System Overview

The basic principle of the system is to pump chilled water through the immersion coil when the temperature of the fermenting beer is greater than the controller's set-point or conversely activate a low wattage cone-heater if the temperature falls below the set-point.

In a cooling mode, the system is designed to use chilled ice water from a common cooler. In this configuration, the submersible pump will be placed in the bottom of the cooler. The FTSs is intended to be a low pressure closed loop system. Water pumped from the cooler is returned to the cooler to be used again. Under normal operation, you do not need to have hose clamps on the water transport tubing. However, if you have any concerns of pressure buildup due to your unique setup, you should install hose-clamps at all connections. If your setup requires more distance from the Fermenter to the Cooler, you can purchase common vinyl tubing at most hardware stores. The pump is capable of lifting the water up to 10 feet. Pumping beyond 10 feet will negatively affect efficiency.

In a heating mode, the controller will activate the low wattage heater, which will in-turn begin to slowly raise the temperature of the liquid volume starting at the fermenter's cone. From there, convection will foster the newly introduced heat to radiate up to the remaining liquid volume not in direct contact with the cone. This key characteristic insures that hot-spots don't form within the fermenter.

Notes on Efficiency

The efficiency of your system depends on many variables. Ideally, you would have the fermenter in an area where the temperatures are relatively moderate.

Since the system contains both heating and cooling, the controller will need to be properly setup to avoid over cycling. Cycling is where the system runs the cooling or heating cycle long enough to over-shoot the set point and past the threshold where it causes the opposite function to activate too quickly.

To avoid over cycling, we recommend you set the "delay" on your controller to at least 5 minutes. This will allow sufficient time for the fermenter's liquid temperature to stabilize and ultimately avoid over cycling.

Proper setup will significantly extend the life of your chill water ice. Speaking of chiller water ice, ONLY use block ice or frozen liquid filled plastic jugs or containers. Cubed ice is very inefficient. You should also avoid using your FTSs to bring freshly brewed wort from a high temp to pitching temperatures. Besides leaving all of the cold break in your fermenter, it will consume much of your cooling capacity and require you to replenish the ice early in the process.

Before You Brew:
System Assembly

- Think about where you want to locate your system, where you will place the controller, and where you will place your chill water source (whether that is an ice chest, a chilled corny keg in a cooler, a glycol system, etc.)
- Start by removing your fermenter's fittings, lid, and neoprene jacket if it is already installed, and then place the fermenter upside down on a surface that won't mar the upper rim of the body. This will make it easier to insure the heater is orientated correctly on the cone while you reinstall the neoprene jacket.
- Place the low-wattage heater onto the cone so that it doesn't interfere with the welded fittings, and maximizes surface area contact with the fermenter body. Use a zip-tie to hold the heater's shape until the neoprene insulating jacket is reinstalled over the fermenter. The neoprene jacket will insure that the heater is held tightly to the cone to maximize efficiency.
- Extend the wire from the low-wattage cone heater out of the bottom of the neoprene jacket.
- Next, install the immersion chiller coil and thermowell as shown. Take note that there are extra o-rings supplied, but only one o-ring is required on the wort side. (Inside of the fermenter).

Labels: O-Ring (Inside Only), Chill Coil, O-Ring (Inside Only), Thermowell Temp Sensor, Sample Port O-Ring (Outside Only), Heater Pad, Heater Cable, Pump Cable, Chill H2O In, Return H2O, Cooler with Chill Water
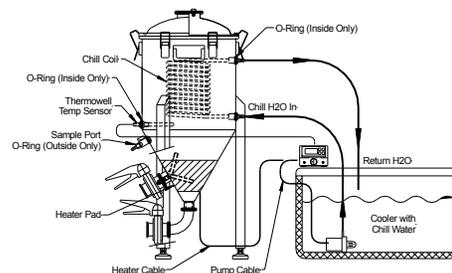
- Divide the length of vinyl tubing into two equal lengths. Connect one end of one tube to the immersion pump outlet. This will be the small pipe connection on the pump. Connect the other end to the Immersion Chiller and then back into the cooler.
- Place the Silicone Pump Intake Cover over the intake port of the Immersion Pump.
- If your cooler is dedicated to the FTSs system, drill holes for the chill water tubes and place the tubes through the holes with the pump located inside the cooler.
- Place the Digital Controller's temperature sensor into the fermenter's Thermowell. Be sure the sensor is fully inserted into the Thermowell.
- Plug in the pump's power cable, the heater's power cable and finally the system's power supply as marked on the digital controller.

After You Brew:
Installing the FTSs System

- Sanitize your fermenter as usual.
- Fill your fermenter with cooled wort as normal.
- Place the sanitized FTSs lid onto your Brew Bucket or Chronical fermenter.
- Install a sanitized airlock or blow-off tube as usual.
- Connect the Chill Water tubes to Chiller Coil and secure with zip ties or hose clamps.
- Insert the Temperature Sensor into the Thermowell.
- Be sure the probe is fully inserted into the end of the Thermowell. (The excess wire on the temp sensor can be "pushed" into the body of the controller if desired) This is important to get accurate temp readings.
- Plug the Pump Connector into the connector labeled "PUMP"
- Plug the Heater Connector into the connector labeled "HEATER"
- Plug the Power Supply Connector into the side labeled "12VDC"

Advanced Controller Settings

There are a number of advanced settings that can be changed on the controller. In general, you will not need to make any changes. But here they are, if you want to see what's possible.

System Menu Settings

Press SET key and hold on for 3 seconds to enter the advanced setting, press the ▲ or ▼ key to select the adjustment menu, press SET key once to enter the appropriate parameter settings, press ▲ or ▼ to adjust the parameters needed to be modified. After being adjusted, press the RST key to exit, or exit as the system delay for 5 seconds.

Menu Code Statement

D Hysteresis
LS The minimum set limit
HS The maximum set limit
CA Temperature calibration
PT Delay time Minutes
AH High temperature alarm settings
AL low temperature alarm settings

Hysteresis Function

Hysteresis setting controls the offset between turning a function turning on/off, when the Set-point is reached.

When the "D" code is shown, press the "SET" key to display the hysteresis set value, press "▲" Or "▼"key to adjust the parameters.

Factory Default = 1 Degree

Temperature Calibration Function

Use the temperature calibration function, correct for temperature sensor errors.

When the "CA" code is shown, press the "SET" key to display the temperature calibration settings, press "▲" Or "▼" key to adjust the parameters.

Factory Default = 0 Degree

Delay/Protection Function

Use the Delay function to force the unit to pause, before it will start after a set point is reached.

When the "PT" code is shown, press the "SET" key to display the delay setting value, then press the "▲" or "▼" key to adjust the parameters.

Factory Default = 5 Minutes

Upper and Lower Limit Functions

The setting of HS and LS limit the set range of control temperature point , for example: HS is set to +15, LS is set to -10, the control temperature can only be adjusted between -10 and +15.

When the "HS" or "LS" code is shown, press the "SET" key to display the upper or lower limit set value, then press "▲" or "▼" key to adjust the parameters. HS means upper limit. LS means lower limit.

Factory Default = +999 Degrees for HS
Factory Default = -999 Degrees for LS

High/Low Temperature Alarm

If the measured temperature is beyond the Set Point, an alarm will sound. To silence the alarm press any button.

High/Low Temp Alarm Settings

When the "AH" or "LH" code is shown, press the "SET" key to display the high-temperature alarm settings, press "▲ "or" ▼ "key to adjust the parameters.

Factory Default = +999 Degrees for AH
Factory Default = -999 Degrees for AL

Degrees F or C Function

The controller can be set to operate in either Degrees F or C.

Press and hold the "SET" and "UP" keys at the same time for 3 seconds to enter this menu.

When "F/C" code is shown, press the "SET" key to display the upper or lower limit set value, then press "▲" or "▼" key to adjust the parameters.

Factory Default = F

Conditioning Step Function

The controller can be set to first see a conditioning step, before the controller function starts.

Press and hold the "SET" and "UP" keys at the same time for 3 seconds to enter this menu.

When "ST" code is shown, press the "SET" key to display the upper or lower limit set value, then press "▲" or "▼" key to adjust the parameters. Parameter 01 = 0.1 Deg and 10 = 1.0 Deg

Factory Default = 01

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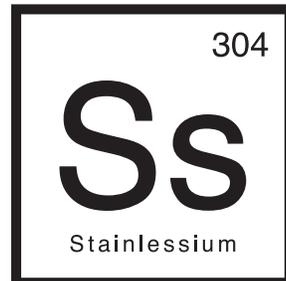
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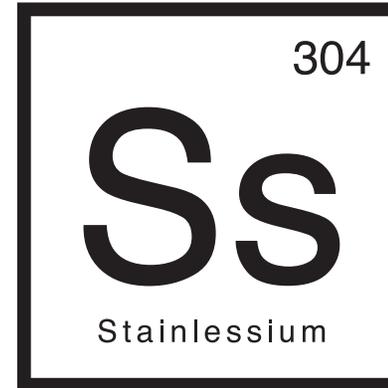
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Thank you for your purchase of Ss Brewtech's Fermentation Temperature Stabilization System aka "FTSs". We appreciate your business and your passion for making great beer!

The instructions Included will guide you through the setup and operation of your system.