



## Arctic Chill Tank Washer

### Manual

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Version 1.0

7/2/19

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# **1. Introduction**

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Congratulations on your purchase of an Arctic Chill Tank Washer. This equipment has been designed and manufactured to meet the needs of a discriminating buyer.

Safe, efficient and trouble-free operation requires that you and anyone else who will be operating or maintaining the equipment, read and understand this manual.

Use of the equipment outside of the intended use, or without written approval from Abts Equipment is not covered by our performance guarantee, nor will damages caused be covered by our warranty.

Abts Equipment cannot be held liable for consequential damages, including, but not limited to, loss of production, personal injury or property loss.

Installation, setup, operation, maintenance and repairs must be performed by qualified personnel only.

## 2. Safety

### Safety Alert Symbol and Signal

#### Words

You must read, understand and follow the instructions in this manual.  
The safety information in this manual is denoted by the safety alert symbol:



This symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

The level of risk is indicated by the following signal words:

|  <b>DANGER</b>                        |
|------------------------------------------------------------------------------------------------------------------------|
| <b>DANGER</b> - Indicates a hazardous situation, which, if not avoided, <b>WILL</b> result in death or serious injury. |
|  <b>WARNING</b>                      |
| <b>WARNING</b> - Indicates a hazardous situation, which, if not avoided, could result in death or serious injury.      |

|  <b>CAUTION</b>                  |
|--------------------------------------------------------------------------------------------------------------------|
| <b>CAUTION</b> - Indicates a hazardous situation, which, if not avoided, could result in minor or moderate injury. |
| <b>NOTICE</b>                                                                                                      |
| <i><b>NOTICE</b> - Indicates a situation that could result in damage to the equipment or other property.</i>       |

### Installation Hazards

|  <b>WARNING</b> |
|----------------------------------------------------------------------------------------------------|
| Prevent serious injury or death.                                                                   |
| Electrical and mechanical installation must be performed by qualified technicians.                 |
| Installation must conform to all national, local, and provincial codes and standards.              |

|  <b>WARNING</b> |
|----------------------------------------------------------------------------------------------------|
| Prevent serious injury or death.                                                                   |
| Use adequate lifting devices to raise, move and install machine.                                   |

## Operational Hazards

|  <b>WARNING</b> |
|--------------------------------------------------------------------------------------------------|
| <b>Safely operate equipment.</b>                                                                 |
| <b>Allow only properly trained and qualified personnel to operate this equipment.</b>            |

Carefully read all safety messages in this manual and on equipment safety signs. Keep safety signs in good condition and replace missing or damaged safety signs.

New equipment components and repair parts must include the current safety decal.

Learn how to properly operate equipment. NEVER operate or work around this equipment without proper instruction, while fatigued or under the influence of alcohol, prescription or non-prescription medication or if feeling ill.

Keep your equipment in proper working condition.

Know the regulations and laws that apply to you and your industry. This manual is not to replace any regulations or laws. If you do not understand any part of this manual, contact Abts Equipment at 920-866-2485.

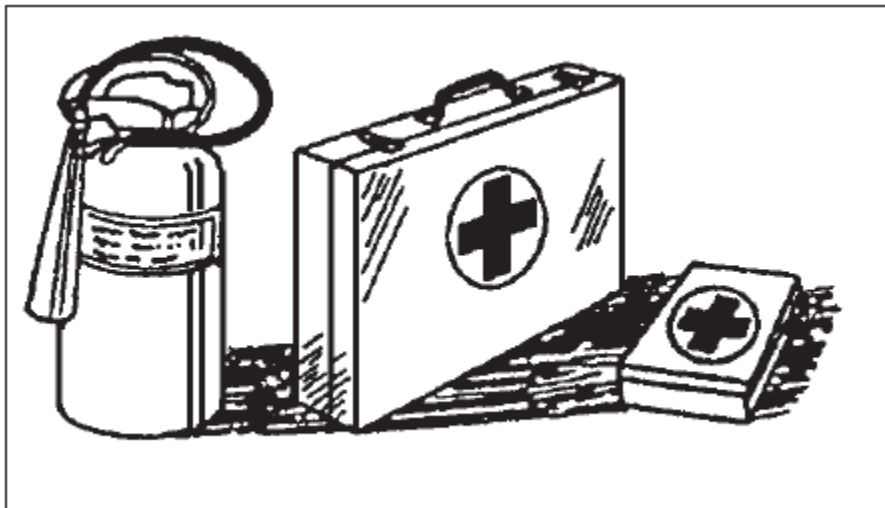
## Prepare for Emergencies

Be prepared in case of emergencies.

Keep a fire extinguisher and first aid kit close to the machine.

Keep emergency phone numbers close to your phone.

Know your address so emergency services can locate you if an emergency arises.



## Maintenance Hazards



Before performing service, maintenance or adjustments, lockout power source.

Always wear face and/or eye protection, safety shoes, and other protective equipment appropriate for the job. Follow company stated safety procedures and policies.

Always use Abts Equipment replacement parts.

## Hazards from Modifying Equipment

Do not alter or modify machine in any way. Altering or modifying may cause your equipment to be unsafe and may void the manufacturers' warranty.

Contact Abts Equipment before altering or modifying equipment.

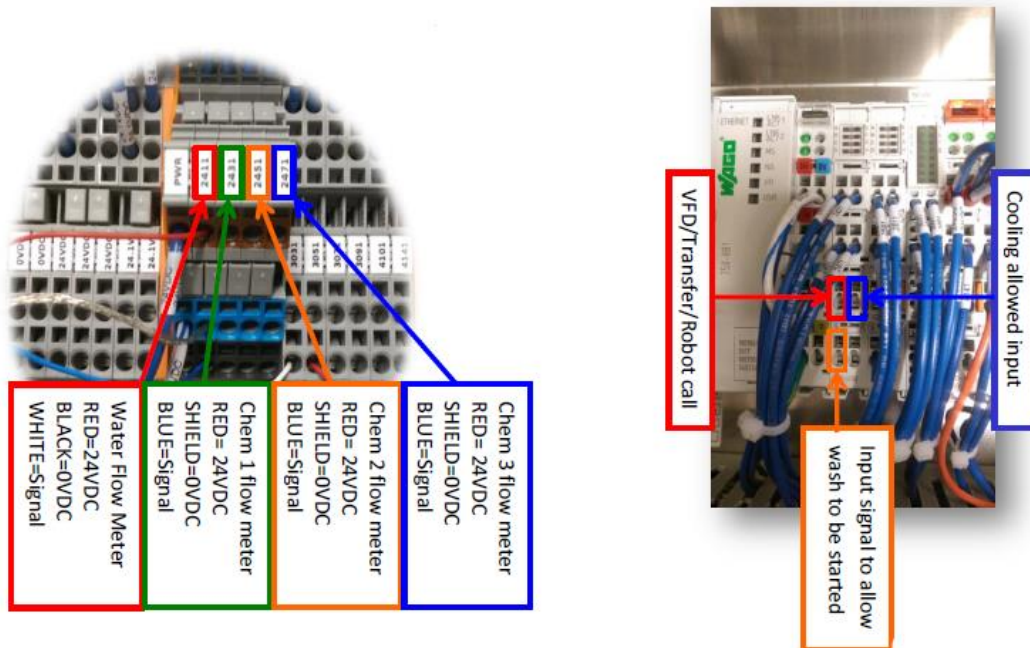
### 3. Installation

#### Requirements

- 220VAC 20 AMP electric supply
- Hot water supply
- Cold water supply
- Control box size= 24" x 17"
- Chemical pump box size= 10" x 14"
- 100 PSI air supply

#### Installing the Tank Washer System

- Mount Arctic Chill control box on the wall close to the location of the tank being washed.
- Mount Chemical pump box approximately 12" below the tank washer control box.
- Mount water manifold assembly on the wall near Arctic Chill control box and hot and cold water supply.
- Wire 220VAC 20 AMP electrical supply to Arctic Chill control box.
- Connect hot and cold water valves to the Arctic Chill control box.
- Wire water flow meter to Arctic Chill control box.
- Wire chemical pumps and chemical flow meters to the Arctic Chill control box.



## Configure Arctic Chill

- Once the Arctic Chill system has been installed, power up the control box.
- Press the screen once to go to the “home” page.
- Press the Login button then login to the user service.
- To login press **setup**→**login**→**select Service**→**password** = **service22**, ⚠ \*NOTE this service menu is intended only for the service technician. Please keep the password discrete



## Factory Configure

- Before the machine can be used it has to be configured for the specific location/tank.
- Press Factory Configure



| Number of Compressors                       | Number of Agitators | Date/Time                                                                                                        | Save Configuration   |
|---------------------------------------------|---------------------|------------------------------------------------------------------------------------------------------------------|----------------------|
| 0                                           | 0                   | Screen Settings                                                                                                  | Load Configuration   |
| Incoming Temp: 0.0 F<br>Product Temp: 0.0 F |                     | Offset: 0.0 F<br>Adjust the temperature probe of the tank/product temperature and the incoming milk temperature. | Export Configuration |
| No Water Detection: Disabled                |                     |                                                                                                                  | Import Configuration |
|                                             |                     | 0.0 min                                                                                                          | 0.0 F                |
| HOME                                        |                     | Alarms                                                                                                           | Maintenance          |
|                                             |                     | Login                                                                                                            | Logout               |

Select the number of compressors and agitators in the current setup

**No Water Detection:** This is an alarm that will occur if the water meter has not detected flow within XX amount of minutes. The temperature box is how much the temperature has to change by for it to be considered that there is flow. For example: if it is set to 5 degrees and the water turns on and the temperature doesn't change by more than 5 degrees over the course of the XX time, an Alarm will occur.

## Configure



## Flow Calibration

**Flow Calibration Screen:**

|            | Metered: | Time Based: |
|------------|----------|-------------|
| Water:     | 0.0P     | 5.0 gal/min |
| Detergent: | 0.0P     | 20.0 Oz/min |
| Acid:      | 0.0P     | 20.0 Oz/min |
| Sanitizer: | 0.0P     | 20.0 Oz/min |

**Buttons:** Run 1 Minute (for each component), Auto Switch On Fault, Information, Exit.

**Instructions:**

- Switch between Time Based and Meter Based operation. Time Based operation will run each component based on a calibration time. Meter Based will run each component based off of pulses from a flow meter.
- Auto Switch On Fault:** This will automatically switch from Meter Based to Time Based operation if a flow meter becomes faulty and does not read correctly.
- Run each component for one minute and catch the liquid in a measuring container, and then enter the amount of liquid dispensed in the box to the left.




## Compressor Configuration

- **Fixed Freq VFD**=If Enabled this setting will start the cooling compressors based on how much milk is being pumped into the tank. This requires a signal from the milk pump VFD to the Arctic Chill controller when the milk pump is running. Enter the approximate GPM of the milk entering the cooling tank in the **gpm box**, then in the Staging Setpoints box enter the amount of gallons for when to start compressor 1 and compressor 2.

- **Transfers**= If Enabled this setting will start the cooling compressors based on how much milk is being transferred into the tank every time the milk pump starts. This requires a signal from the milk pump VFD to the Arctic Chill controller when the milk pump starts. Enter the approximate gallon amount of the milk entering the cooling tank, Every time the milk pump runs, in the **gal box**, then in the Staging Setpoints box enter the amount of gallons for when to start compressor 1 and compressor 2.
- **Robot Called**=If Enabled this requires an output from an external device to start the cooling.
- **Manually Called**=If Enabled the user can manually turn cooling on and off

## Cooling Configuration

Flow Calibration      Outputs

Compressor Config      Factory

**Cooling Config**      Alarm Settings

Wash Recipes

HOME   Alarms   Maintenance   Login   Logout

At Setpoint Agitator Cycle Timing:

Cooling Setpoint:      Deadband:      ON TIME:      OFF TIME:

38.0 F      2.0 F      30 s      1200 s

Select which compressors trigger which Agitators:

**Agitator 1:**      **Agitator 2:**

1: Disabled   2: Disabled      1: Disabled   2: Disabled

Select which compressors turn on which agitator. This function is useful when a specific agitator is mixing product over position of the evaporator plate.

HOME   Alarms   Maintenance   Login   Logout

- Cooling Setpoint= Select what temperature to cool the product down to.
- Deadband= Select how much Deadband is required (the range of temperatures in which no cooling is required).

## Wash Recipes

The screenshot displays the Arctic Chill Washer's main menu with the 'Wash Recipes' option highlighted in red. Below it, the 'Wash Recipes' sub-menu is shown, featuring buttons for 'New Recipe', 'Edit Recipe', 'Load Recipe', 'Save Recipe', and 'Delete Recipe' (all in a red box), and 'Export Recipes' and 'Import Recipes' (in a green box). A table titled 'Display Name: Show:' lists recipes: 'TEST' (checked), 'TEST1' (unchecked), and 'TEST 2' (checked). A blue arrow points from the 'Show' column to a text box explaining the checkbox function. A red arrow points from the 'New Recipe' button to a text box explaining the recipe management actions. A green arrow points from the 'Import Recipes' button to a text box explaining the import/export function. At the bottom left, a 'Load Recipe' dialog box is shown with a 'TEST' label and 'Load'/'Cancel' buttons.

Flow Calibration  
Compressor Config  
Cooling Config  
**Wash Recipes**  
Outputs  
Factory  
Alarm Settings  
HOME Alarms Maintenance Login Logout

New Recipe  
Edit Recipe  
Load Recipe  
Save Recipe  
Delete Recipe  
Export Recipes Import Recipes  
HOME Alarms Maintenance Login Logout

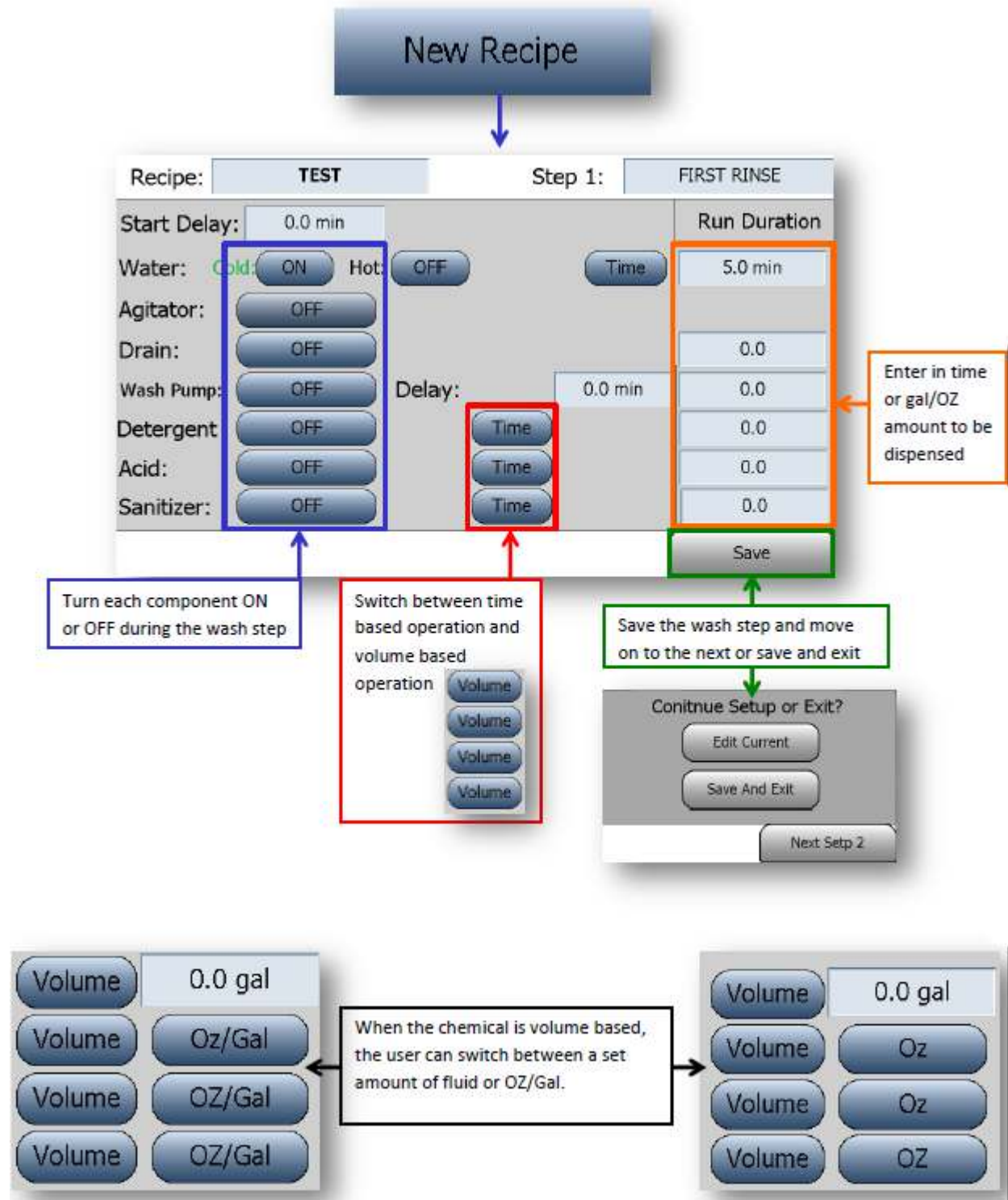
Display Name: Show:  
TEST X  
TEST1 ☐  
TEST 2 X

Create a new recipe, edit a recipe, load a recipe, save a recipe, or delete a recipe.

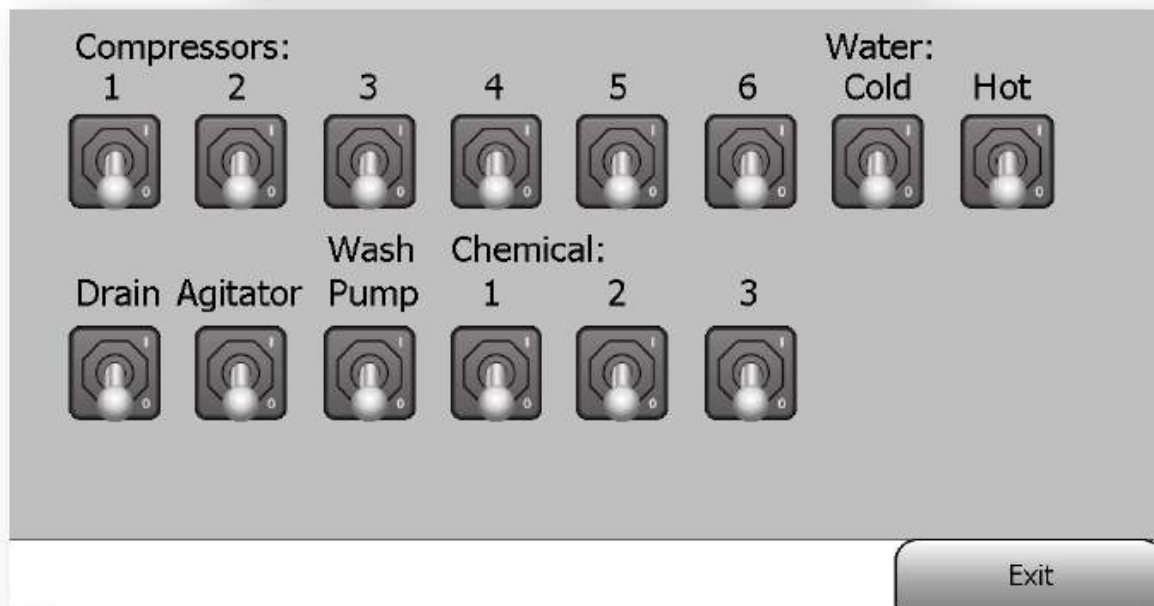
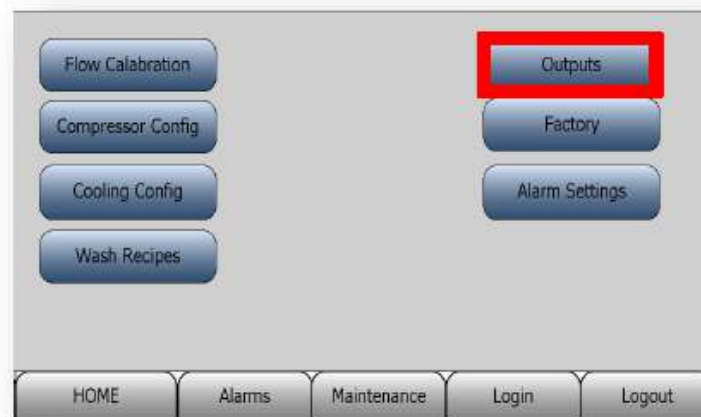
Import or export recipes to different Arctic Chill washers

Label what you want the recipe to be called as. Check the box if you want to show the recipe on the main wash page. This allows you to switch between different wash recipes easily.

Load Recipe  
TEST  
Properties:  
Load Cancel



## Outputs



Toggle on and off any output device

Alarm Settings



|                            |          |                                                                                                                                                    |
|----------------------------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| Detergent Step Final Temp: | 100.0 F  | When washing, after the detergent has been added, if the cooling tank temperature has <u>not reached 100F</u> an alarm will occur.                 |
| Cooling High Temp:         | 70.0 F   | If the cooling tank is in the cool mode and the <u>tank temperature</u> has not dropped <u>below 70F</u> after the delay time an alarm will occur. |
| Cooling High Temp Delay:   | 60.0 Min | If the cooling tank has been at <u>70F or above</u> for <u>more than 60 Min</u> an alarm will occur.                                               |
| Cooling LowTemp:           | 30.0 F   | If the cooling tank is in the cool mode and the <u>tank temperature</u> has dropped <u>below 30F</u> after the delay time an alarm will occur.     |
| Cooling Low Temp Delay:    | 30.0 Min | If the cooling tank has been at <u>below 30F</u> for <u>more than 30 Min</u> an alarm will occur.                                                  |
| Time Without Pulse:        | 0.5 Min  | If a flow meter has <u>not pulsed</u> for more than <u>0.5Min</u> an alarm will occur.                                                             |

HOME

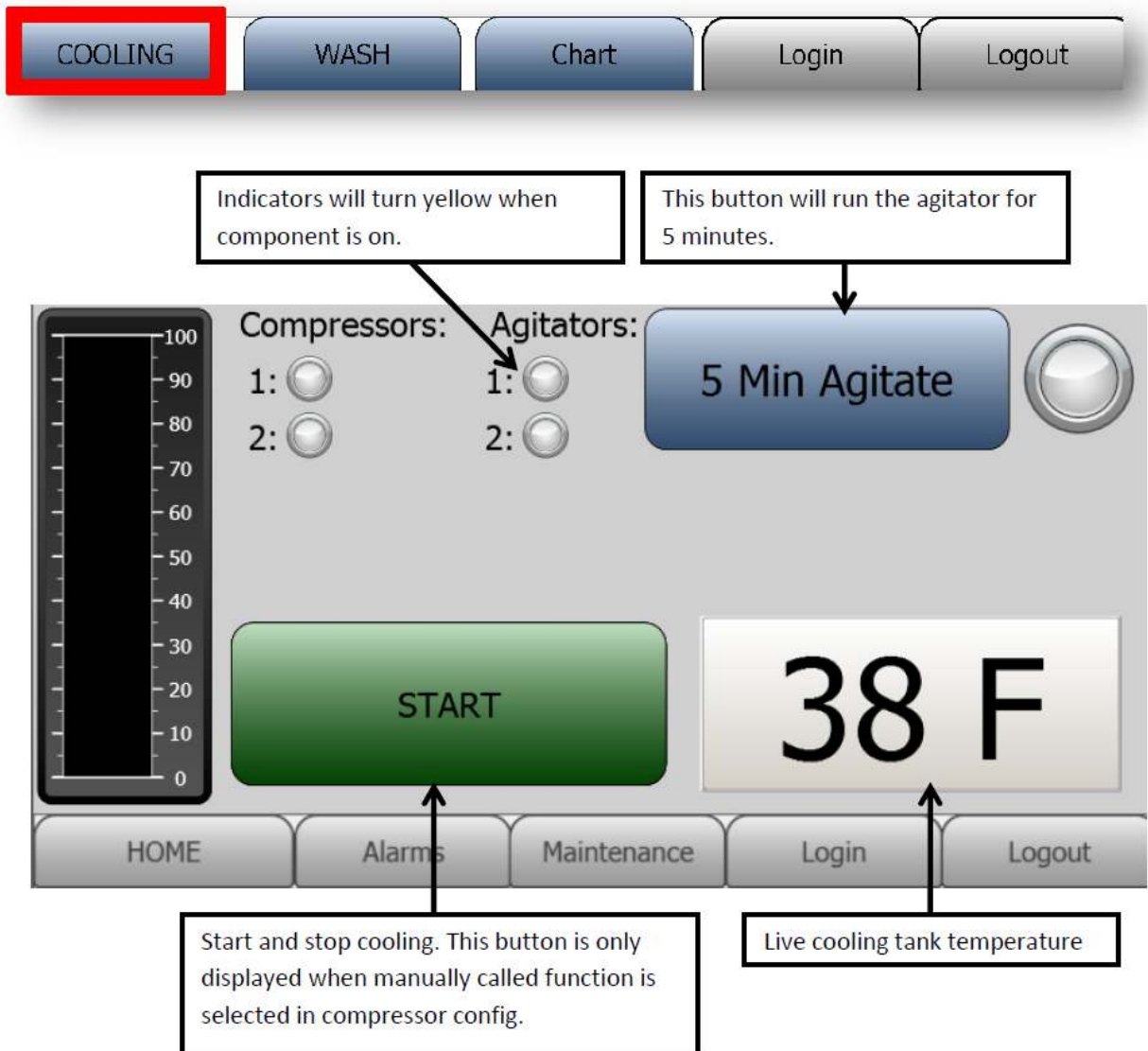
Alarms

Maintenance

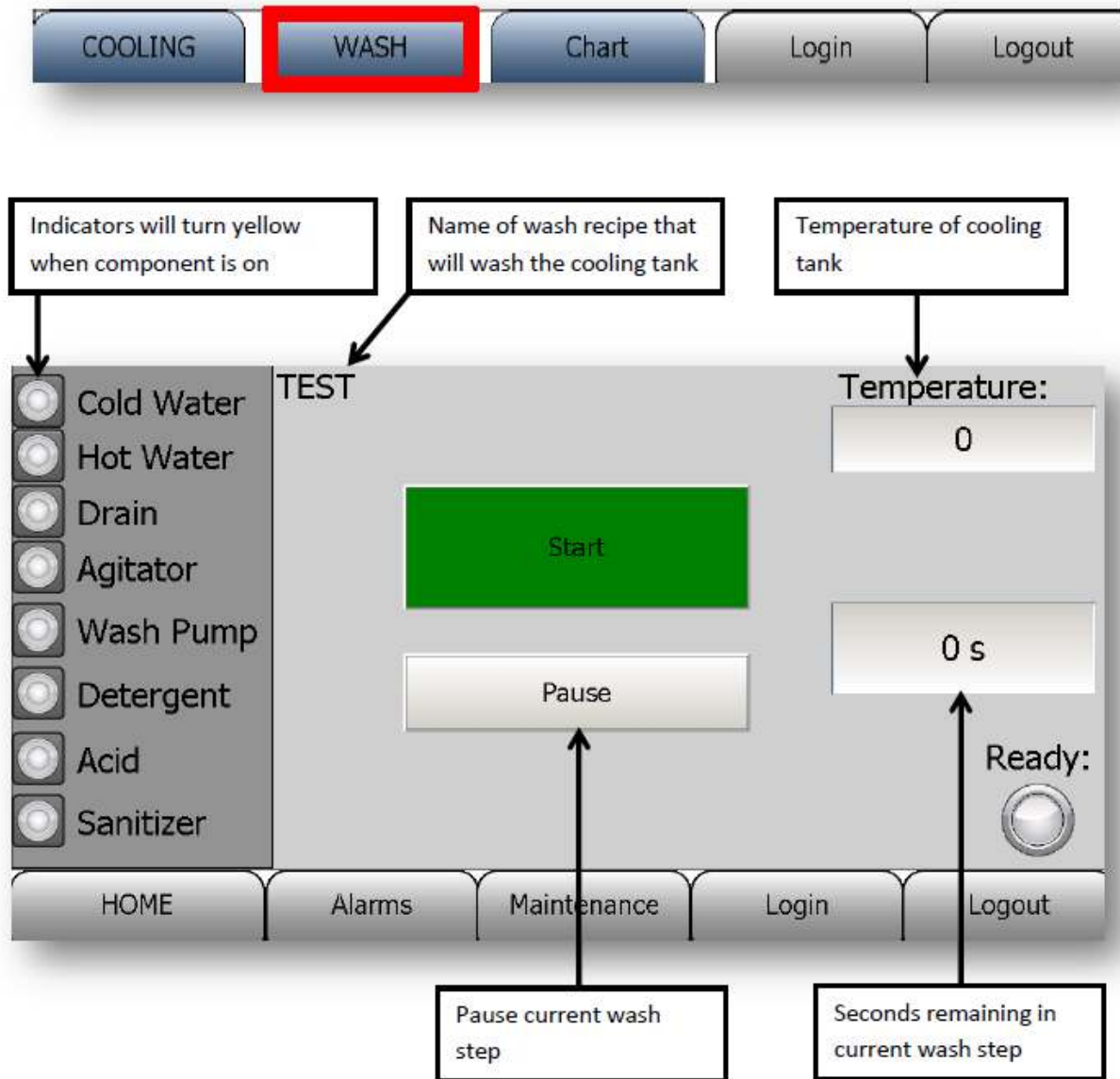
Login

Logout

## 4. Cooling Page

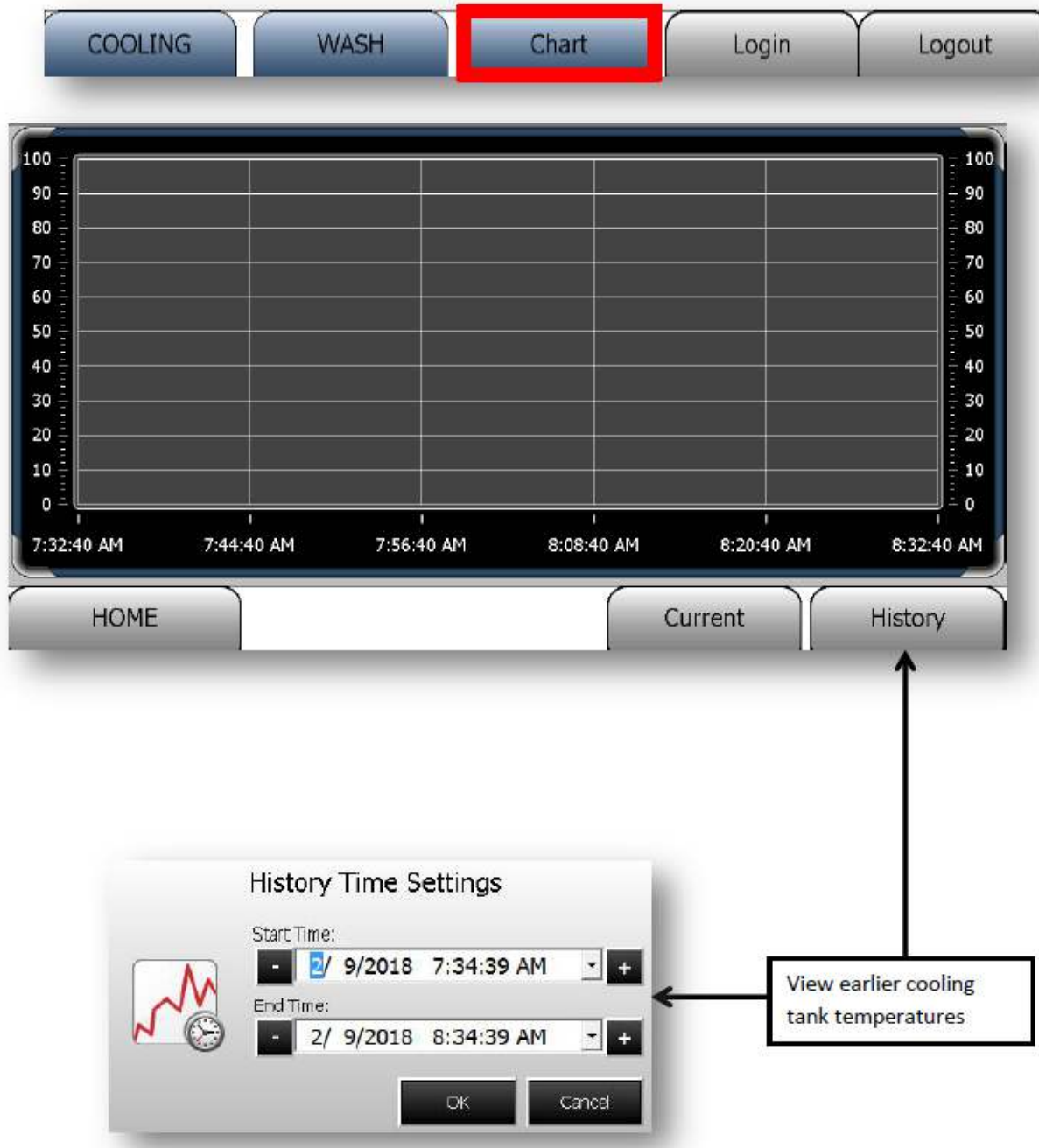


## 5. Wash Page



## 6. Chart

Displays cooling tank temperature



|                                       |                                       |               |         |         |            |           |          |          |
|---------------------------------------|---------------------------------------|---------------|---------|---------|------------|-----------|----------|----------|
| 750-0430                              | 750-0530                              | 750-450       | 750-492 | 750-492 | 750-513    | 750-513   | 750-513  | 750-513  |
| DI                                    | DO                                    | RTD           | AI      | AI      | DO Relay   | DO Relay  | DO Relay | DO Relay |
| 0 Water Flow                          | Compressor 1                          | Incoming Temp |         |         | Cold Water | Drain     | Chem 1   | Chem 3   |
| 1 Chem 1 Flow                         | Compressor 2                          | Product Temp  |         |         | Hot Water  | Wash Pump | Chem 2   |          |
| 2 Chem 2 Flow                         | Compressor 3                          |               |         |         |            |           |          |          |
| 3 Chem 3 Flow                         | Compressor 4                          |               |         |         |            |           |          |          |
| 4 VFD/Transfer/RobotCall              | Compressor 5                          |               |         |         |            |           |          |          |
| 5 Cooling Allowed (FOR VFD AND ROBOT) | Compressor 6/washer is washing signal |               |         |         |            |           |          |          |
| 6 Signal to allow wash to be started  | Agitator                              |               |         |         |            |           |          |          |