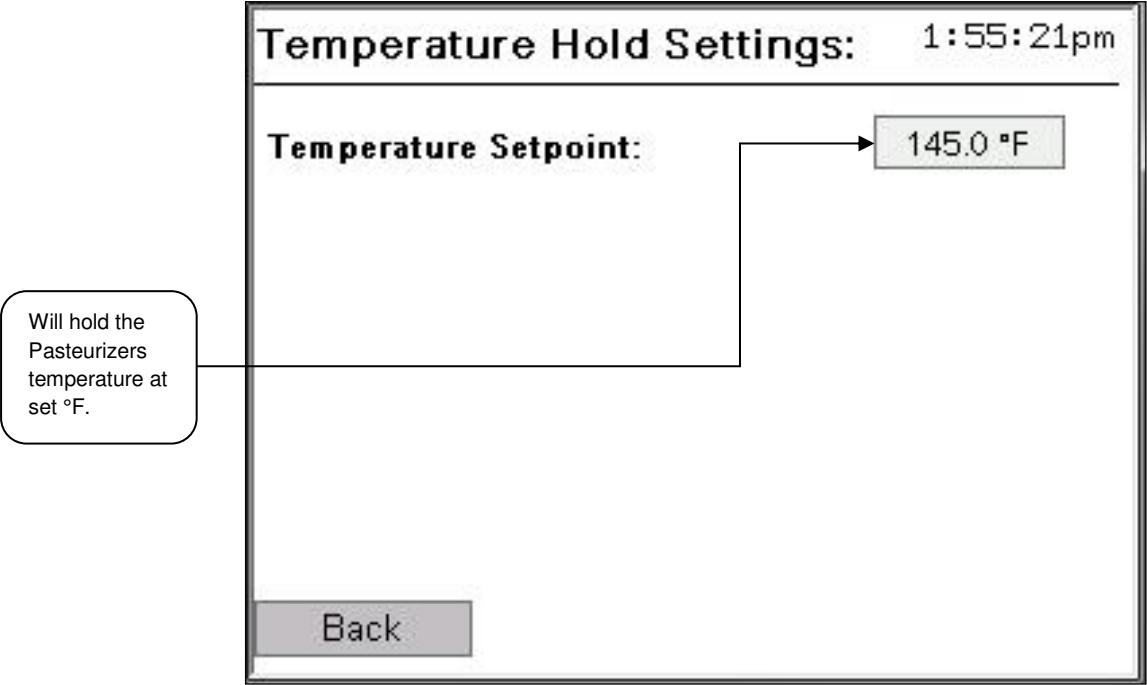
Back

Set to change the amount of time that the colostrum will be de-thawed.

Set to change how hot the pasteurizer will become.

Temperature Hold Settings

The temperature hold feature is a heat or cool override that will last until the temperature hold is disabled. On this settings screen you can set the desired temperature that the pasteurizer unit will maintain.



iii. – Pasteurizer Wash Settings

These settings will allow for the set-up of the pasteurizer wash cycle. Each cycle can be customized to perform a different task, whether from a rinse, detergent or acid cycle. Here you can also toggle a cycle to the OFF position to disable it from activating during a wash phase.

Pasteurizer Wash Settings: 12:54:24pm

Wash Cycles:

On

PRE RINSE CYCLE

On

DETERGENT CYCLE

On

RINSE CYCLE

On

ACID CYCLE

On

FINAL RINSE CYCLE

Settings

Settings

Settings

Settings

Settings

Back

Press button to toggle cycle on or off.

Press settings to bring up individual wash cycle settings.

Pasteurizer Wash Cycle Settings

Pasteurizer wash cycle settings allows for each one of the cycles to be custom set. This screen will allow the operator to set the name of the cycle, the water temperature, chemical pump operation and fill / circulation / drain time.

Pasteurizer Wash Cycle 1 Settings: 1:19:44pm

Cycle Name:

PRE RINSE CYCLE

Water Temperature:

Cold

Hot

Warm

Chem Pump:

Pump 1

Pump 2

Off

Chem Pump time:

0 sec

Fill time:

270 sec

Circulation time:

300 sec

Drain Time:

180 sec

Back

Press to add or edit a name to the wash cycle.

Select either Cold Hot or warm by pressing the green/grey button.

Set duration time for Fill, Circulation and Drain.

iv. – Bottle Washer Settings

These settings will allow for the set-up of the bottle wash cycle. Each cycle can be customized to perform a different task, whether from a rinse, detergent or acid cycle. Here you can also toggle a cycle to the OFF position to disable it from activating during a wash phase.

The screenshot shows the 'Bottle Wash Settings' screen with a timestamp of 1:28:00pm. It lists five wash cycles, each with a green 'On' button and a 'Settings' button. A 'Back' button is at the bottom. Callouts include: 'Press button to toggle cycle on or off.' pointing to the 'On' buttons; 'Press settings to bring up individual wash cycle settings.' pointing to the 'Settings' buttons; and a 'Back' button at the bottom.

Bottle Wash Settings: 1:28:00pm

Wash Cycles:

- ☒ On PRE-RINSE CYCLE
- ☒ On DETERGENT CYCLE
- ☒ On RINSE CYCLE
- ☒ On ACID CYCLE
- ☒ On FINAL RINSE CYCLE

Press button to toggle cycle on or off.

Press settings to bring up individual wash cycle settings.

Bottle Wash Cycle Settings

Bottle wash cycle settings allows for each one of the cycles to be custom set. This screen will allow the operator to set the name of the cycle, the water temperature, chemical pump operation and fill / circulation / drain time.

The screenshot shows the 'Bottle Wash Cycle 1 Settings' screen with a timestamp of 1:24:20pm. It includes fields for Cycle Name, Water Temperature (Cold, Hot, Warm), Chem Pump (Pump 1, Pump 2, Off), and time settings for Chem Pump time, Fill time, Circulation time, and Drain Time. A 'Back' button is at the bottom. Callouts include: 'Select either Cold Hot or Warm by pressing the button' pointing to the temperature radio buttons; 'Select Chemical Pump 1, 2 or none On/Off' pointing to the Chem Pump radio buttons; 'Press to add or edit a name to the wash cycle.' pointing to the Cycle Name field; and 'Adjust duration of chem pump run, fill, circulation & drain time' pointing to the time input fields.

Bottle Wash Cycle 1 Settings: 1:24:20pm

Cycle Name:

Water Temperature: ☐ Cold ☐ Hot ☒ Warm

Chem Pump: ☐ Pump 1 ☐ Pump 2 ☒ Off

Chem Pump time:

Fill time:

Circulation time:

Drain Time:

Select either Cold Hot or Warm by pressing the button

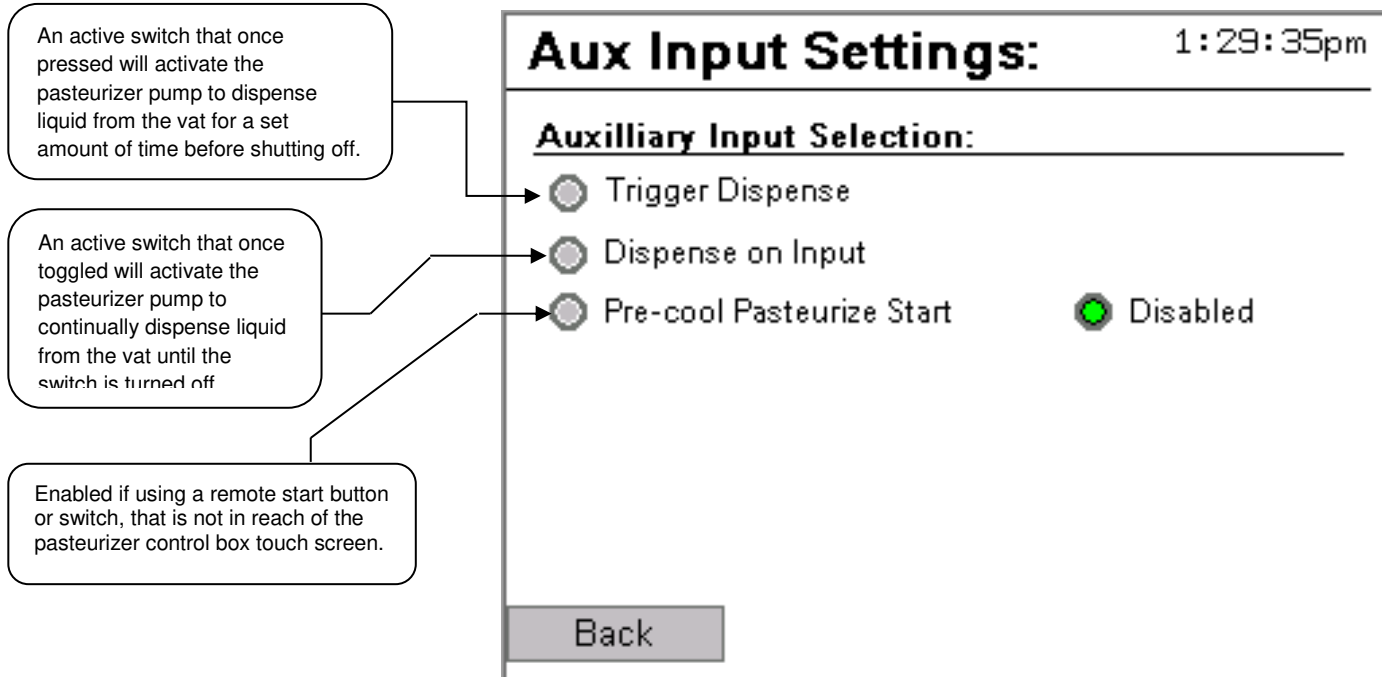
Select Chemical Pump 1, 2 or none On/Off

Press to add or edit a name to the wash cycle.

Adjust duration of chem pump run, fill, circulation & drain time

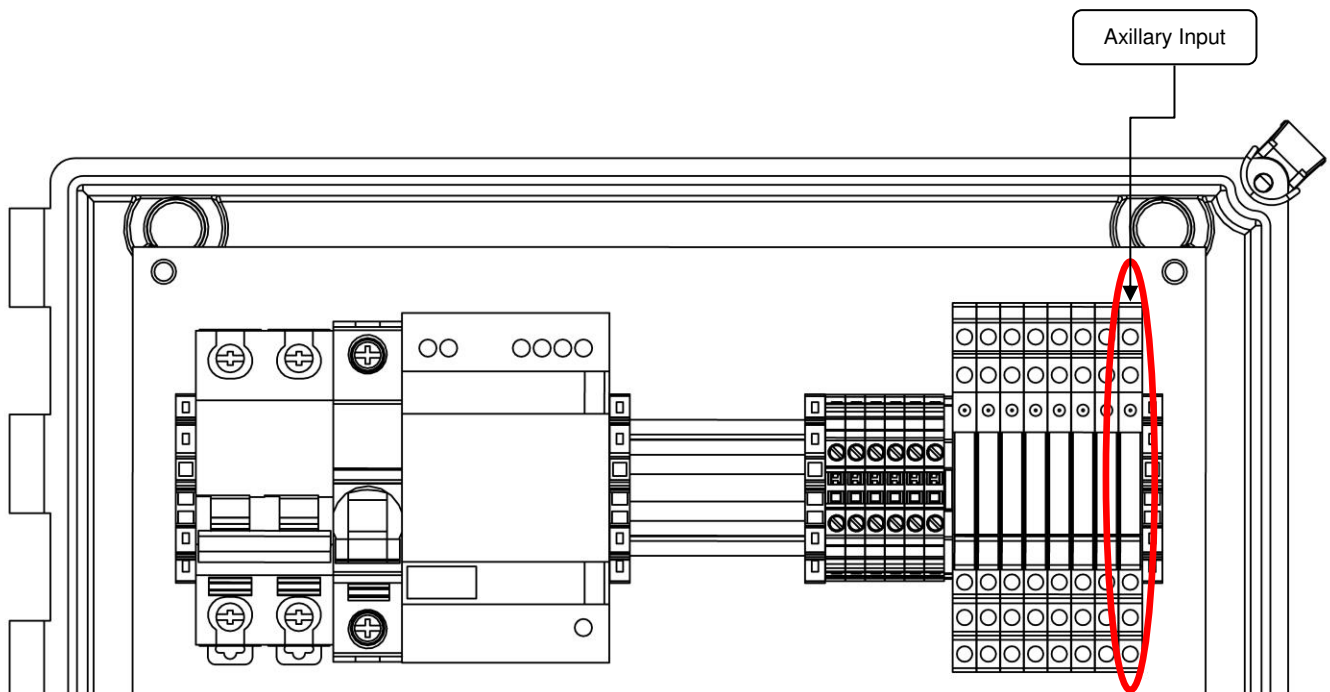
v. – Aux Input Settings

The Aux Input settings allow the pasteurizer to add in automated or remote control inputs. These custom components allow the pasteurizer to have more flexibility to custom additional features making the unit more user friendly to a specific dairy. To apply additional features, wiring will need to be installed to the terminal blocks located inside the control panel. The input terminal block hook up is displayed below.



Aux Wire Connections

Each control box comes with an auxiliary terminal block for input. The auxiliary terminal block is located inside the control box in the top right corner on a terminal distribution block. The input terminal block is the last one on the right in the distribution block. The auxiliary terminal block can be seen in the red circle in the image below.



vi. – Pump VFD Settings

The pump VFD (variable frequency drive) settings allow the pump to run at the desired speed for each mode. The higher the frequency is set at the faster the speed.

Pump VFD Settings:

1:30:32pm

Pasteurize Frequency:

40.0 hz

Dispense Frequency:

40.0 hz

Pasteurizer Wash Frequency:

50.0 hz

Bottle Wash Frequency:

60.0 hz

Back

Use buttons to set pump speed (frequency) for Pasteurizing, Dispensing, Pasteurizer Washing and Bottle Washing.

vii. - Service Menu Screen

The service menu will allow for the manual operation of each device on the pasteurizer unit. This manual can be used to troubleshoot each device if a problem is detected.

Service Menu:

1:31:28pm

Off

Pump Motor

60.0 Hz.

Off

Heating Element / Hot Water Solenoid

Off

Cold Water Solenoid

Off

Cold Water Wash Solenoid

Off

Hot Water Wash Solenoid

Off

Electric Drain

Back

Sensor Settings

Press a button to toggle output On or Off.

Pressing the back button will shut off all outputs.

Press to bring up Vat Sensor Settings



Running pumps with no liquid can burn out pump seals.

Vat Sensor Settings

The Vat sensor settings control the range of the pasteurizer unit for temperature consistency. This allows the product inside the vat to heat or cool with less variance in temperature drop. The Water jacket sensor settings can be found in the Service Menu from the Operation Settings screen.

Vat Sensor Settings: 1:33:00pm

Units: ☒ Fahrenheit ☐ Celsius

Vat Temperature Offset: 0.0 °F

Vat Sample Interval: 0.200 Sec

Vat Samples for Average: 20

Vat Temperature Raw Value: 0.0 °F

Vat Temperature For Logic: 0.0 °F

Vat Temperature Display Rounded: 0 °F

Vat Temperature Converted: 0.0 °F

Back **Water Jacket Temperature Settings**

Although easily accessible, the vat sensor settings should only be changed with the explicit instructions of an authorized dealer or technician.

Press to access Water Jacket sensor settings

Water Jacket Sensor Settings

The Water jacket sensor settings control the range of the pasteurizer unit for temperature consistency. This allows the product inside the vat to heat or cool with less variance in temperature drop. The Water jacket sensor settings can be found in the Service Menu from the Operation Settings screen.

Water Jacket Sensor Settings: 1:34:55pm

Jacket Temperature Offset: 0.0 °F

Jacket Sample Interval: 0.200 Sec

Jacket Samples for Average: 20

Jacket Temperature Raw Value: 0.0 °F

Jacket Temperature For Logic: 0.0 °F

Jacket Temperature Display Rounded: 0 °F

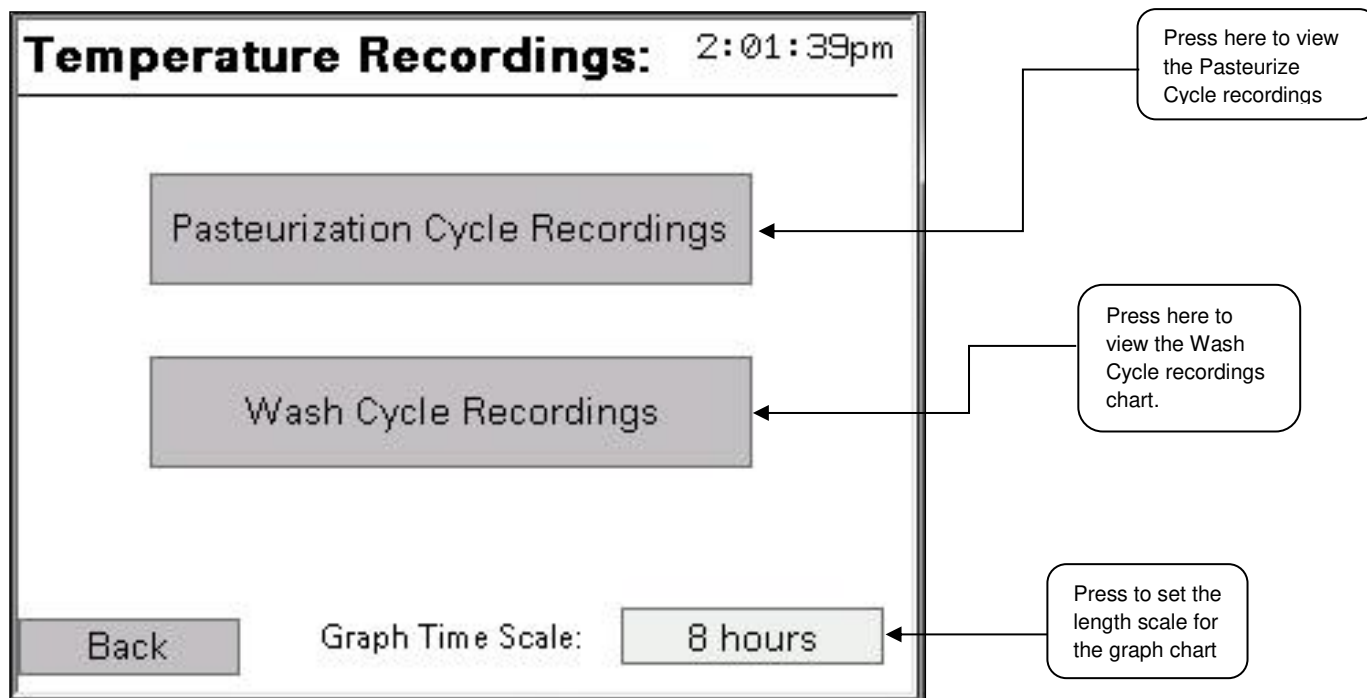
Jacket Temperature Converted: 0.0 °F

Back

Although easily accessible, the water jacket sensor settings should only be changed with the explicit instructions of an authorized dealer or technician.

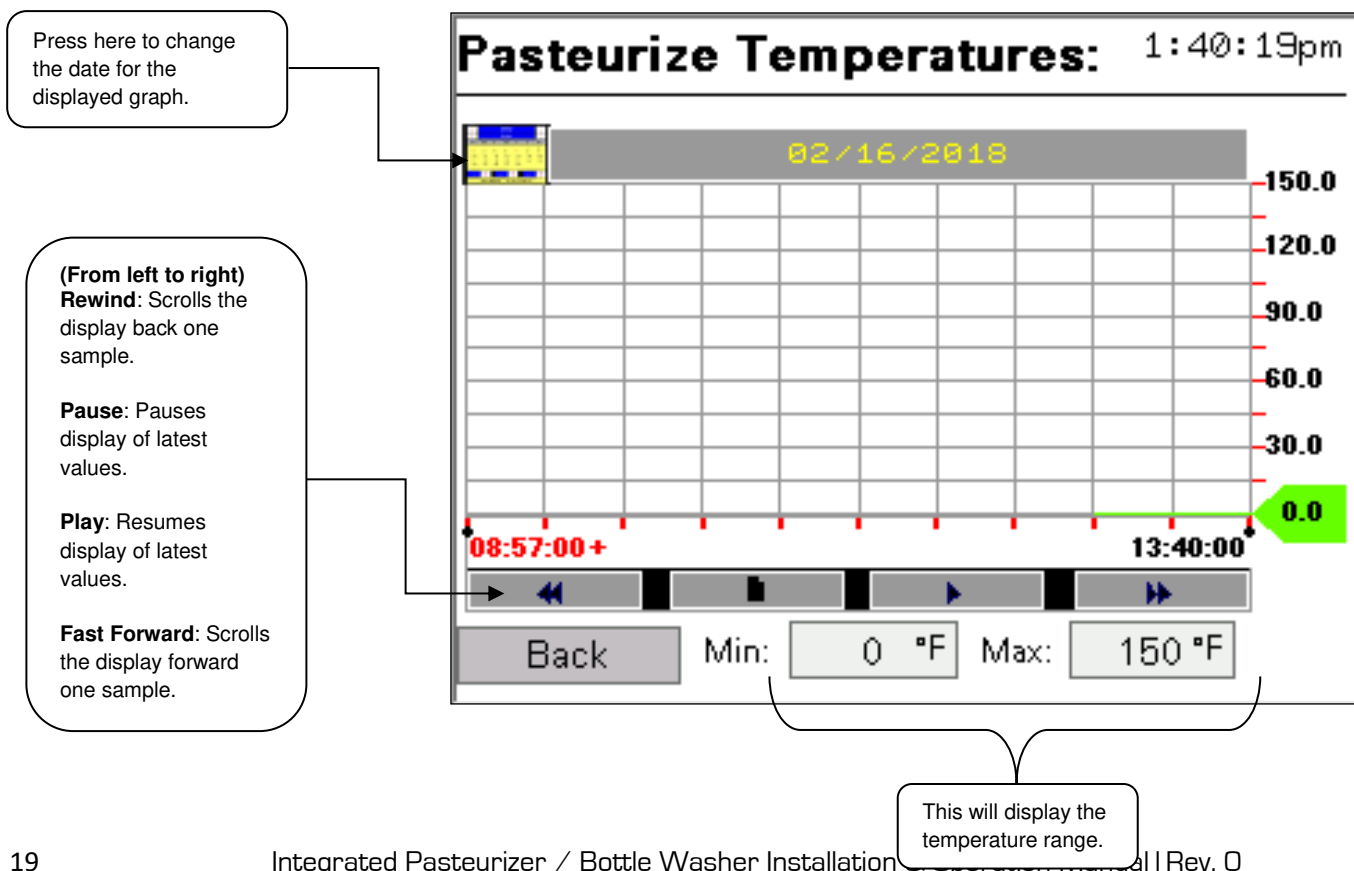
3.4 Temperature recordings

Temperature Recordings can be found on the Settings Menu screen (see section 3.2). Here all the data is recorded from the pasteurizer cycles. Pasteurization and Wash cycle data can be viewed in a graph format from time of day to temperature reached.



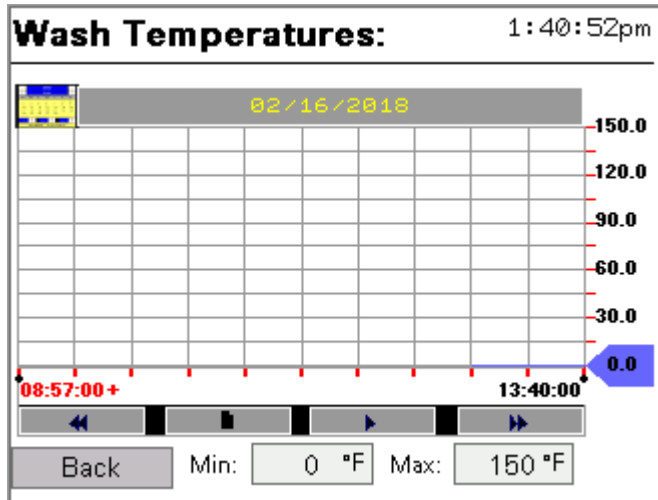
i. – Pasteurize Cycle Graph Recordings

This graph will illustrate the hour and recorded pasteurizer temperature on any given day. Temperatures are logged throughout each pasteurization cycle and all information is stored here for viewing and data logging. To view past dates click on the calendar in the top left corner to enlarged the calendar size.



ii. – Wash Cycle Graph Recordings

This graph will illustrate the hour and recorded wash temperature on any given day. Temperatures are logged throughout each wash cycle and all information is stored here for viewing and data logging. To view past dates click on the calendar in the top left corner to enlarged the calendar size.



Controls function in the same manner as the Pasteurize temperature chart above

3.5 Completed Cycles

Completed Cycles Screen can be found on the Settings Menu screen (see section 3.2). This screen will record the last 8 completed cycles and the cycle duration.

Completed Cycles: 2:02:34pm

Date/Time:	Cycle Type:	Duration:

Back

- **Home Screen**

- *Settings*

- **Settings Menu**

- *Operation Settings*
 - *Factory Configuration (Locked for authorized service only)*
 - *Temperature Recordings*
 - *Completed Cycles*

- **Operation Settings**

- **General Settings**

- **Device Settings**

- *Language*
 - *Unit Display (Fahrenheit / Celsius)*
 - *Home Image*
 - *Settings Password*
 - *System Time*
 - *Set Time*
 - *Brightness*

- **Pasteurizer Settings**

- **Pre-cool Mode** **** only 1 mode can be selected**

- **Pre-cool Settings**

- *Pre-cool Temperature*
 - *Pasteurize Start Times (1-3)*
 - *Cycle Agitation*

- **Reheat Mode** **** only 1 mode can be selected**

- **Reheat Settings**

- *Reheat Temperature*
 - *Reheat Start Times (1-3)*
 - *Cycle agitation*

- **Manual Start Only** **** only 1 mode can be selected**

- **Cycle Types** **** multiple different cycle types can be enabled**

- **Calf Milk Pasteurize**

- **Calf Milk Settings**

- *Pasteurize Temperature*
 - *Pasteurize Time*
 - *Cool Temperature*
 - *Cycle Agitation*
 - *On Time*
 - *Off Time*

- **Colostrum Pasteurize**

- **Colostrum Settings**

- *Pasteurize Temperature*
 - *Pasteurize Time*
 - *Cool Temperature*
 - *Cycle Agitation*
 - *On Time*
 - *Off Time*

- **Colostrum Thaw**

- **Colostrum Thaw Settings**

- *Thaw Temperature*
 - *Thaw Duration*

- **Temperature Hold**

- **Temperature Hold Settings**

- *Temperature Setpoint*

- **Pasteurizer Wash Settings**

- **Pasteurizer Wash Settings**

- **Pre-Rinse Cycle** (1)
 - **Detergent Cycle** (2)
 - **Rinse Cycle** (3)
 - **Acid Cycle** (4)
 - **Final Rinse Cycle** (5)

- **Pasteurizer Wash Cycle (1-5) Settings**

- *Cycle Name*

- *Water Temperature*
 - *Chem Pump*
 - *Chem Pump Time*
 - *Fill Time*
 - *Circulation Time*
 - *Drain Time*
- **Bottle Wash Settings**
 - **Bottle Wash Settings**
 - **Pre-Rinse Cycle** (1)
 - **Detergent Cycle** (2)
 - **Rinse Cycle** (3)
 - **Acid Cycle** (4)
 - **Final Rinse Cycle** (5)
 - **Bottle Wash Cycle (1-5) Settings**
 - *Cycle Names*
 - *Water Temperature*
 - *Chem Pump*
 - *Chem Pump Time*
 - *Fill Time*
 - *Circulation Time*
 - *Drain Time*
- **Aux Input Settings**
 - **Aux Input Settings**
 - *Trigger Dispense*
 - *Dispense on Input*
 - *Pre-cool Pasteurize Start*
 - *Disabled*
- **Pump VFD Settings**
 - **Pump VFD Settings**
 - *Pasteurize Frequency*
 - *Dispense Frequency*
 - *Pasteurize Wash Frequency*
 - *Bottle Wash Frequency*
- **Service Menu**
 - *Pump Motor - On/Off*
 - *Burner – On/Off*
 - *Cold Water Solenoid – On/Off*
 - *Cold Water Wash Solenoid – On/Off*
 - *Hot Water Wash Solenoid – On/Off*
 - *Sensor Settings*
 - **Vat Sensor Settings**
 - *Units (Fahrenheit / Celsius)*
 - *Vat Temperature Offset*
 - *Vat Samples for Average*
 - *Water Jacket Settings*
 - **Water Jacket Sensor Settings**
 - *Jacket Temperature Offset*
 - *Jacket Sample Interval*
 - *Jacket Samples for Average*
- **Temperature Recordings**
 - **Pasteurization Cycle Recordings**
 - *Pasteurize Temperatures Chart*
 - **Wash Cycle Recordings**
 - *Wash Temperatures Chart*
- **Completed Cycles**
 - *Lists all completed Pasteurize and Wash cycles*

3.7 Pasteurize Operation Menu Diagram (Selector Switch in “PASTEURIZE” Position)

- **Pasteurization Cycle**
 - *Calf Milk Pasteurization*
 - *Colostrum Pasteurization*
 - *Colostrum Thaw*
 - *Temperature Hold*
- **Calf Milk Cycle**
 - *Pre-cool Cycle Start*
 - *Manual Pasteurize Start*
- **Colostrum Cycle**
 - *Pre-cool Cycle Start*
 - *Manual Pasteurize Start*
- **Colostrum Thaw**
 - *Thaw Cycle Start*
- **Temperature Hold**
 - *Hold Temperature Set*
 - *Temperature Hold Start*

3.8 Wash Operation Menu Diagram (Selector Switch in “WASH” Position)

- **Wash Cycle**
 - *Bottle Wash Cycle*
 - *Pasteurizer Wash Cycle*
- **Bottle Wash Cycle**
 - *Bottle Wash Start*
- **Pasteurizer Wash Cycle**
 - *Pasteurizer Wash Start*

Section 4 – Operation

The Westwaard Pasteurizer is an agitated batch pasteurizer. A PLC controls all functions of the unit. The WP uses an electric heating element to heat a water jacket, which transfers the heat through to the milk in the unit to a set temperature and keeps it there for set holding duration. It then cools the milk by passing cold water through the water jacket until the milk reaches the set temperature. Please be aware the PMO for a batch pasteurizer calls for heating to 145 degrees and holding it at that temperature for 30 minutes. Any adjustment made to the heat temperature can take the unit out of what the call out is for proper pasteurization.

	Vat reaches temperatures of approximately 150° F during heating cycle. Contact with vat will create burn risks. Caution must be taken with young children around equipment.
	Never plug or impede the discharge tube. High temperatures can create a pressure build up inside the units cooling jacket, any impediment in the discharge tube may cause the unit to implode.
	Guards and covers which prevent contact with electrically energized or moving parts or are required to direct the flow of air for effective cooling, must not be removed or left open during operation.

4.1 Pasteurization

Pasteurizer Operation Modes

-The Westwaard Pasteurizer can operate in only **one** of the following modes:

- **Pre-cool Pasteurization**
- **Reheat Pasteurization**
- **Manual Pasteurization**

-Refer to section 3.3 (ii) to change mode of operation.

i. Pre-cool Pasteurization

-In Pre-cool mode, the product will maintain a set pre-cool until the set pasteurize start time. At that point, the product will run through the selected Pasteurization Cycle, then cool back down to the set temperature. The cycle is now complete.

****There can be 2 set start times for this cycle.**

1.	Open Pasteurizer Tank valve Close Chemical/Drain valve Close Bottle Washer valve. (See Section 2.4)
2.	Install agitation tube in vat.
3.	Load milk into unit.
4.	Move front panel selector switch to "PASTEURIZE" position.
5.	If more than 1 cycle type is enabled, select either Calf Milk or Colostrum Pasteurization Cycle.

Pasteurization Cycle: 12:00:00am

Select cycle:

Calf Milk Pasteurization

Colostrum Pasteurization

Colostrum Thaw

Temperature Hold

i. Pre-cool Pasteurization (continued)

6.	Set Pasteurize start times by pressing the hour and minute blocks. Press AM/PM to toggle. Then press <i>Pre-cool Cycle Start</i> to begin cycle.	Calf Milk Cycle: 12:00:00 am Pasteurize start time 1: 6 : 00 AM Pasteurize start time 2: 5 : 00 PM Pre-cool Cycle Start Manual Pasteurize Start Back to Select Cycle Type
7.	Screen will display the status of the pre-cool cycle.	Calf Milk Cycle: 12:00:00 am Pre-cool cycle ON Target Temperature: 57 °F Pasteurize Start Time: 6:00 AM Cycle Agitation: Enabled 10.0 sec on, 45.0 sec off 65 °F
8.	Screen will display progress on heating once the clock reaches pre-cool start time.	Calf Milk Cycle: 12:00:00 am Heating ON Target Temperature: 145 °F  65 °F
9.	Once milk reaches the set temperature, the unit will maintain this temperature for 30 minutes providing a countdown of time remaining for the hold duration.	Calf Milk Cycle: 12:00:00 am 30 min Temperature Hold Hold time remaining: 00:29:59 Hold Temperature: 145 °F 145 °F

i. Pre-cool Pasteurization (continued)

10.	After the hold duration is complete, the unit will start to cool the milk to the set temperature.	Calf Milk Cycle: 12:00:00 am Pasteurization Complete Cooling ON Target Temperature: 55 °F 145 °F
11.	Pasteurization cycle is now complete. Move selector switch to off position to use pump switch to dispense.	Calf Milk Cycle: 12:00:00 am Pasteurization Cycle Complete Maintaining Temperature Turn switch to off/pasteurize to dispense Cycle Agitation: Enabled 15.0 sec on, 300.0 sec off 105 °F

ii. Reheat Pasteurization

-In Reheat mode, the product will immediately start the Pasteurization Cycle, cool back down to the set temperature and maintain this temperature until the set reheat start time. At that point the product will be reheated to set temperature ready to dispense. The cycle is now complete.

***There can be 2 set start times for this cycle.*

1.	Open Pasteurizer Tank valve Close Chemical/Drain valve Close Bottle Washer valve. (See Section 2.4)	
2.	Install agitation tube in vat.	
3.	Load milk into unit.	
4.	Move selector switch to "PASTEURIZE" position.	
5.	If more than 1 cycle type is enabled, select either <i>Calf Milk</i> or <i>Colostrum</i> Pasteurization Cycle.	Pasteurization Cycle: 12:00:00am Select cycle: Calf Milk Pasteurization Colostrum Pasteurization Colostrum Thaw Temperature Hold

ii. Reheat Pasteurization (continued)

6.	Set Reheat start times by pressing the hour and minute blocks. Press AM/PM to toggle. Then press <i>Reheat Cycle Auto Start</i> to begin cycle.	Calf Milk Cycle: 12:00:00 am Reheat start time 1: 5 : 00 AM Reheat start time 2: 6 : 00 PM Reheat Auto Cycle Start Manual Pasteurize Start Back to Select Cycle Type
7.	Screen will display progress on heating.	Calf Milk Cycle: 12:00:00 am Heating ON Target Temperature: 145 °F  65 ° F
8.	Once milk reaches the set temperature, the unit will maintain this temperature for 30 minutes providing a countdown of time remaining for the hold duration.	Calf Milk Cycle: 12:00:00 am 30 min Temperature Hold Hold time remaining: 00:29:59 Hold Temperature: 145 °F 145 ° F
9.	After the hold duration is complete, the unit will start to cool the milk to the set temperature and maintain this temperature until the set re-heat start time.	Calf Milk Cycle: 12:00:00 am Pasteurization Complete Cooling ON Target Temperature: 57 °F Re-Heat Start Time: 6:00 PM Cycle Agitation: Enabled 10.0 sec on, 45.0 sec off 145 ° F

ii. Reheat Pasteurization (continued)

10.	Reheat cycle will heat up the milk to the set temperature.	Calf Milk Cycle: 12:00:00 am Re-heat cycle ON Target Temperature: 110 °F  108 °F
11.	Once the milk has reached the set temperature, the cycle is complete, and the milk can be dispensed.	Calf Milk Cycle: 12:00:00 am Pasteurization Cycle Complete Maintaining Temperature Turn switch to off/pasteurize to dispense Cycle Agitation: Enabled 15.0 sec on, 300.0 sec off 105 °F

iii. Manual Pasteurization

-In Manual mode, the product will immediately start the Pasteurization Cycle, cool back down to the set temperature. The cycle is now complete.

1.	Open Pasteurizer Tank valve Close Chemical/Drain valve Close Bottle Washer valve. (See Section 2.4)	
2.	Install agitation tube in vat	
3.	Load milk into unit	
4.	Move selector switch to “ PASTEURIZE ” position	
5.	If more than 1 cycle type is enabled, select either <i>Calf Milk</i> or <i>Colostrum</i> Pasteurization Cycle:	Pasteurization Cycle: 12:00:00am Select cycle: Calf Milk Pasteurization Colostrum Pasteurization Colostrum Thaw Temperature Hold

6.	Press <i>Manual Start</i> to begin cycle.	Calf Milk Cycle: 12:00:00 am Manual Start Back to Select Cycle Type
7.	Screen will display progress on heating.	Calf Milk Cycle: 12:00:00 am Heating ON Target Temperature: 145 °F  65 °F
8.	Once milk reaches the set temperature, the unit will maintain this temperature for 30 minutes providing a countdown of time remaining for the hold duration.	Calf Milk Cycle: 12:00:00 am 30 min Temperature Hold Hold time remaining: 00:29:59 Hold Temperature: 145 °F 145 °F
9.	After the hold duration is complete, the unit will start to cool the milk to the set temperature.	Calf Milk Cycle: 12:00:00 am Pasteurization Complete Cooling ON Target Temperature: 55 °F 145 °F

iii. Manual Pasteurization (continued)

10.	Pasteurization cycle is now complete. The milk can now be dispensed.	Calf Milk Cycle: 12:00:00 am Pasteurization Cycle Complete Maintaining Temperature Turn switch to off/pasteurize to dispense Cycle Agitation: Enabled 15.0 sec on, 300.0 sec off 105 °F
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4.2 Colostrum Thaw

-Must be enabled to activate on screen, refer to section 3.4 to enable.

1.	Open Pasteurizer Tank valve Close Chemical/Drain valve Close Bottle Washer valve. (See Section 2.4)	
2.	Install agitation tube in vat.	
3.	Place frozen bags of colostrum in vat.	
4.	Fill vat with water at least 3" above colostrum bags.	
5.	Move selector switch to " PASTEURIZE " position.	
6.	Press <i>Colostrum Thaw</i> .	Pasteurization Cycle: 12:00:00am Select cycle: Calf Milk Pasteurization Colostrum Pasteurization Colostrum Thaw Temperature Hold
7.	Press <i>Thaw Cycle Start</i> .	Colostrum Thaw: 12:00:00 am - Vat filled with water - Colostrum loaded Thaw Cycle Start Back

4.2 Colostrum Thaw (continued)

8.	The unit will bring the water in the vat up to the set temperature.	Colostrum Thaw: 12:00:00 am Thaw cycle ON Target Temperature: 110 °F  80 °F
9.	Once the water reaches the set temperature, the unit will hold this temperature for the set time to allow thermal transfer to the frozen colostrum bags. The screen will show a countdown of the time remaining for the hold cycle.	Colostrum Thaw: 12:00:00 am Thaw cycle HOLD Target Temperature: 110 °F Hold time remaining: 00:29:57  110 °F
10.	The Colostrum Thaw Cycle is now complete. Remove bags from the vat and feed.	Colostrum Thaw: 12:00:00 am Colostrum Thaw Cycle Complete Turn switch to off position and drain

4.3 Temperature Hold

-Must be enabled to activate on screen, refer to section 3.4 to enable.

1.	Move selector switch to “ PASTEURIZE ” position.	Pasteurization Cycle: 12:00:00am Select cycle: Calf Milk Pasteurization Colostrum Pasteurization Colostrum Thaw Temperature Hold
2.	Press <i>Temperature Hold</i> .	
3.	The unit will bring the substance in the vat up to the set temperature.	Temperature Hold: 12:00:00am 110 °F ▲ ▼ Temperature Hold Start Back to Select Cycle Type
4.	Once the water reaches the set temperature, the unit will hold this temperature. Move selector switch to “ OFF ” position to stop the Temperature Hold and be brought back to the home screen.	Temperature Hold: 12:00:00am Target Temperature: 110 °F ▲ ▼ Turn switch to off position to stop 80.0 °F

4.4 Pasteurizer and Bottle Wash Mode

The Westwaard Integrated Pasteurizer/Bottle Washer has an onboard CIP system. It washes in a similar method to a typical dairy bulk tank. PLC runs a 5 cycle wash by dispensing chemicals through Peristaltic Pumps. The 5 cycles are Pre-Rinse, Detergent, Rinse, Acid, and a Final Rinse to make sure all chemicals have been rinsed out from the unit. Chemical levels will need to be evaluated and adjusted by a dairy sanitation supplier.

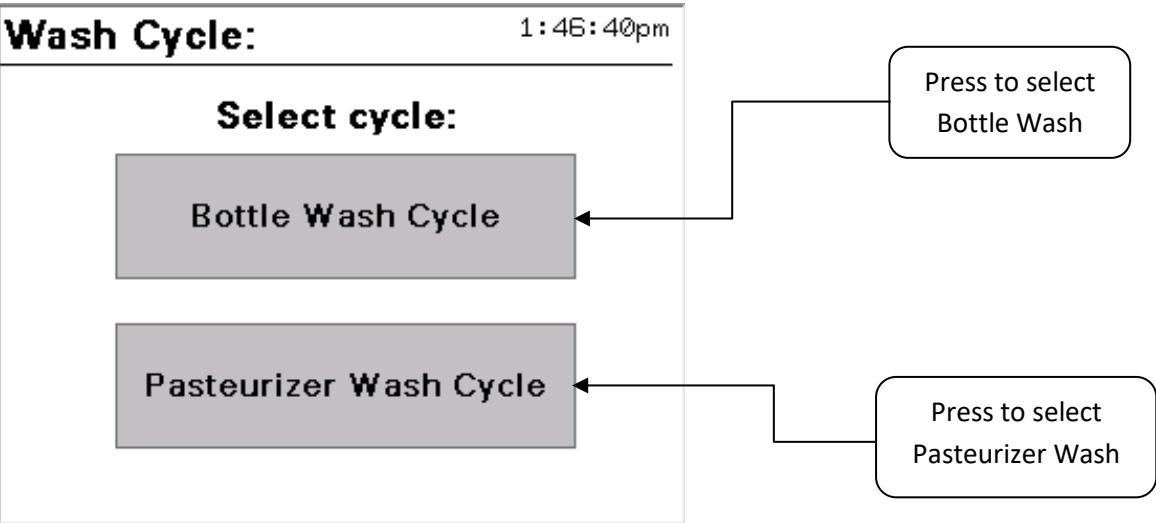


It is recommended that you run a final clear rinse cycle to remove any remaining acid from the hoses and pump. Failure to do so can result in curdling milk, if acid residue and milk mix in following batch.



Mixing of wash chemicals can cause potential dangerous fumes. Extreme caution must be taken when testing and setting of wash cycle to make sure chemicals are not allowed to mix.

To activate wash operations, put front panel switch to “**WASH**” position. Wash cycle screen will come up.



i Bottle Wash Mode

1.	Open Bottle Washer valve Open Drain / Chemical valve Close Pasteurizer Tank valve. (See Section 2.4)
3.	Attach Hose to Bottle Washer Manifold
4.	If full bottle wash load is not available, one line of jets can be turned off at bottle washer manifold. Do not run bottle washer without a bottle over active nozzles.
5.	Toggle front panel selector switch to “WASH” position.
6.	Select <i>Bottle Wash Cycle</i>
7.	Insure notes on screen have been completed.
8.	Press <i>Bottle Wash Cycle Start</i>
9.	Unit will cycle through each cycle giving you a visual display of the progress of each step.

ii Pasteurizer Wash Mode

1.	Open Pasteurizer Tank valve Open Drain / Chemical valve Close Bottle Washer valve. (See Section 2.4)
3.	Rinse out vat with warm water using hose
4.	Attach Hose to Vat Attach spray ball attachment
5.	Toggle front panel selector switch to “WASH” position.
6.	Select <i>Pasteurizer Wash Cycle</i>
7.	Insure notes on screen have been completed.
8.	Press <i>Pasteurizer Wash Cycle Start</i>
9.	Unit will cycle through each cycle giving you a visual display of the progress of each step.

Pasteurizer Wash Cycle: 1:48:23pm

- Rinse Vat
- Open Tank Valve
- Open Drain Valve
- Close Bottle Wash Valve
- Hose connected to Vat

Start Pasteurizer Wash Cycle

Wash Cycle: 12:00:00am

PRE-RINSE CYCLE	Warm	Filling
DETERGENT CYCLE	Hot	Pending
RINSE CYCLE	Warm	Pending
ACID CYCLE	Warm	Pending
FINAL RINSE CYCL	Cold	Pending

Wash time remaining: 00:34:04

 **80.0 °F**

Wash Cycle: 12:00:00 am

Wash Cycle Complete

Turn switch to off/pasteurize

8.	

4.5 Dispense Mode

-With selector switch in OFF position, dispense pump can be run using switch on front of control panel. For unloading unit into calf buckets or bottles, install fork dispense nozzle, and use ball valve on end of hose to control milk flow.

1.	Move selector switch to the off position.
2.	Remove hose from vat.
3.	Attach dispensing nozzle onto hose.
4.	Turn pump on/off using the pump switch on the front of the panel.
5.	Use ball valve to regulate flow.

INCOMING POWER
220-240VAC 1PH 60HZ

20/40 Gal Models - 30 Amp
60 Gal Model - 50 Amp
90 Gal Model - 70 Amp
120/150/200 Gal Models - 20 Amp
Control Center Model - 20 Amp

External Connections
Optional Component Wiring

Heating Element on 20/40/60/90 Gal Models Only
20 Gal - 5,000 Watt
40 Gal - 6,000 Watt
60 Gal - 10,000 Watt
90 Gal - 15,000 Watt

Heating Circulation Pump on 120/150/200 Gal/Control Center Models Only
1HP - 8 Amp FLA
High Capacity Model
1.5HP - 10 Amp FLA

All Models
20 Gal Model - 1/3 HP 3.6 Amp FLA
40/60/90 Gal Models - 1/2 HP 4.9 Amp FLA
120/150/200 Gal Models - 1HP 8 Amp FLA
Control Center Model - 1HP 8 Amp FLA
High Capacity Model - 1.5HP 10 Amp FLA

Agitator on Control Center Model Only
1/3 HP 3.6 amps MAX

Chemical Pumps Optional
Only 1 pump enabled at a time

PLC1 HMISCU8B5

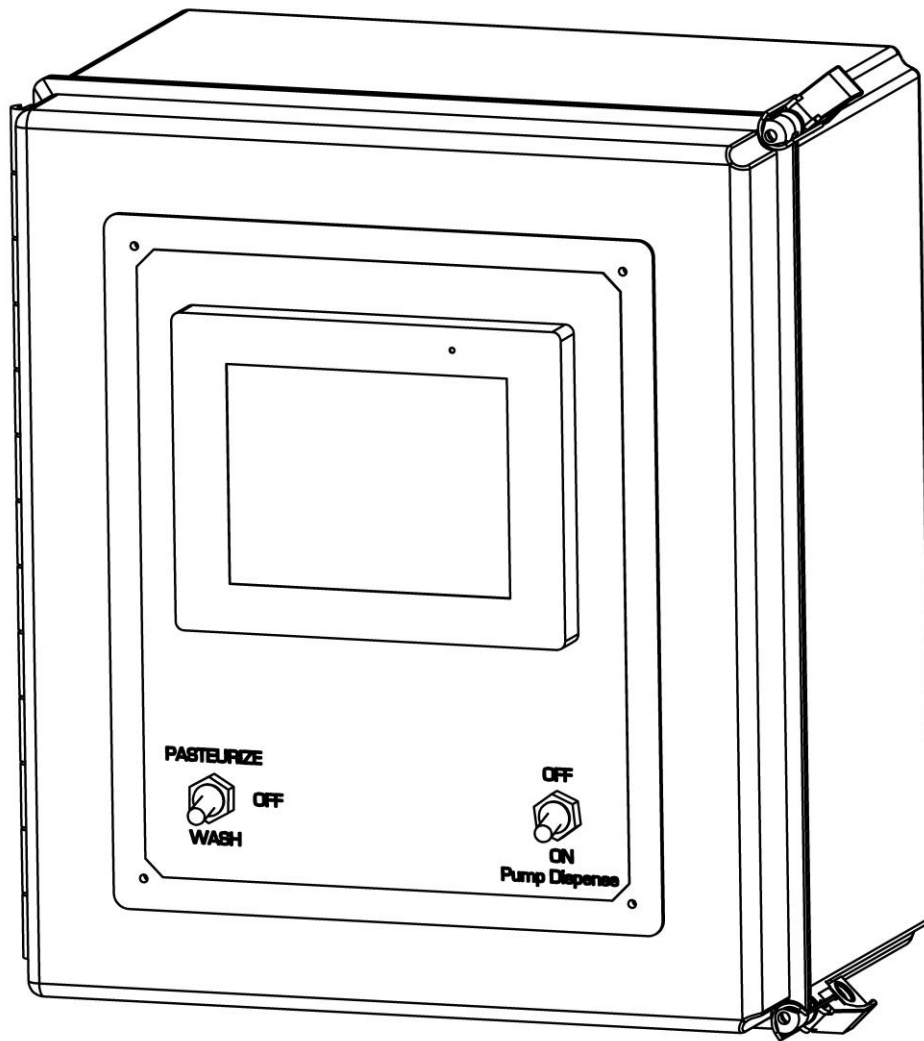
Terminal	Wire Color	Component / Note
D-C0	A-C0	24V / Red
D-C1	B-DQ2	Blue
D-DI0	A-C1	24V / Red
C-DI1	B-DQ3	Blue / Black
D-DI2	A-DQ4	Orange
C-DI3	B-DQ0	Orange / Black
EX0+	B-DQ1	White
TI0-	C-FQ0	Whiter / Black
EX0-	C-24V	24V / Red
EX1+	D-FQ1	Black / White
TI1-	D-V-	Red / Black
EX1-	B-DQ5	Red / Black
PWR-	24V	24V / Red
CAN	PWR- 0V	0V / Black
PWR-GND	GND	GND

Relays:
R1: Cooling Relay
R2: Cold Wash Relay
R3: Hot Wash Relay
R8: Pump Relay
R4: Heating Relay
R5: Chemical Pump #1 (Detergent)
R6: Chemical Pump #2 (Acid)
R7: Drain Valve

Sensors:
RTD1: Milk Temp
RTD2: Temp Sensor (20 Gallon Only)

Other Components:
P1: 30W 24VDC Power Supply
Pump On/Off Switch
Wash / Off / Pasteurize Switch
Auxiliary Inputs AUX1, AUX2

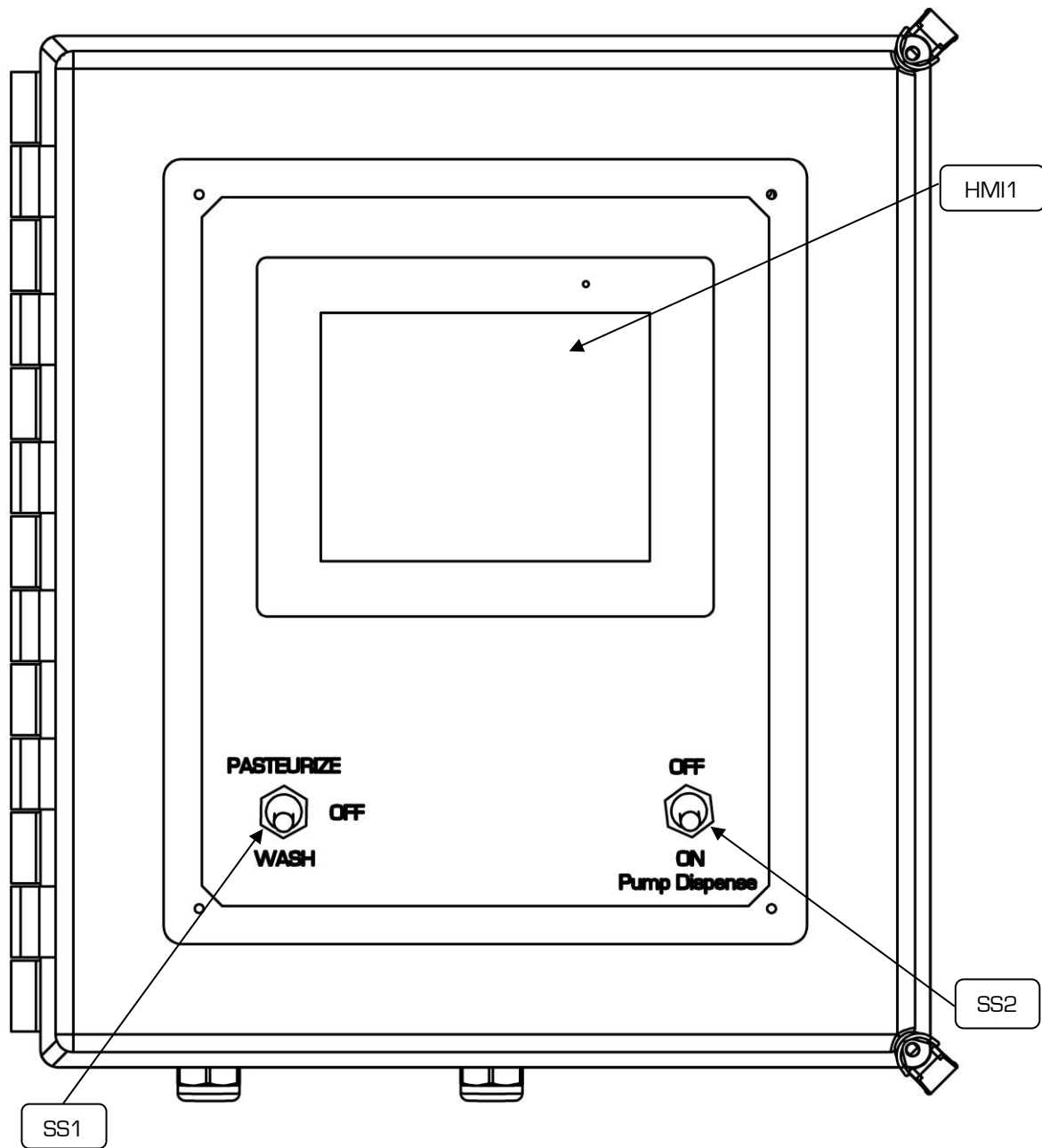
Terminating Resistors:
CANopen Cable (Terminating Resistor) 1.Q9



Integrated Pasteurizer / Bottle Washer Control Cabinet

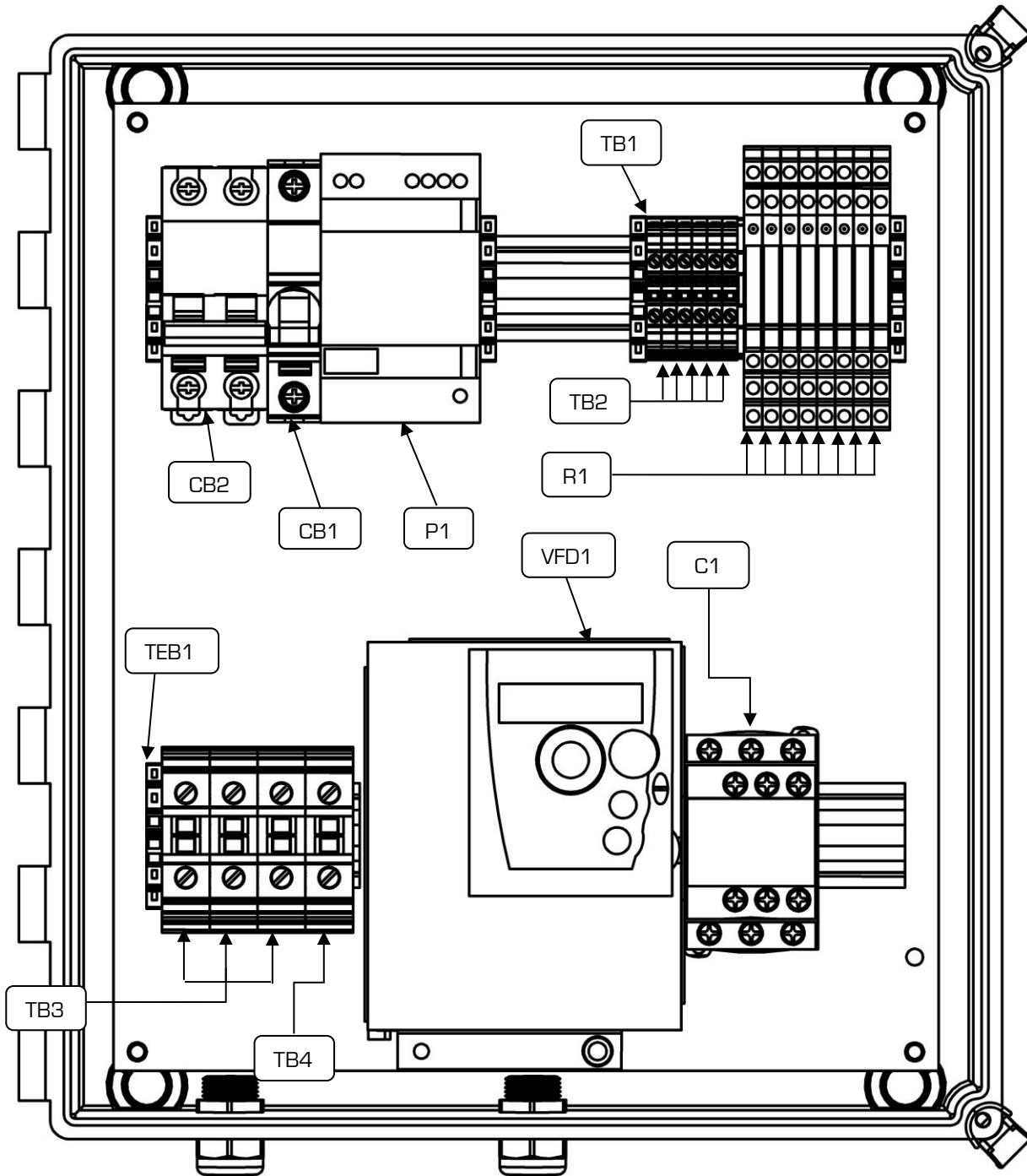
Component List

Front Panel

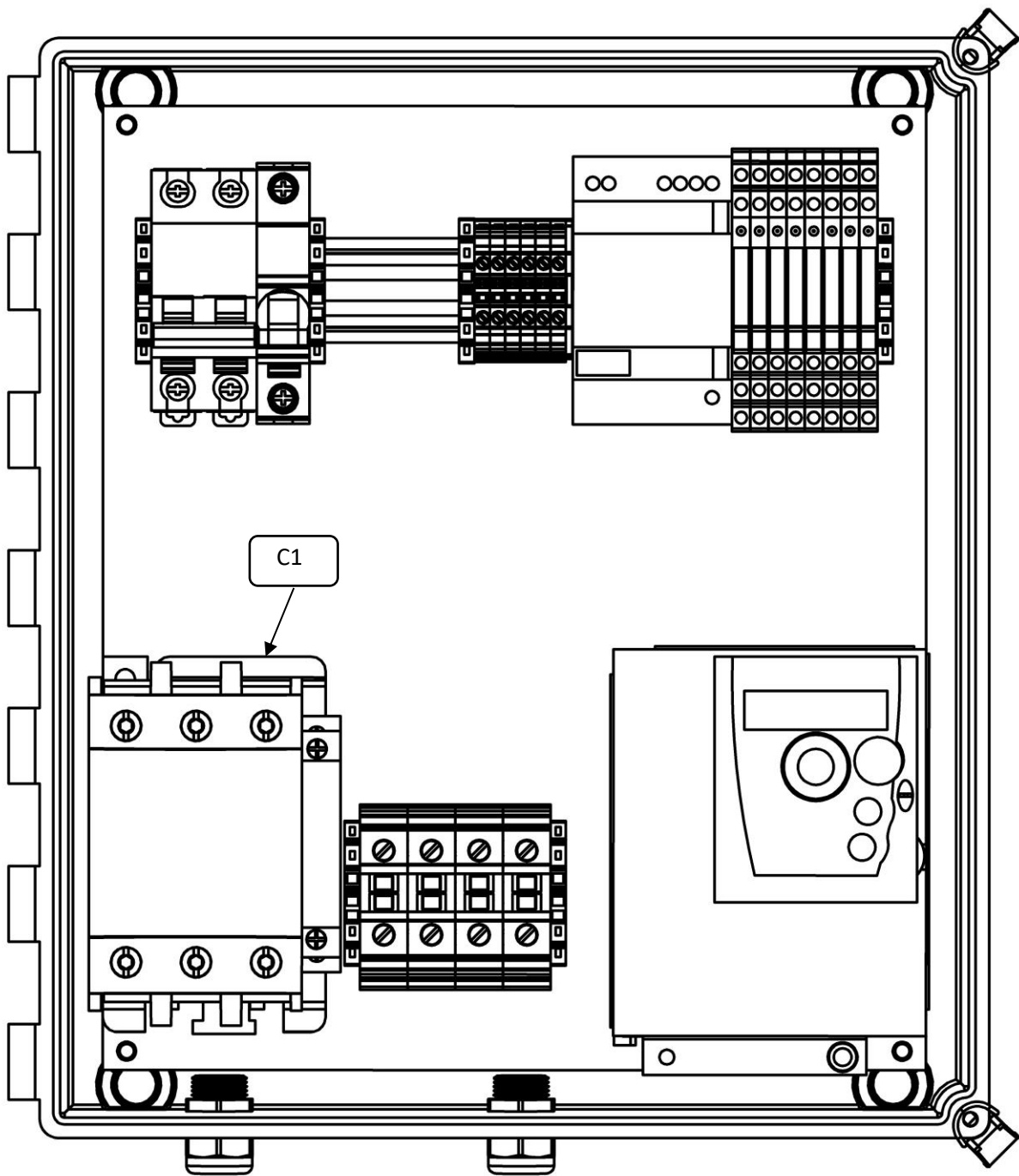


Label	Part #	Description
HMI1	O413	5.7" TFT HMISCU
SS1	G605	ON-OFF-ON 1P Toggle Switch W/Tab
SS2	A608	ON-OFF 1P Toggle Switch W/Tab

Internal Components – 40 & 60 Gallon Units



Label	Part #	Description
P1	J849	30W Power Supply
CB1	P465	6A Circuit Breaker
CB2	S791	15A Circuit Breaker
C1	K507	120V 32A Contactor
TB1	V791	2.5mm Terminal Grounding Block
TB2	J749	2.5mm Terminal Block
TB3	X737	16mm Terminal Block
TB4	Z414	16mm Terminal Grounding Block
VFD1	R266	Variable Frequency Drive - 240V 1.5KW 2HP
R1	Y606	Slice Relay
TEB1	N458	Terminal End Block



For the 90 Gallon Integrated Pasteurizer / Bottle Washer the only component change in the Control Box is the contactor C1. Some component placement is also changed but the same components are used.

The contactor for the 90 Gallon Unit is DariTech part number J377 - 120V 80A

For Technical Support, to order Replacement Parts, or for questions about other products,
please contact your local dealer.

