BrewBuilt™

# LOW RIDER

## Digital Electric BrewSculpture™ Manual

**⚠ SAFETY WARNING ⚠**

Electric BrewSculptures™ are designed to be used with a GFCI. Hot water and high current are dangerous and can lead to serious injury or death. Please practice safe brewing at all times.

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## WHAT'S INCLUDED

So you've just received your Single-Tier BrewSculpture™, and like a kid during their birthday, you've torn through the wrapping and have all of your new toys lying in front of you. Once you've gotten through it all, take stock of the items listed below:

**1 x** Stainless Steel Single-Tier Stand

**3 x** Stainless Steel BrewBuilt™ Kettles

**1 x** False Bottom Screen For Mash Tun

**1 x** Stainless Steel Sparge Arm Assembly

**1 x** Copper Heat Exchanger

**2 x** March Pump Assemblies

**1 x** Whirlpool Assembly for Boil Kettle

**6 x** Tubing Setups

**1 x** Wheelbarrow Arm (Under Boil Kettle)

**2 x** Wheels

**2 x** SlingBlade™ Electric Elements (**4 x** 1 BBL System Only)

**1 x** Control Panel

**1 x** Bottom Box for Power Distribution (L6-30 Connections)

**2 x** Hot Liquor Tank/Boil Kettle Float Switch/Temp Probe Assemblies

**1 x** Sparge Arm Float Switch/Temp Probe Assembly

# ASSEMBLY REQUIREMENTS

**IMPORTANT NOTE:** Your Digital BrewSculpture™ does not include an extension cord for the control panel because we do not know how far your BrewSculpture™ will be from an outlet. Please purchase a standard three-prong extension cord of the appropriate length to power your digital BrewSculpture™ separately.

Most items should have come assembled; however some of them may require adjusting or assembling. If any of these items appear to be missing, please notify our customer service team.

## TOOLS NEEDED FOR ASSEMBLING & MAINTENANCE

- Flat Head Screwdriver (Hose Clamps)
- Phillips Head Screwdriver (Pump Head)
- Crescent Wrench (Quick Disconnects, Ball Valves)
- Plumber's / Teflon Tape (Any Male Pipe Threads)
- Line Brush (Tubing Assemblies)
- White Scrub Pads (Cleaning Kettles and Frame)
- Extension Cord (Needed For Control Panel)
- 15 AMP 115V GFCI protected outlet for the pumps & control panel.
- 30 AMP 220V GFCI protected outlets.
- 30 AMP 220V Extension Cord may be needed if your power is more than 5' from the bottom box.

# SETTING UP

With all of the included items and tools in front of you, you're ready to setup your BrewSculpture. Let's start at the right of the BrewSculpture, and work our way to the left…

The far right kettle location is going to be where we position the hot liquor tank. The hot liquor tank is the vessel that will heat and store your sparge water, which is used to rinse all of the sugars from the grains in the mash tun and into the boil kettle after you've finished mashing. This kettle will be placed on the right side, and will need five items installed on it. These are: A ball valve and quick disconnect on the bottom coupler, a stainless steel maximizer on the inside of that bottom coupler, a SlingBlade™ Electric Element, Float Switch/Temperature Probe Assembly and last, but not least, your 3" Face x 2" Probe thermometer. Install the SlingBlade™ into the TC port. You'll also need to install the heat exchanger in the hot liquor tank prior to re-circulating your mash and sparging.

The middle kettle location is where you'll position your mash tun. Your mash tun is where all of the grains will be during the mashing and sparging process, and will receive four things during setup: A ball valve and quick disconnect combination, a 3" Face x 6" Probe thermometer (the probe will protrude into the grain bed), the perforated false bottom screen, and a stainless steel maximizer. First, install the ball valve after wrapping plumber's tape on the bottom coupler. With this in place, install the supplied silicone seal around the outside of the mash screen. Then, take the perforated false bottom screen, and insert it into the kettle with the single-handle side facing upward. It is important that this rests flat on the bottom, with minimal gapping between the screen and the sides of the kettle. Next, screw the quick disconnect into the inside of the bottom coupler and attach the stainless maximizer with the bend in the tube aimed down toward the bottom of the kettle. Once this is in place, we're ready to screw the thermometer into the top coupler using 3–4 wraps of plumber's tape. We'll attach the stainless steel sparge arm assembly to the side of the mash tun after we've doughed-in.

The left kettle location is going to be where your boil kettle goes. With this kettle in front of you, we'll want to install four things: Two ball valves and quick disconnects, the 3" Face x 2" Probe thermometer, and the stainless steel whirlpool/maximizer. One ball valve will thread on to the bottom coupler, the thermometer will thread into the top coupler, and the whirlpool/maximizer attach to the quick disconnect threaded into the inside of the bottom coupler's threads, inside the kettle (no plumbers tape required - if it leaks it will just be leaking inside the kettle). The second ball valve will install on your whirlpool coupler.

Your pump assemblies should come with mounting brackets already mounted to the frame. To install your pumps, simply slide the pumps' mounting plate into the BrewSculpture™ mounted bracket. Your pump should be installed so the "inlet" faces down towards the ground and the pump "outlet" faces up. **NOTE**: The pump outlet will be labeled on your pump head with the word "out". The pumps will need to be plugged into the power box on the control panel, rather than into the wall. Make sure the "Pump" indicator on the control panel is **NOT** on prior to plugging in, to avoid running the pump dry!

The wheels and control panel should come pre-mounted. If these are not included or installed, please call our customer service department. You will need to connect the cables from the kettles to the control panel. These are color coded for easy attachment.

Hang the bottom box at a convenient place on the top rail of the stand. Place close to your power outlet if possible. Connect the 8 pin connector from the bottom box to the control panel. Plug the two female L6-30P plugs into your elements. The plug on the right goes to the HLT and the plug on the left goes to the Boil Kettle. Plug the male plug into your GFCI.

# BREW DAY

It's important to have the following items ready at the start of your brew day:

**WORT CHILLER**: Used at the end of your boil to quickly cool your wort to yeast pitching temperatures. (The included Convoluted Heat Exchanger can be used as an immersion chiller.)

**INGREDIENTS:** Sounds like a no-brainer, but it's best to ensure all grains / hops are there prior to starting!

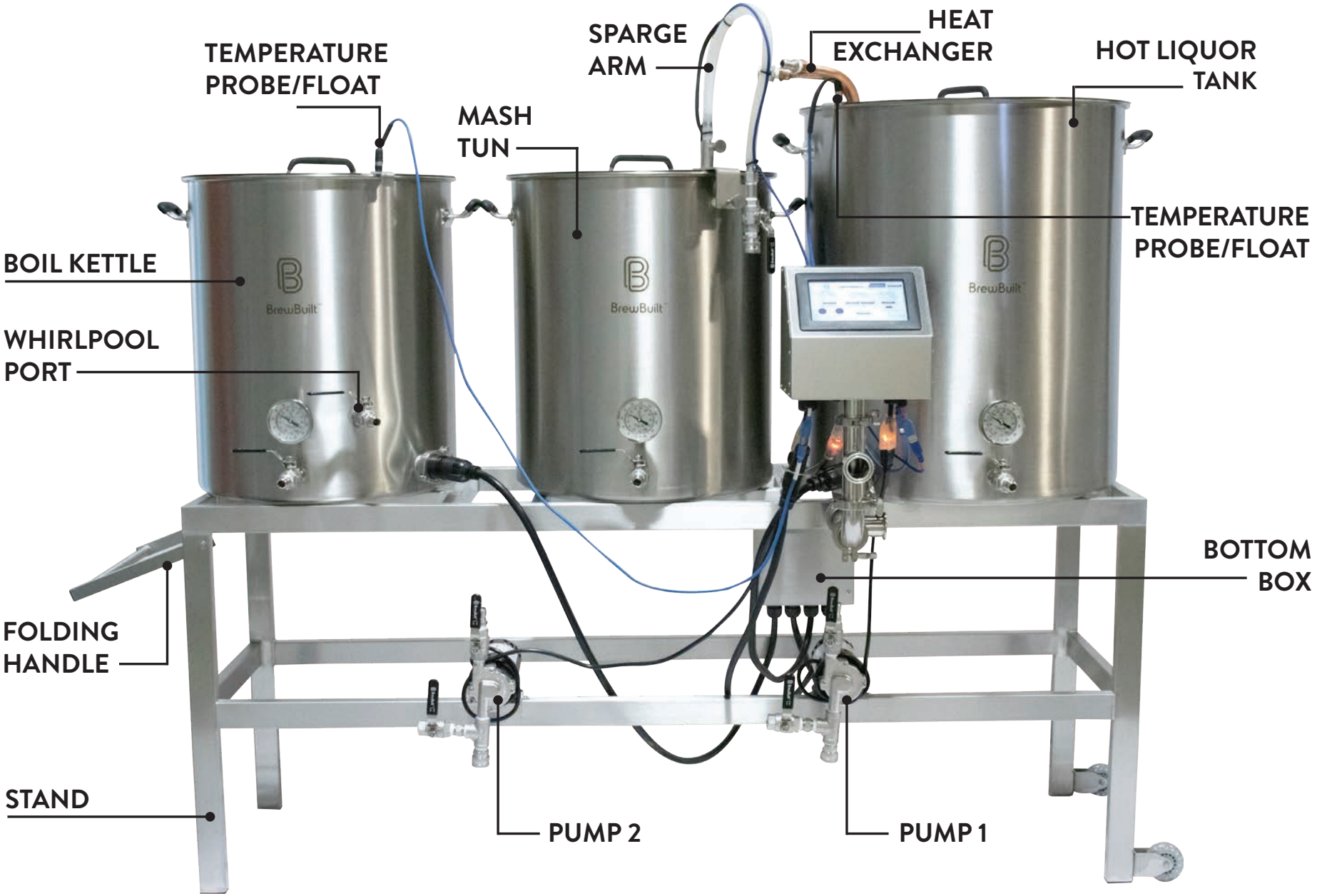
**FERMENTERS:** It's best to have your fermenter or fermenters cleaned and ready to sanitize before you brew, but if not, have them around so they can be cleaned during the brew.

**OTHER TOOLS:** Spoon, mash paddle, refractometer, note pad, etc.

So you've gotten your whole BrewSculpture™ setup, and can't wait to start brewing! We'll go through the process of doing so, and will try to help keep your brew day as quick, easy, and efficient as possible. We would like to start by recommending that once all of your kettles have been setup, you may want to do a water run starting with 4–5 gallons in your mash tun and hot liquor tanks. Re-circulate the water in the mash tun, then move the tubing around to mimic a sparge into your boil kettle. This is not only done to remove any dust or stainless shavings from manufacturing, but is also recommended so that you understand how everything connects and flows prior to brewing with wort. Another thing to look for while performing the water run is any leaky threads or tubing – better to leak water than wort!

At this point, all of your kettles should be setup, and now you probably have a couple pieces of equipment sitting around. These would be your pieces of tubing with quick disconnects, the copper heat exchanger, and your stainless steel sparge arm. The stainless sparge arm will install on the mash tun's kettle wall, and the height is adjustable. Make sure to plug it into the control panel.

# BREWSCULPTURE ANATOMY



With all of your kettles setup, all other items in front of you, and a craving to brew like you've never had before, let's get started! There are different grist ratios that work well for different brewers and breweries. If you're using long tubing lines, you may want to start with more water (since there will be some liquid that is not in contact with the grains while it recirculates through your tubing). With our Single-Tier BrewSculpture™, we recommend starting with a 1.3–1.4 qts water to lbs of grist ratio, and moving up or down from there. An example of how to find out the amount of water you'll need (or how to get your grist ratio) is below. Let's say your recipe for 10 gallons will include 20 lbs of grain. In order to find out how much water (in gallons) you'll need in the mash tun, we'll use this equation:

1.3 (qts) x 20 (lbs) = 26 qts / 4 (4 qts in a gallon) = 6.5 (gallons)

We'll want 6.5 gallons in contact with our 20 lbs of grain to achieve a 1.3:1 grist ratio. If we were to fill our kettle with 6.5 gallons though, we wouldn't have it all in contact with the grains. There will be what we call "foundation water" under the false bottom: Water that is not in contact with grain. We'll need to account for that in our equation, and add that volume of foundation water to our 6.5 gallons. In our 15 gallon kettles, we'll have approximately 2 gallons underneath the false bottom. Therefore, we'll want to measure out 8.5 gallons to achieve a 1.3 grist ratio. In our 22 gallon kettles, we'll have approximately 2.25 gallons underneath the false bottom, and in the 50 gallon kettles we have about 2.5 gallons of foundation water. We will transfer this much preheated water from the HLT using pump #1.

Once we have our strike water in our mash tun, we can turn on the control panel and set the HLT temperature. We'll want to heat it up to a temperature above what you're actually hoping to mash at, as that temperature will drop once the room temperature grain is introduced and stirred in. This temperature drop will be dependent on how much grain will be used, how much water you have in the mash tun, and what the ambient temperature is where you're brewing. Due to this, it's hard to recommend how far above your mash temperature you'll want to heat your water to prior to doughing-in. A wide, general range would be between 6–12 degrees above what you're hoping to mash at. Example: If you'd like to mash at 150°F, dough-in at 156°F–162°F.

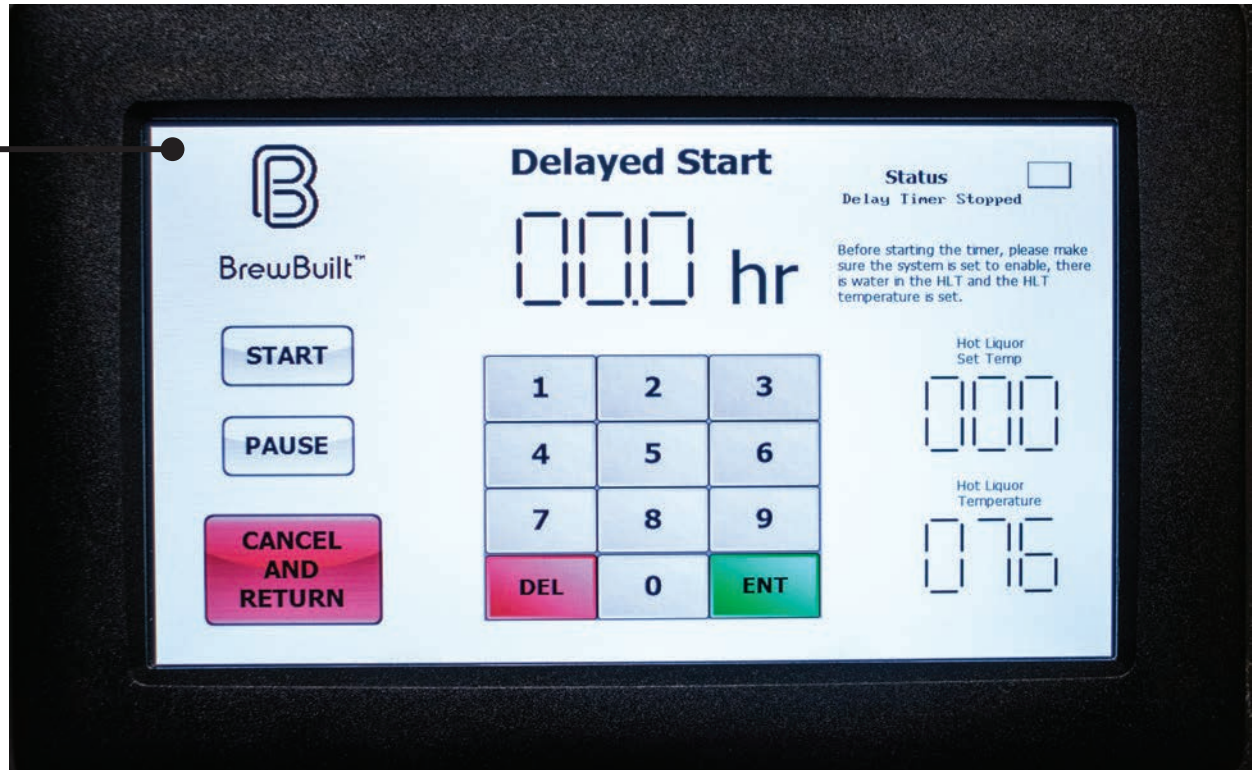
Your sculpture has the option of preheating your water for you. Once you are comfortable with your installation you can program it to start when you are not there. We strongly advise that you not leave the system unattended on the first brew to ensure everything is installed correctly.

## TO ACCESS THE DELAYED START SCREEN

- Fill your HLT with water and adjust the chemistry
- Make sure your system is set to Enabled
- Select HLT Setpoint, Mash temp +10°F is a good starting place
- Help>Delayed Start
- Press the delayed start button
- Set your delayed time in 1/10th of an hour increments. For this test .2hr (12 min) is a good start
- Press Start. The Delayed Start indicator will start blinking indicating that the timer is running

After the timer stops it will turn on the electric element and start heating the water. It will take about 3.5 hr for the water to heat. If the element does not turn on, make sure the float is installed and indicates UP, the HLT is set to Auto, and the System is set to Enabled.

## DELAYED START SCREEN



Before we mash in we will set up the mash schedule into the Mash Screen.

- Press Mash Mode
- Enter the time for the first step
- Press Enter
- Enter the temperature for the first step
- Press Enter
- Repeat for each step

**NOTE:* *The system works best when the HLT is not warmer than 30°F above the mash set-point*

Start pouring the grain into the mash tun, distributing it as evenly as possible and stirring constantly with a mash paddle. This is done to help prevent dough balls and clots that will reduce efficiency, and possibly contribute to a stuck sparge. With all of the grain inside the mash tun, double check the temperature to make sure it's where you want it, and attach the stainless steel sparge assembly. At this point in time we can connect the appropriate tubing for recirculation. Set up the system for recirculation and open the valves.

From the mash tun's ball valve, we'll run the longest length of tubing down to the March Pump inlet. Run one of the other tubing lengths with (2) quick disconnect fittings from the pump outlet to the heat exchanger inlet (left female QD), and the other one of those tubing lengths from the outlet (right male QD) of the heat exchanger to the inlet of your sparge arm assembly. You're now ready to re-circulate your mash! Meanwhile, the hot liquor tank will probably be getting close to our target temperature soon, so keep an eye on that and turn the element off once we've reached that temperature.

When you are finished press Start on the Mash Screen. This will use the heat exchanger and the pump to control the mash steps. The timer will not start till the current mash step temperature is achieved.

## FLOW OF TUBING FOR RE-CIRCULATING MASH

The conversion from mashing to sparging is rather simple. Close the mash tun's ball valve, as well as the ball valve on the March Pump and sparge arm. Move the tubing running from the mash tun's ball valve to the hot liquor tank ball valve. Take one of the tubing lengths with (2) quick disconnects and connect the Mash Tun ball valve to the inlet of the left side pump. Take another tubing length with (2) quick disconnects and connect the outlet of the left pump to the boil kettle ball valve. With the hot liquor temperature at 170°F (or slightly higher), open the hot liquor tank and March Pump ball valves all the way. Now crack the sparge arm assembly's ball valve and turn on the pump. The liquid level should now be dropping in the hot liquor tank, while rising in the mash tun. Once 2–3" has gathered on top of the grain bed, open the boil kettle ball valve, and crack the mash tun ball valve – now we're sparging!

Press Sparge on the Mash Screen to switch to the Sparge screen and start the timer.

Make sure that during the sparge you do not over fill the mash tun, while also not running the grain bed dry. This will take a little fine tuning of the mash tun ball valve. The sparge process should take between 45–75 minutes, so if it seems like your hot liquor tank will be dry after 20 minutes, it's best to close the mash tun ball valve a little more to slow down the flow. Finding that perfect flow rate may take a few batches, so make note on how far open you have the valve, and how long it took to sparge at that position.

## FLOW OF TUBING FOR SPARGING

If you set the power slider on the Sparge Screen to 50% it will keep your HLT warm while preheating the boil. It will not turn on the boil element till the float switch reads UP and it will kill the HLT element when the HLT float reads DN.

Make sure to close the ball valves of your hot liquor tank, mash tun, and boil kettle once the desired volume has been collected in your boil kettle.

## RUNNING BOIL

At the very beginning of the boil, you'll most likely experience the "hot break". This is identifiable by a layer of foam forming on the top of your wort, and is a good thing unless it spills all over your BrewSculpture™ and kettle! To prevent the hot break from a "boil-over", either reduce the heat or spray the foam with water out of a spray bottle. Blowing on the foam can help a little also, but only if the heat has been reduced first. You could try using foam control, or "FermCapS" (our part number AD290). Just add a couple of drops when this foam starts to form, and this should help reduce it. After getting through the hot break, start your timer for the length of the boil you'll be doing. 60, 75, and 90 minutes are generally the most common boil times, but depending on your brewing style and recipe, other times may be appropriate also. Through the boil, you'll be adding your hops, adjuncts, and other ingredients as the recipe calls for them. **NOTE:** Whole leaf hops will need to be put into a mesh bag, as they will clog the ball valve if they're not contained. While your wort is boiling, you can save time by connecting the long piece of tubing to the mash tun ball valve, and open it allowing any extra liquid drain into a bucket/drain.

With about 15 minutes left in the boil, we'll want to start the whirlpool re-circulation. While the whirlpool will be ineffective until we turn the flame off and kill the boil, re-circulating through your tubing, pump, and potentially your plate or counterflow wort chiller will help ensure that any possible wild yeast or bacteria that happened to be there is killed by the boiling temperature of the wort.

## FLOW OF TUBING FOR WHIRLPOOL RE-CIRCULATION

At the end of the boil, we'll turn the element off and allow the whirlpool to run for 1–2 minutes. After the 1–2 minutes is up, you can turn the pump off, and allow the whirlpool to settle. The reason we want to create this whirlpool is to accumulate all of the hop sediment, grain particles that made it through during sparge, extra proteins, etc. in the center of the boil kettle. Allow the whirlpool to settle in the center of the kettle for about 15 minutes (you can crack the boil kettle lid open to see if it's still swirling around – if not then you're ready to transfer). If you're using an immersion chiller, you'll want to wait until your wort is at the desired temperature prior to transferring. If you're using a plate or counterflow chiller, you'll be ready to transfer through the chiller once the whirlpool has settled. To transfer into your fermenter(s), you'll want to close the bottom coupler ball valve, disconnect the quick disconnect from the pump, and run that length of tubing to your fermenter(s). **NOTE:** Transferring at a slightly slower rate will help ensure that you do not create too much suction on the inside of your boil kettle, which will help keep the hop sediment to remain in the center of the boil kettle.

We highly recommend taking good notes to help perfect your brewing style and recipes.

**Example of Useful Notes:**

- HLT Temp:
- Volume of Water Transferred to Mash:
- Weight of Grist:
- Mash Temp:
- Mash pH:
- Mash Length:
- Recirculation Length:
- Sparge Length:
- Collected Boil Volume:
- Boil Length:
- Wort Volume:
- Evaporation Percentage = (Collected Volume-Wort Volume)/ Wort Volume

# HOW THE CONTROL PANEL WORKS

- The Hot Liquor Tank float and temperature probe will enable the HLT element to be powered. When the cooler sweet wort runs through the heat exchanger, this will lower your hot liquor water temperature.
- When this water temperature drops below your set point, the control panel will tell the bottom box to turn on the element until the set point is reached again, at which point the control panel will tell the bottom box to turn the element off.
- The Mash Temperature Probe will be controlling the pump during your mash process. When the temperature of your mash falls below the set point on the mash program it will turn the pump on. This will begin pumping your mash through the heat exchanger, gradually bringing it back to the proper temperature.
- When in Mash or Sparge Mode, the Pump buttons on any screen can override the pumps in an emergency; such as a leaking hose connection.
- While sparging, the pump will now turn on until the float switch has risen to the top, at which point it will shut the pump off. As liquid drains from your mash tun into the boil kettle, the float switch will lower, eventually turning the pump back on, restarting the cycle. The software has a delay to keep the pump from cycling too quickly.
- The hot liquor tank float switch is an extra safety precaution. Once the liquid level of the hot liquor tank goes below the float switch, the element in the hot liquor tank will not turn on, preventing premature element failure.
- When the control panel calls to both the HLT element and the Boil Kettle at the same time the Boil Intensity Slider controls the power to both kettles. If the Slider is set to 50% (as an example) then the HLT will get 3 seconds of heat, if it's below temp, the boil kettle will get 3 seconds of heat. This allows the HLT temp to be maintained during sparging and using the extra power to heat the boil kettle in order to shorten the brew day.

# CLEANING & SANITIZING

Cleaning is one of the last things that anyone wants to do after finishing a brew day, but anybody that's put it off before will tell you, it's much easier to do right after the brew rather than waiting until your next brew! Please make sure to remove and unplug all of the temperature and float switches at this point in time.

Generally speaking, the hot liquor tank will not need to be cleaned, but may need to be dried out/wiped down, as nothing but water is ever held in this kettle. Removing and cleaning the maximizer, ball valve assembly, sparge ring, and thermometer is highly recommended after every brew.

The mash tun will need to be emptied, and having a scoop, mash paddle, or spoon will allow you to scoop the grain out of the mash tun until it is light enough to dump out. This grain will probably still be hot, so be careful not to dump it onto yourself or anyone else. Once most of the grain has been dumped, remove the thermometer and false bottom, and clean these off (do not submerge the thermometer face into water). Remove the maximizer, but leave the ball valve installed. Fill the kettle with 2–3 gallons of water and scrub any sugars or grains off the kettle walls with a white scrub pad (our part number CE27) or wash cloth and StarSan. Once the kettle looks clean and there are no more sugar or grain spots, you can empty all water and remove the ball valve assembly. All of the subparts of your kettles (other than the thermometers) should be placed in a bucket of PBW water and allowed to soak for 10–15 minutes. PBW will help to break down any residual sugar or wort on these parts, and will make them easier to un-thread and keep clean.

Your boil kettle will most likely have some foam residue, hop material, and trub adhering to the walls and bottom. There will also most likely be some liquid left over from the boil, so we recommend dumping that out, then spraying and wiping the kettle down with a hose and scrub pad until all visual dirt, hops, and residual sugar have been removed. After the kettle appears clean, remove the ball valve assembly, thermometer, and whirlpool maximizer from inside the kettle. Again, other than the thermometer, these should be placed in your PBW bucket and allowed to soak.

Cleaning and drying your kettles and frame shouldn't be too difficult. Something to keep in mind is that cleaning your equipment right away will make it easier, and will help keep your BrewSculpture™ looking newer for longer. After your brew day, clean up your equipment as soon as possible! To allow your kettles to completely drain/dry out, you can keep them stored upside down on the stand with their lids resting on top (the bottom of the kettle). Always try to store your BrewSculpture™ in the best conditions possible. Every 5–6 months it is probably a good idea to check your thermometers' calibrations. They most likely have remained accurate, but double checking is easy and never hurts. To calibrate, you'll need to have a 1/16" hex key. This will go into the hex nut on the side of the thermometer, and will adjust the face of the thermometer. While the probe is in a bath of ice water, check to make sure it's reading 32–33°F. If not, adjust the hex nut until it is. Then, place the probe in boiling water and make sure the thermometer is reading 211–212°F **NOTE**: Boiling temperature is variable by elevation. Please calibrate the thermometer accurately to your personal elevation's boiling temperature. Outside in a snow storm or flood is not an ideal storage spot – a garage is!

# FAQ

**Question:** I connected all of the tubing as suggested in this manual, but even with all of the ball valves completely open, I can't get the pump to move the wort! How should I proceed?

**Answer:** The pump is not great at moving air, but is excellent at moving liquid! The pump assembly will have a "tee" fitting on it, with a ball valve on that tee. Try priming the lines by opening and re-closing this ball valve (with a bucket underneath it…). This will get the pump head full of liquid hopefully, and the air in the rest of the lines should get pushed out by this liquid. If this doesn't completely solve the problem, try closing the pump's outlet ball valve, remove the tubing, and open / close that valve. After you get a steady stream of liquid exiting, re-attach the tubing and turn the pump on. Just remember – the pump pushes, but does not pull. It will not suck liquid from one vessel and move it to another, so always have gravity working in your favor to feed the pump.

**Question:** My BrewSculpture doesn't have a wort chiller – why not?

**Answer:** A wort chiller is an item that many brewers may have prior to owning their BrewSculpture™. We do offer these, and our full line of wort chillers can be viewed at www.morebeer.com.

# TIPS & TRICKS

## SPARGE TIME

If you want to sparge in 60 minutes, and you want to sparge 10 gallons in that time, you'll know that you should be dropping about 1 gallon every 6 minutes.

## WORT CHILLING

You can use the supplied heat exchanger as an immersion wort chiller. Continue to whirlpool while chilling. Once the wort is cooled, turn off the whirlpool and allow to settle.

## BALL VALVES

There is a pocket behind the ball valve that is not rinsed if you rinse full open. If you want to rinse and sanitize it, you must open the valve half way and go both directions. Alternatively, they are easy to disassemble and clean.

## PUMPING FROM THE BOIL KETTLE

To transfer from the boil kettle using the pump, the hose connected to the bottom coupler needs to be switched from the pump outlet to the pump inlet and the hose connected to the offset coupler detached and ran from the pump outlet to the fermenter.

## CALIBRATING YOUR DIGITAL PROBES

There are two methods for calibrating your digital probes depending on how accurate your needs are. We recommend the simple method for 99% of users. Go to Help>System Settings.

### Simple Method:

Place all probe/float assemblies in the same kettle and cover with water for 20 minutes. Press Calibrate. This will set all three probes to the average value of the three probes within .1 °F.

### Advanced Method:

Place all probes in the boil kettle. Fill the kettle half way with ice water and set up to whirlpool. Turn on the pump and wait 15 minutes. Make sure there is still ice at the end of 15 minutes. Press Calibrate. This will set all three probes to 32.0 °F.

## CALIBRATING YOUR THERMOMETER

The boiling point of water changes with altitude. Locate your altitude on the chart below to find your calibration temperature:

| Altitude, ft (m) | Boiling point of water, °F (°C) |
|---|---|
| 0 (0 m) | 212°F (100°C) |
| 500 (150 m) | 211.1°F (99.5°C) |
| 1,000 (305 m) | 210.2°F (99°C) |
| 2,000 (610 m) | 208.4°F (98°C) |
| 5,000 (1524 m) | 203°F (95°C) |
| 6,000 (1829 m) | 201.1°F (94°C) |
| 8,000 (2438 m) | 197.4°F (91.9°C) |
| 10,000 (3048 m) | 193.6°F (89.8°C) |