

# 3.5 BBL Gas Hybrid Brewhouse



## Assembly, Operation, & Maintenance

Congratulations on your purchase, and thank you for selecting the 3.5 BBL Gas Hybrid Brewhouse from Blichmann Engineering™. We are confident that it will provide you years of service and many gallons of outstanding beer.



### IMPORTANT INFORMATION

#### PLEASE READ AND THOROUGHLY UNDERSTAND THIS MANUAL PRIOR TO USE

- WARNING:** Sections labeled “Warning” can lead to serious injury or death if not followed. Please thoroughly read these sections and understand them completely before use. If you do not understand them or have any questions, contact your retailer or Blichmann Engineering ([www.BlichmannEngineering.com](http://www.BlichmannEngineering.com)) before use.
- CAUTION:** Sections labeled “Caution” can lead to equipment damage or unsatisfactory performance of the equipment. Please read these sections thoroughly. If you have any questions, contact your retailer or Blichmann Engineering ([www.BlichmannEngineering.com](http://www.BlichmannEngineering.com)) before use.
- IMPORTANT:** Sections labeled “Important” should specifically be followed to ensure satisfactory results with the product.

**IMPORTANT:** Power demand for the brewhouse is 4.3A at 120V (single phase). Select a main breaker setting for 20% above the appropriate amperage to avoid nuisance tripping or as directed by your local codes.

### What’s In the Box?

| Item Number           | Description                           | Quantity | Item Number  | Description                         | Quantity |
|-----------------------|---------------------------------------|----------|--------------|-------------------------------------|----------|
| BEPS-MLT-3.5BBL       | 3.5 BBL Mash Tun                      | 1        | BE-000868-00 | Clamp Gasket 1.5"                   | 17       |
| BEPS-BK-HLT-3.5BBL    | 3.5 BBL Boil Kettle / Hot Liquor Tank | 2        | BE-000633-00 | 1.5" Tri Clamp                      | 17       |
| BEPS-LIFTSTAND-3.5BBL | Mash Tun Stand                        | 1        | BE-000863-00 | Tri Clamp Elbow 1.5"                | 4        |
|                       | Control Panel - Single Phase          | 1        | BE-001356-00 | 1.5" Multi Position Valve Tri Clamp | 3        |
|                       | Burner Box                            | 2        | BE-001084-00 | CIP Spray Ball                      | 1        |
| BEPS-PUMP-15HP        | 1/5hp Brewery Pump                    | 2        | BE-001186-00 | 1.5" Sanitary Pipe 6"               | 1        |
| BEPS-CHILLER-2.0SQM   | Chiller 3.5 BBL                       | 1        | BE-000630-00 | Cap 1.5" Sanitary                   | 1        |
| BEPS-HoseKit-3.5      | 3.5 Hose Assembly Kit                 | 1        | BE-001132-01 | 3.5 BBL Stand Pipe                  | 1        |
| BE-000957-00          | CIP Spear 1.5" Tri Clamp              | 1        | BE-000866-00 | Clamp Gasket 2.5"                   | 9        |
| BE-000859-00          | Cap 2.5" Sanitary                     | 2        | BE-000861-00 | 2.5" Tri Clamp                      | 9        |

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|                              |   | Pipe Size: |      |      |       |       |       |       |       |
|------------------------------|---|------------|------|------|-------|-------|-------|-------|-------|
|                              |   | 0.75"      |      | 1"   |       | 1.25" |       | 1.5"  |       |
|                              |   | NG         | P    | NG   | P     | NG    | P     | NG    | P     |
| Number of Gas Fired Kettles: | 1 | 60'        | 230' | 160' | 300'+ | 300'+ | 300'+ | 300'+ | 400'+ |
|                              | 2 | 10'        | 65'  | 40'  | 180'  | 190'  | 300'+ | 300'+ | 400'+ |
|                              | 3 | NA         | 30'  | 17'  | 90'   | 85'   | 300'+ | 140'  | 400'+ |

NG: natural Gas P: Propane

Distances based on the number of gas burners running at approximately 100 MBTU each.  
(Standard for 3.5BBL Gas Kettles)

Minimum pressure required at full flow: 6-14" W.C.

## Gas Burner Box

Remove plug and spring. Attach the correct orifice to the spring and install as shown in **Figure 1**.

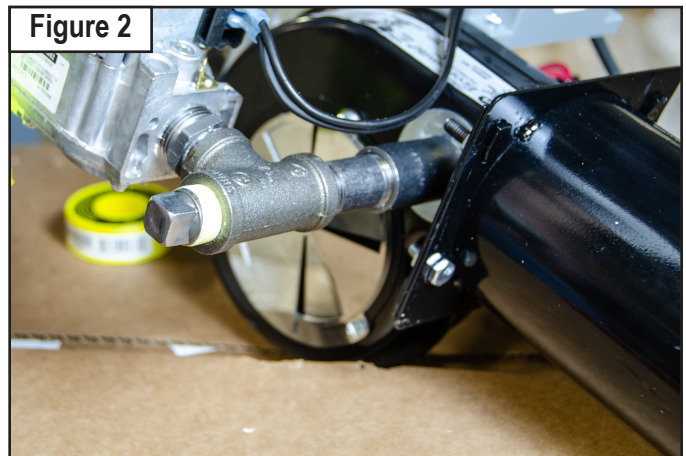
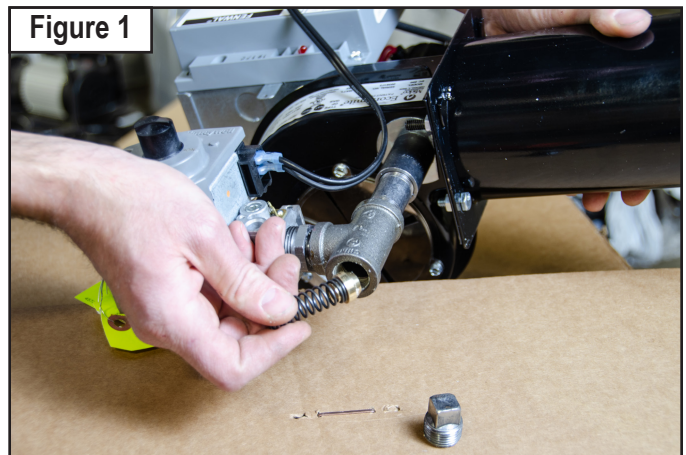
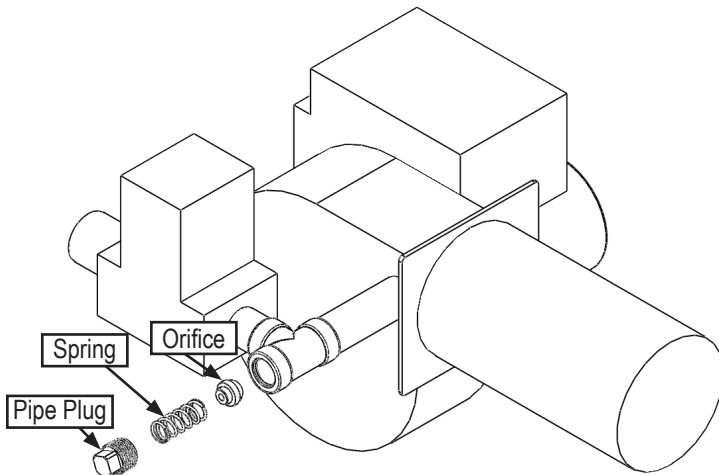
Propane Gas Orifice

#173



Natural Gas Orifice

#200

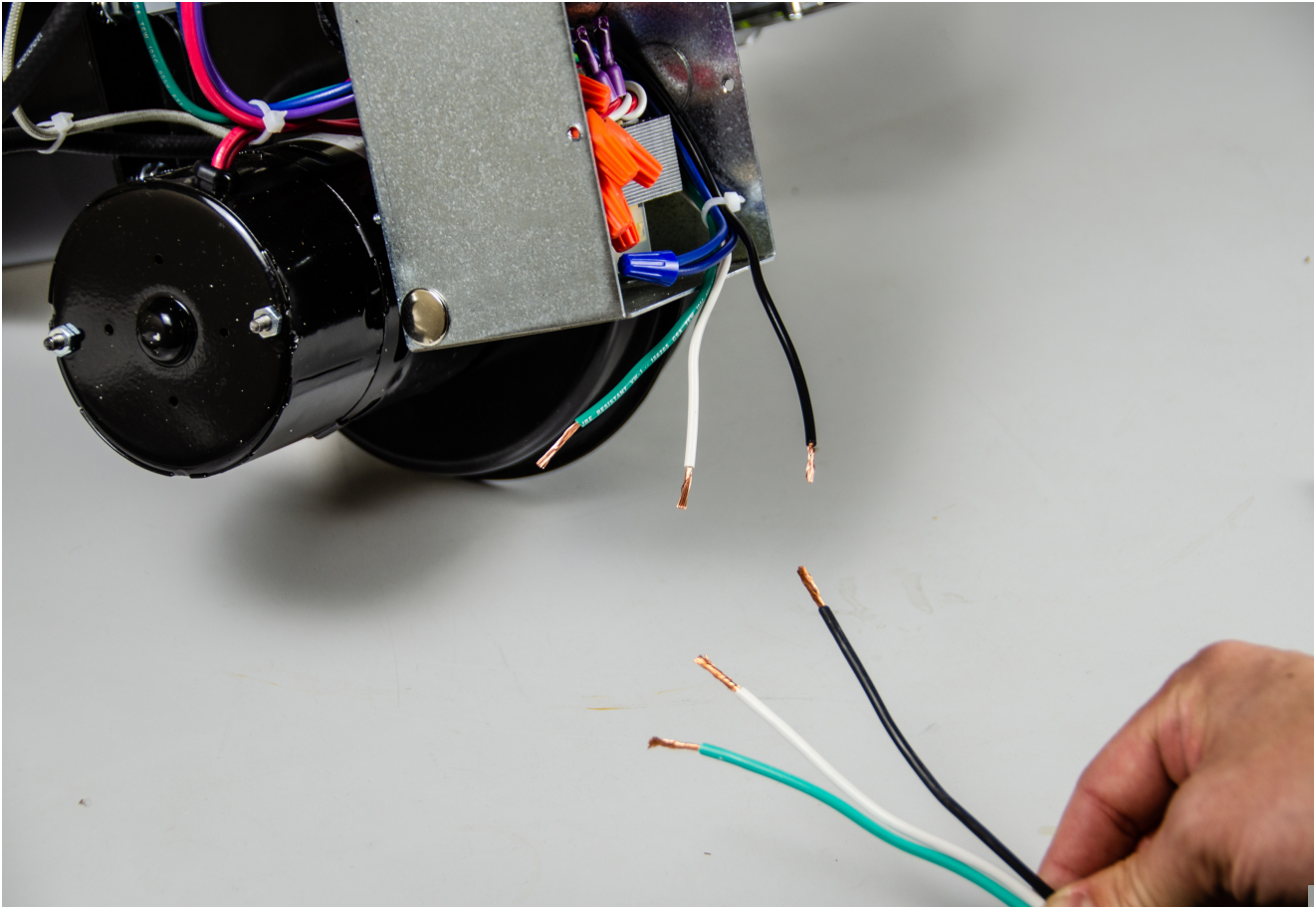


The Gas burner box will come fully assembled. Attach the white burner flange gasket to the burner box as shown in Figure 1. Attach the black burner flange to the burner box as shown in Figure 2. Refer to the Midco burner manual for proper installation and operation.



## Burner Wiring

With the included Control Panel, there is no need to install an external thermostat. The White, Black, and Green wires will be connected together with wire nuts to wire you provide and ran to the distribution block in the control panel. The Blue wires in the burner electrical box will remain tied together with a wire nut.



Run the wire from the burner wiring housing which was connected with wire nuts to the Control Panel. In the control Panel you will wire in to 110T1, 115VN, and the ground openings of the distribution block.



# Burner Exhaust

## Read Burner Manual before installation and use!!!

Due to every brewery having different floor plans and layouts, exhaust ductwork is not included. Materials needed to run exhaust ductwork can be found at <https://www.captiveaire.com/>

We highly recommend having your Burner Exhaust Ductwork installed by an HVAC professional.

For your Burner Exhaust ductwork we recommend Type A Double Wall Chimney ductwork specifically designed for Gas Chimney Exhaust. This ductwork is typically rated for continuous operation at 1000 °F. A MINIMUM of 2" clearance should be maintained between ventilation ductwork and any other surface.

Ventilation Ductwork will comprise of a general layout, though your HVAC professional may recommend more suitable layouts and parts for your specific situation. Starting from the tank, the layout of your ductwork will be:

1. The Exhaust port adapter
2. A Tee or 90 degree Elbow
3. A small straight piece ductwork
4. Tee with open side to connect a Damper (Field Draft Control) 36-48" above the exhaust port
5. Straight piping section
6. Ductwork to transition outdoors through wall or roof

After installation of the ductwork and burner, it is important to tune in the exhaust temperature of the flue gasses. When the gasses exit the burner stand through the exhaust adapter, the temperature should be just under 1000 °F. Above the damper, the temperature should be between 325 °F and 550 °F. Excessive flue gas temperatures will result in low efficiencies. Low flue gas temperature may cause excessive condensation. Reset gas input if necessary to adjust stack temperature.



Pictured above is an example of how to install burner exhaust ventilation using CaptiveAire materials. In this example picture there is not a Tee with Damper. That Tee with damper would be installed on top of the vertical straight run of ductwork.

# Single Phase Control Panel

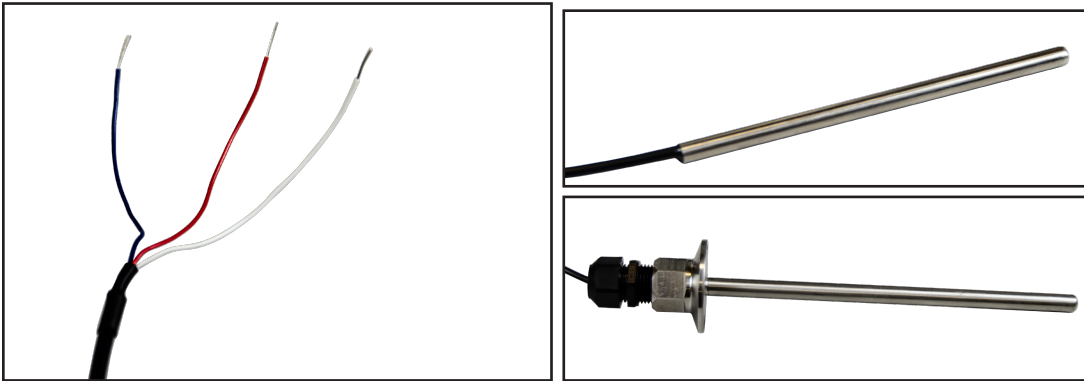
**Warning:** Always follow ALL local codes and regulations for installation of this panel. We highly recommend hiring a certified electrician for this work! This panel is designed for 120 VAC single phase power or 208V Three phase

The back of the panel has 4 holes for affixing the panel to the wall of the brewhouse or onto a suitable stand. Mounting hardware or stand is not included.



Your system is supplied with PT100 RTD temperature probes with 30 feet of cable. Insert the Temperature Probe into the cord grip and thermowell until the probe bottoms out. It is important to ensure it is inserted all the way, otherwise this can cause your temperature readings to be inaccurate. Tighten the cord grip until the probe cable is locked into place.

Connect the white, red, and blue wires to the control panel listed below.



## RTD Wiring Inside Control Panel

Fig. 10

### Boil Kettle

Blue to BKTS-1  
Red to BKTS-2  
White to BKTS-3

### Mash Tun

Blue to MTS-1  
Red to MTS-2  
White to MTS-3

### HLT

Blue to HLTTS-1  
Red to HLTTS-2  
White to HLTTS-3



**IMPORTANT:** Always consult your local codes to determine what type of cable is acceptable, what gauge is required, and maximum lengths of flexible cable allowed.

# Control Panel Operation

Reference the figures on pages 3 and 4 for locations of components.

**PID's** – The PID controllers are pre-set for optimum heating rates and minimum overshoot. The corresponding large green lamp below the PID will indicate when the control is powering the Burners. As the temperature approaches the set point the controller will automatically begin to cycle the burner on and off for a short period to maintain the set temperature. Typical stability is about +/- 1F. Note that the MASH PID is displaying temperature only and does not power on the burners.

To change the set point press the UP/DOWN arrows until you reach your desired setting.

**ON** - Keeps the burner on without cycling

**OFF** - Turns power off to the burner, closing the gas solenoid and burner power

**AUTO** - Cycles the burner on and off to reach and maintain a temperature

**WARNING:** Consult your local codes and regulations for unattended operation of your system.

**Emergency Stop** – this switch disables all Burner contactors in the panel and also can be used for ensuring your burners do not inadvertently power on. For safety, install a padlock through the hole in the switch to prevent unauthorized operation of the panel.

**WARNING:** pressing the emergency stop button does NOT cut power from the inside of the panel! All internal components will be live! To service the panel, disconnect main power to the panel before opening the panel.

## Burner Operation

To operate your burners from your control panel:

1. Start with your Burners in the ' OFF ' position on your control panel
2. Turn the manual gas cock knob on the the combination valve on the burner to ' ON '
3. Turn your control panel burner knob to either ' ON ' or ' AUTO ' with the temperature set above room temperature
4. The burner will then purge the system for 30 seconds
5. After 30 seconds the burner will then ignite. If ignition fails, the power to the burner will have to be reset manually.
6. In the ' AUTO ' selection on the control panel, the burner will turn off and on to prevent over heating.

Tip : If your tank is not full, set the temperature on the control panel to 2 degrees below your desired temperature. This will ensure you do not overshoot your desired temperature when the tank is less than full.

7. To turn the burner off after use, turn the knob on the control panel to the ' OFF ' position and turn the gas cock knob on the burner to the ' OFF ' position.

**DO NOT: Fire the burner without the Kettle installed on the fire box**

**DO NOT: Ignite the burner without liquid in the kettle**



## **Brewhouse Operation**

The hybrid design combines the conveniences of a traditional brewhouse with the simplicity, familiarity, and lower start-up cost of a homebrew system. This allows a fast and easy transition into commercial brewing with very few sacrifices! As such, startup and the learning curve is quite simple. This system is a fly-sparge design and includes a boil kettle, a hot liquor tank, and a mash/lauter tun.

**IMPORTANT:** This manual is not intended as a brewing guide. If you are not intimately familiar with all grain brewing techniques we highly recommend the following texts from the Brewers Association:

**How to Brew (Palmer)**  
**Water (Palmer & Kaminski)**  
**Yeast (Zainasheff and White)**  
**Malt (John Mallet)**  
**For the Love of Hops (Stan Hieronymus)**  
**Brewing Classic Beer Styles (Zainasheff & Palmer)**

### **Heating Hot Liquor**

For a typical brew day you will fill your HLT with enough water for your full brew length. Always better to have too much hot liquor than too little! For higher gravity beers it may be necessary to add more liquor to your HLT after dough-in. Or simply heat your strike water in your boil kettle, and separately heat your sparge water in your HLT. It is really a matter of preference. Set your strike water to the desired temperature. Remember to press the enter key to accept the new value. If the screen is flashing the new setting has NOT been accepted.

**TIP:** For recipe calculation and strike water temps we have loaded the 3.5 BBL Hybrid kettles into BeerSmith. We highly recommend this software for all of your brews. It will take a few brews to dial in all of your parameters to achieve consistent results.

**CAUTION:** Prior to powering up your panel, or pulling the emergency stop switch to the ON position, turn all burner control selector switches to OFF! This will prevent unintended ignition of the burners

### **Mashing**

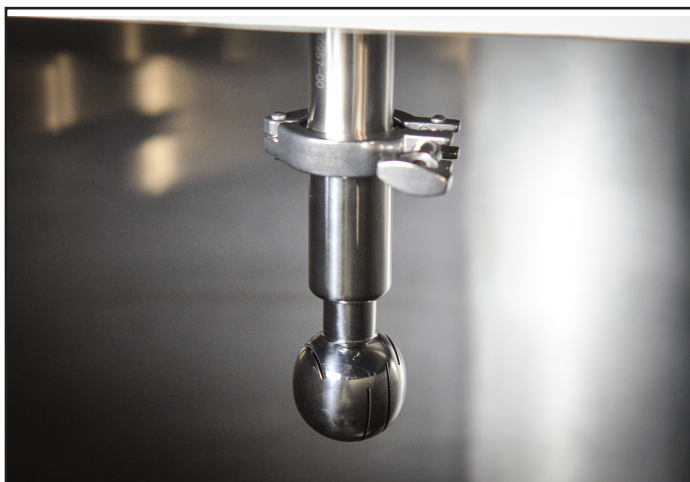
When the temperature has been reached and you are ready to pump liquor to the MT turn the PID selector switch to OFF. Underlet water into the MT by pumping water from the HLT into the BOTTOM of the MT. When you have 3-4" of water above the false bottom begin adding and stirring the malt as you continue to pump.

**TIP:** we recommend underletting so that the malt and water combine and reach close to your desired rest temperature at all times. It takes 15-20 min to stir in all the malt and conversion does begin quickly. If you were to fill the MT with all the hot liquor and then add the malt you would over-shoot your infusion temperature for the first 15-20 minutes until you had all the malt in the MT. Therefore underletting is highly advised. Having one person stir while another adds malt is very helpful.

Your mash tun, even though uninsulated, will lose less than 1 F/hr. Rarely do commercial breweries perform step mashing. Modern malts are highly modified and very little is to be gained by step mashing. Homebrew kettles, on the other hand, are so small that they lose heat quickly so temperature maintenance is common (RIMS/HERMS).

After your scarification rest period, vorlauf (recirculate) your wort for about 15 minutes to clarify the wort and set the grain bed in preparation for runoff to the BK. Now is a good time to check that you have your stand pipe installed in your boil kettle as detailed previously.

Vorlauf and Lautering (sparging) are both performed using the sparge arm attachment. For post use cleaning, you can remove the sparge arm and attach the CIP spray ball. See the image below. Take care to avoid too fast of a runoff which may stick the mash. Note that the level gauge also acts as a manometer that measures the suction pressure on the grain bed. If the level in the gauge is more than 1/3 lower than the level in the tank you are drawing too quickly and will soon stick your mash.



**IMPORTANT:** Do NOT sparge or vorlauf at full pump flow or you are very likely to stick your mash, and your efficiency will suffer severely!

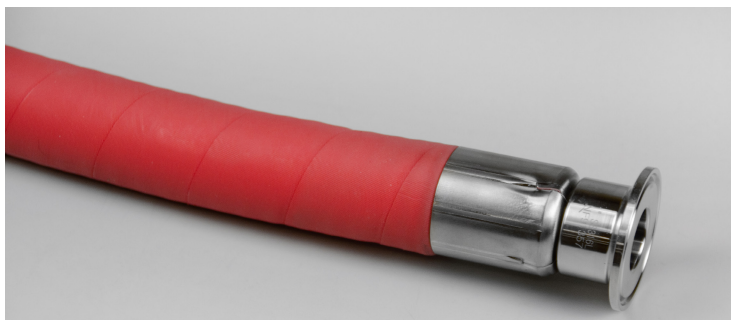
**TIP:** Your pumps are equipped with sanitary diaphragm valves that make easy work of balancing your flow rates. After a few brews you will determine the number of turns on the valve to achieve your desired flow. Simply make the same number of turns on each pump and your flows will be very close to balanced.

## Hoses

| Length (1 inch ID) | Quantity |
|--------------------|----------|
| 5 Feet             | 3        |
| 10 Feet            | 1        |

**Construction:**

Tube: FDA white EPDM (non oily transfer applications)  
 Reinforcement: Multiple plies of polyester tire cord with wire helix  
 Cover: Red EPDM  
 Temperature Range: -40°F to +225°F  
 Not for continuous steam service  
 Stainless Steel 1.5 Inch Tri-Clamp ends

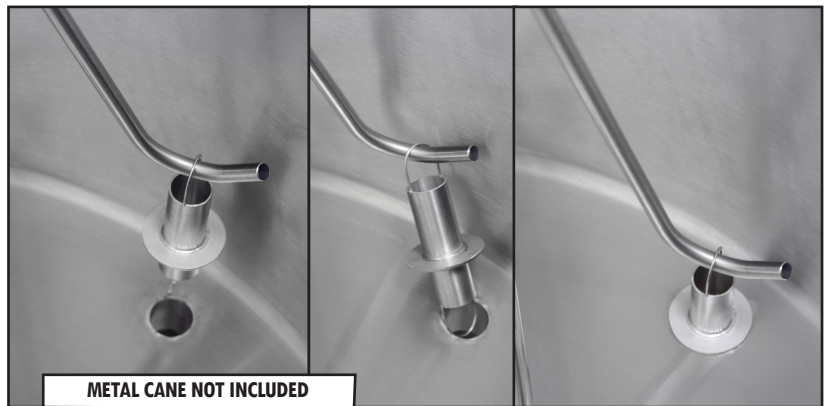


**Note:** that you can easily couple hoses together with a clamp and gasket to make long runs to fermentors etc.

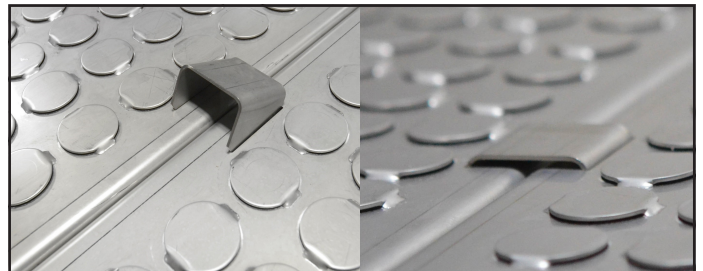
*Additional hoses can be purchased.*

## Kettle Stand Pipe

For the Boil Kettle only install the stand pipe in the drain fitting inside the kettle as shown. To install and remove the standpipe, simply use a racking cane to lower it into the drain hole and reverse for removal. This will keep the bulk of the settled hops and break material in the bottom of kettle and out of the chiller. Use of the stand pipe, while recommended, is optional. If you plan to treat your brewing water by boiling, the use of the stand pipe works well in your HLT to leave settled water salts behind. An extra stand pipe can be purchased on our parts site or at time of order.



Install the false bottom through the manway in the mash tun (MT) one segment at a time starting with the center section. Install the U-shaped securing clips between the sections to secure them as shown. Visit our website for replacements.



## Kettle Ventilation

Total power for the Boil Kettle is 90,000 BTU/HR.

Steam ventillation out of the brewery is an important aspect of the brewery build out process as well as the brewing process. Inadequat ventillation can cause steam build up within the building which over time can lead to mold growth, moisture within the building, and wiring fault. Inadequate ventillation from the brewing kettle can also cause DMS accumulation in the wort, causing the finished beer to taste and smell vegetal - often like creamed corn.

There are countless ways to run duct work to vent steam from your brewing kettle and each breweries floorplan will dictate the best ways to run that duct work. We recommend utilizing an HVAC professional to run your steam ventillation duct work and displace it outdoors.

Some important factors to keep in mind when running your duct work are:

1. Always ensure your steam is rising upwards. Never install duct work with any downward angles from the kettle.
2. Have a way to let any liquid condensate drain from the duct work and into a drain, not back into the wort.
3. Consider an in-line fan to help the steam escape the duct work.
4. Keep horizontal duct work lengths to the minimum length possible.

| Rules of Thumb Summary   |  |
|--------------------------|--|
| Heat Load Factor         | 1 CFM per 100 BTU/hr (gas) or 34 CFM per KW (electric)                 |
| Hood Velocity Factor     | 50 CFM per ft <sup>2</sup> of hood                                     |
| Room Air Exchange Factor | CFM = Room Volume (ft <sup>3</sup> ) / 6 (you can generally disregard) |
| Hood Size                | Overhang 6" minimum front and sides                                    |
| Hood Height              | 32" above kettles – approx. 6.5 ft from floor                          |

# Heat Exchanger

Sanitize the chiller by either pumping copper friendly sanitizer through the chiller or by pasteurizing the heat exchanger by running hot pasteurization temperature water through the heat exchanger for the necessary amount of time. Drain the chiller after the recommended time with the fittings facing down. Connect the chiller per the instructions on the nameplate.

Drain off the first gallon or so of wort from the boil kettle to a waste drain to eject any solids in the piping and to ensure only clear wort flows through the chiller to prevent plugging. Then divert the flow to the chiller. Adjust the wort flow and/or the cooling water flow to achieve the desired wort temperature to your fermentor.

**IMMEDIATELY** after use back-flush the chiller with hot water to eject any solids and wort. **IMMEDIATELY** soak the chiller fittings up in PBW or other copper friendly cleaning agents for 30 min or pump through the chiller. Rinse with hot water and then soak in sanitizer. Allow to drain fittings down, and then store with the chiller horizontal. Following this procedure consistently will give you a very long service life for your chiller.

**Pumps:** SEE INCLUDED PUMP DISCLAIMER!!! The pumps included with the system are seal-less magnetic drive pumps. They **MUST NOT** be run dry or the impeller bearing surface will be damaged! This is **NOT** covered under warranty. Ensure the hoses and pump head are filled with liquid before turning on the pump. If you hear a loud squeal stop the pump immediately!

**Caution:** NEVER restrict the inlet to the pump. Always place flow throttling valves on the **OUTLET** of the pump **ONLY**. Failure to do this will cause cavitation in the pump possibly leading to failure of the impeller. If you hear any grumbling or grinding in the pump **STOP IMMEDIATELY** as this is cavitation. Cavitation failures are **NOT** covered under warranty.

## Cleaning Your System:

**Mash tun:** Spent grains can easily be removed through the manway in the mash tun. Drain all remaining wort out of the bottom drain and then open the door. Utilizing a non-marring hoe (available in our maintenance kit) rake out the spent grains into a tub, also available through Blichmann Engineering. Remove the false bottom sections and spray them off with hot water and allow to dry. Spray excess grain from the sidewalls and bottom of the kettles with a hose.

**HLT/BK/MT:** Due to the easy access through the top of the relatively small tanks, and small size of the chiller and pumps, it is usually fastest to scour the kettles with a scrub brush mounted on a pole and spray them out with a hose. Optional cleaning tools are available through Blichmann Engineering to make this a fast and thorough job. Alternately, you can utilize one of the heated vessels to heat and hold your CIP (clean in place) chemicals and use one pumps to recirculate through the CIP ball and the second pump to return back into the chemical kettle. It is recommended that you turn off all heaters while running the CIP system to avoid dry firing them. Tip your kettles forward so that all water drains out the bottom valve, leave the lid open, and allow the kettles to dry thoroughly.

**Tip:** A spray of StarSan on the interior surfaces after cleaning will help prevent mildew between uses.

**Tip:** Place your chiller in-line with the pump to clean it at the same time.

## Helpful System Data

Typical heating rates are 0.8-1.5 F/min.

Expect about a 5% boil-off rate

Strike water will cool about 10F when pumped from the HLT to the MT

Temperature loss in MT – less than 1F/hr

Temperature stability of control system approximately +/- 1 F

# IMPORTANT!

PLEASE READ BEFORE OPERATING PUMPS.

FAILURE TO FOLLOW THESE GUIDELINES COULD RESULT IN DAMAGE TO THE PUMP OR IMPELLER.

## IMPELLER IS NOT COVERED UNDER WARRANTY.

Cavitation is the leading cause of failure with centrifugal pumps. Cavitation is the process of running a pump without sufficient liquid lubrication on the impeller cavity causing the impeller to lose its balance of pressure and becoming air locked OR causing microbubbles to form which implode due to the change in pressure turning and pitting the impeller surface. During severe cavitation your pump will sound like it is pumping rocks or whirling. Restriction type cavitation can be harder to hear, but over time will cause pitting to the pump impeller and housing, sometimes causing holes that look like Swiss cheese.

Centrifugal pumps are not self-priming. Pumps that are not primed cannot create an adequate vacuum to pull liquid, causing an air lock that will not allow liquid to flow. The pump casing must be filled with liquid before the pump is started. To prime the pump, fully open the flow of liquid to the inlet and outlet letting fluid flow into the pump. Many brewers place a sight glass on the output of the pump allowing you to monitor the flow or lack of flow. A Tee fitting and bleed valve can be placed on the output of the pump to help vent air trapped in the system. Once the pump begins to flow properly, suction will pull the liquid through the lines.

The other main cause of cavitation is restricting the flow into the pump. This type of cavitation is not as readily apparent, but will cause damage over time especially to the impeller. Restricting the flow into the pump can be done in several ways:

1. Restricting flow with a valve on the inlet
2. Using a hose on the inlet with a diameter that is less than the pump inlet diameter
3. Running the pump with inadequate pressure – ex: running the pump while it is hooked up to a city water source.
4. Kinked hoses to the inlet of the pump
5. Running the pump with liquid that is too hot, causing steam to cavitate the pump

To ensure the longevity of your pump, impellor, and motor PLEASE ensure to observe the following:

IMPORTANT: Always prime your pump before powering it on

IMPORTANT: Never use a valve on the inlet of the pump.

IMPORTANT: A hose larger than or equal to the inlet diameter of the pump is required to prevent restriction to the inlet.

IMPORTANT: The pump should be located lower than the source of the fluid it is pumping.

IMPORTANT: Never use the power the pump with liquids over 206°F

IMPORTANT: Never run the pump when it is hooked up to a city water hose

Failure to follow these guidelines could result in damage to the pump or impeller.

**Impellers are not covered under warranty as they are a wear item**

# Blichmann Engineering Product Warranty

## **A. Limited Warranty**

1. Blichmann Engineering warrants to the original purchaser that this product will be free from manufacturing defects in material and workmanship for a period of one (1) year from the date of purchase by the customer. Proof of purchase is required. Blichmann Engineering's obligation to repair or replace defective materials or workmanship is the sole obligation of Blichmann Engineering under this limited warranty.
2. The limited warranty covers only those defects that arise as a result of normal use of the product and does not cover any other problems, including, but not limited to, those that arise as a result of:
  - a. *Improper maintenance or modification;*
  - b. *Damage due to incorrect voltage or improper wiring by customer;*
  - c. *Operation outside of the product's specifications;*
  - d. *Carelessness or neglect to operate the product in accordance with instructions provided with the product;*
  - e. *Damaging the tamper label on the product;*
  - f. *Damage by over-tightening the fasteners;*
  - g. *Failure to follow cleaning and / or maintenance procedures; or*
  - h. *Exceeding published operational temperatures.*
3. Blichmann Engineering reserves the right to request delivery of the defective component for inspection before processing the warranty claim. If Blichmann Engineering receives, during the applicable warranty period, notice of a defect in any component that is covered by the warranty, Blichmann Engineering shall either repair or replace the defective component with a new or rebuilt component at Blichmann Engineering's option.
4. Blichmann Engineering must be notified within seven (7) days of the delivery date of any shipping damage. Customer is responsible for shipping damage outside of this time period. Approval for return must be provided by Blichmann Engineering prior to any return. Customer is responsible for keeping all original packaging material for warranty returns. Blichmann Engineering is not responsible for damage from improperly packaged warranty returns, and these repair costs will be the sole responsibility of the customer. Shipping costs for warranty returns are covered only for the contiguous United States.
5. Blichmann Engineering's limited warranty is valid in any country where the product is distributed.

## **B. Limitations of Warranty**

1. Any implied warranty that is found to arise by way of state or federal law, including any implied warranty of merchantability or any implied warranty of fitness, is limited in duration to the terms of this limited warranty and is limited in scope of coverage to this warranty. Blichmann Engineering disclaims any express or implied warranty, including any implied warranty of fitness for a particular purpose or merchantability, on items excluded from coverage as set forth in this limited warranty.
2. Blichmann Engineering makes no warranty of any nature beyond that contained in this limited warranty. No one has authority to enlarge, amend, or modify this limited warranty, and Blichmann Engineering does not authorize anyone to create any other obligation for it regarding this product.
3. Blichmann Engineering is not responsible for any representation, promise, or warranty made by any independent dealer or other person beyond what is expressly stated in this limited warranty. Any selling or servicing dealer is not Blichmann Engineering's agent, but an independent entity.

## **C. Limitations of Liability**

1. The remedies provided in this warranty are the customer's sole and exclusive remedies.
2. Except for the obligations specifically set forth in this warranty, in no event shall Blichmann Engineering be liable for direct, indirect, special, incidental, or consequential damages, whether based on contract, tort, or any other legal theory and whether or not advised of the possibility of such damages.
3. This warranty does not cover, and in no event shall Blichmann Engineering be liable for, travel, lodging, or any other expense incurred due to manufacturing defects in material and workmanship, or any other reason.
4. Any performance of repairs after the warranty coverage period has expired or performance of repairs regarding anything excluded from coverage after this limited warranty shall be considered good-will repairs and they will not alter the terms of this limited warranty, or extend any warranty coverage period.
5. Venue for any legal proceedings relating to or arising out of this warranty shall be in Tippecanoe County, Indiana, United States, which courts will have exclusive jurisdiction.

## **D. Local Law**

1. This warranty gives the customer specific legal rights. The customer may also have other rights that vary from state to state in the United States or other countries.
2. To the extent that this warranty is inconsistent with local law, it shall be deemed modified, only to the extent necessary to be consistent with such local law.