

5 BBL Insulated Brewhouse

Assembly, Operation, & Maintenance



Congratulations on your purchase, and thank you for selecting the 5 BBL Hybrid Brewhouse from Blichmann Engineering™. We are confident that it will provide you years of service and many gallons of outstanding beer. This manual will familiarize you with the use, assembly, and the sanitation procedures for the product.



IMPORTANT INFORMATION

PLEASE READ AND THOROUGHLY UNDERSTAND THIS MANUAL PRIOR TO USE FOR IMPORTANT SAFETY INFORMATION!

- 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) 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) before use.
- IMPORTANT:** Sections labeled “Important” should specifically be followed to ensure satisfactory results with the product.

IMPORTANT: Power demand for the brewhouse is 140A at 230V (three phase), 154A at 208V (three phase), 70A at 460V (three phase) or 242A at 230V (single phase). Select a main breaker setting for 20% above the appropriate amperage to avoid nuisance tripping or as

What’s In the Box?

Item Number	Description	Quantity	Item Number	Description	Quantity
BEPS-BK-5BBL	5 BBL Boil Kettle	1	BE-000868-00	Clamp Gasket 1.5"	17
BEPS-HLT-5BBL	5 BBL Hot Liquor Tank	1	BE-000633-00	1.5" Tri Clamp	17
BEPS-MLT-5BBL	5 BBL Mash Tun with Mash Rake and Motor	1	BE-000863-00	Tri Clamp Elbow 1.5"	6
	Control Panel - 3 Phase	1	BE-001356-00	1.5" Multi Position Valve Tri Clamp	5
	Sanitary Heater Set of 3	2	BE-001084-00	CIP Spray Ball	1
BEPS-PUMP-15HP	1/5hp Brewery Pump	1	BE-001186-00	1.5" Sanitary Pipe 6"	1
BEPS-Pump-1HP	1HP Brewery Pump	1	BE-000630-00	Cap 1" & 1.5" Sanitary	2
BEPS-CHILLER-2.0SQM	Chiller 3.5 BBL	1	BE-001132-01	3.5 BBL Stand Pipe	2
BEPS-HoseKit-5	5 Hose Assembly Kit	1	BE-000866-00	Clamp Gasket 2.5"	3
BE-000957-00	CIP Spear 1.5" Tri Clamp	1	BE-001482-00	6" Tri Clamp Cap	1
BE-000859-00	Cap 2.5" Sanitary	3	BE-001478-00	6" Tri Clamp	1
BE-000861-00	2.5" Tri Clamp	3	BE-001479-00	6" Gasket	1

Kettle Placement & Fitting Installation

Adjust the leveling feet as needed. It is recommended that you allow enough clearance between kettles and also on the sides and rear to allow personnel access for cleaning and service of the ancillary equipment. Although in practical use, the kettles can easily be slid out for any service needs.

Place heating elements (3) into the boil kettle and hot liquor tank. Secure with tri-clamps and gaskets.

The system will come with (3) 7' lengths of hose and (1) 12' length of hose.

False Bottom

The false bottom will come pre-installed. To remove the false bottom, unscrew the bolt half way and pull the false bottom out. The false bottom will fit through the manway although it can be easier to pull out the top.

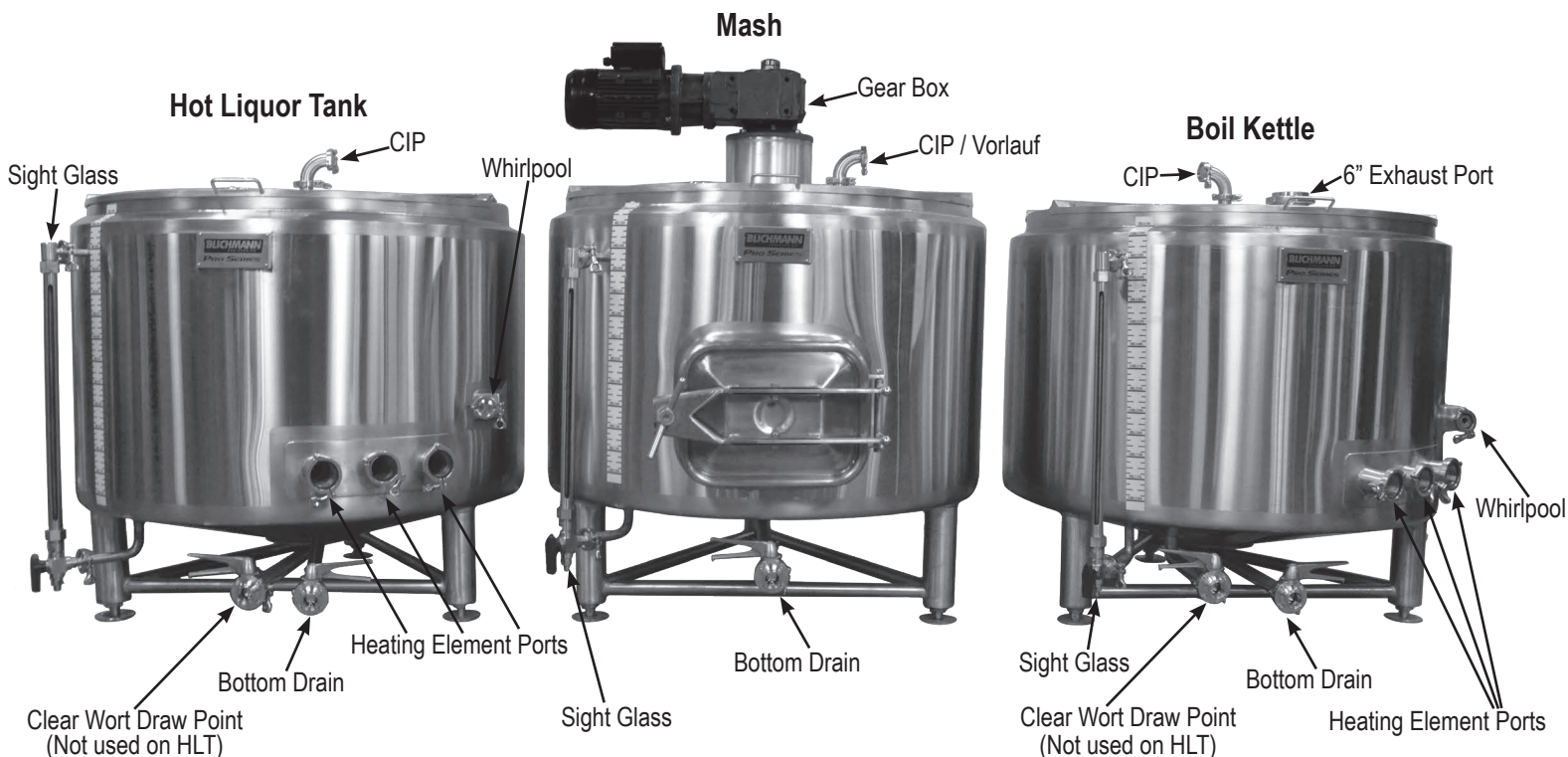
Brewery Ventilation

Ventilation needs for an electric brewhouse are fairly minimal as only the boil kettle needs to be ventilated. We recommend direct ventilation through the 6 inch top port or a traditional commercial kitchen vent hood can be installed approximately 6.5 ft from the finished floor. General rules of thumb are in the table below. It is recommended that you consult your local codes and consult with a professional prior to purchasing or installing your ventilation equipment.

For recommendations on professional ventilations contact a Blichmann Engineering Pro Brewing representative.

Total power for the Boil Kettle is 27 KW.

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 ² of hood
Room Air Exchange Factor	CFM = Room Volume (ft ³) / 6 (you can generally disregard)
Hood Size	Overhang 6" minimum front and sides
Hood Height	32" above kettles – approx. 6.5 ft from floor



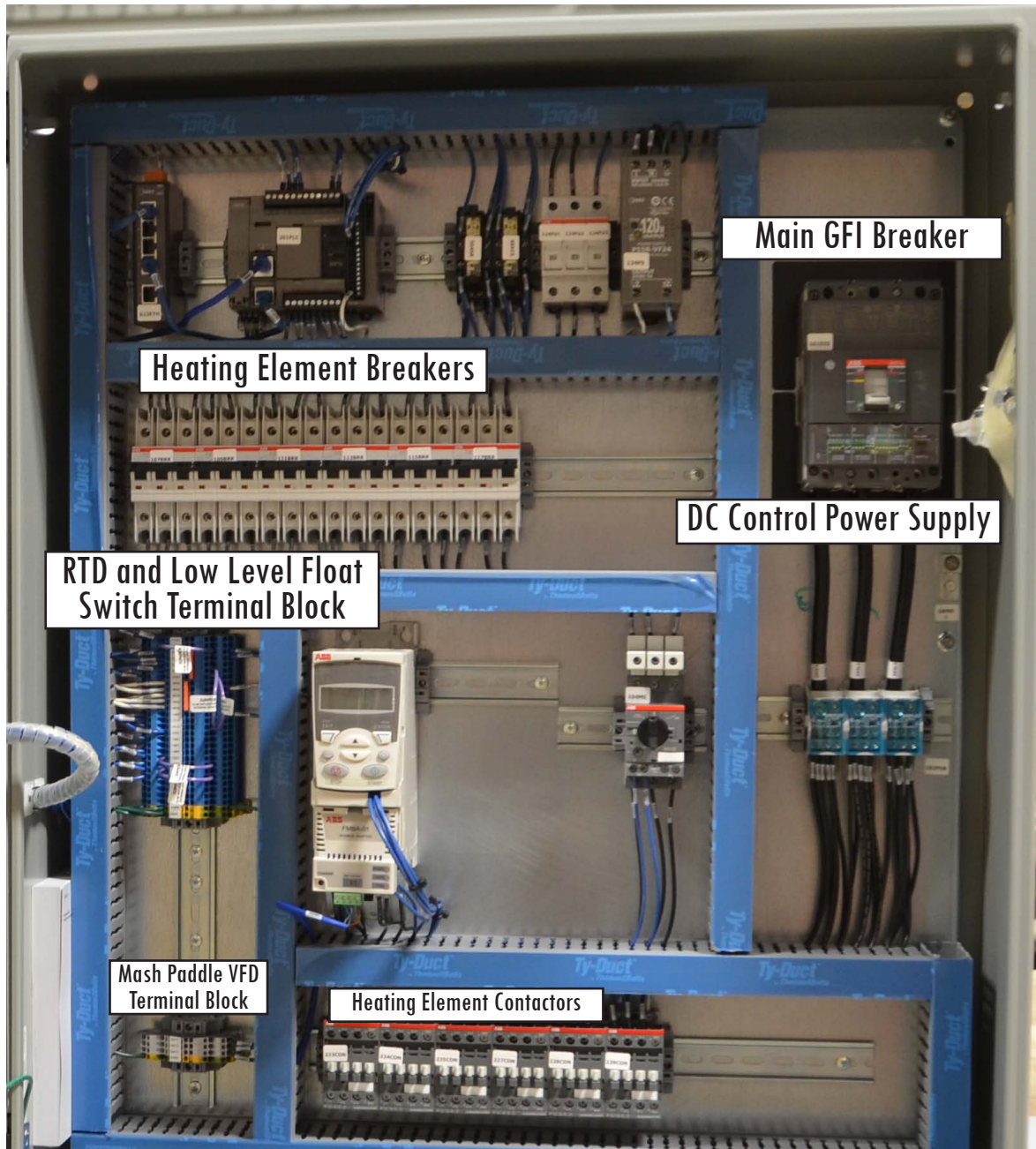
Control Panel Installation

Warning: Always follow ALL local codes and regulations for installation of this panel. We highly recommend hiring a certified electrician for this work! The pictured panel is designed for 208v or 230v three phase power only. The single phase control panel layout is identical to the three phase control panel. The main difference is the single phase breakers and contactors, but the connection points will remain in the same locations.



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. The image below indicates the locations of the main components.

We recommend mounting the bottom of the panel 3 feet from the ground.



Panel Dimensions

36 inches tall

30 inches Wide

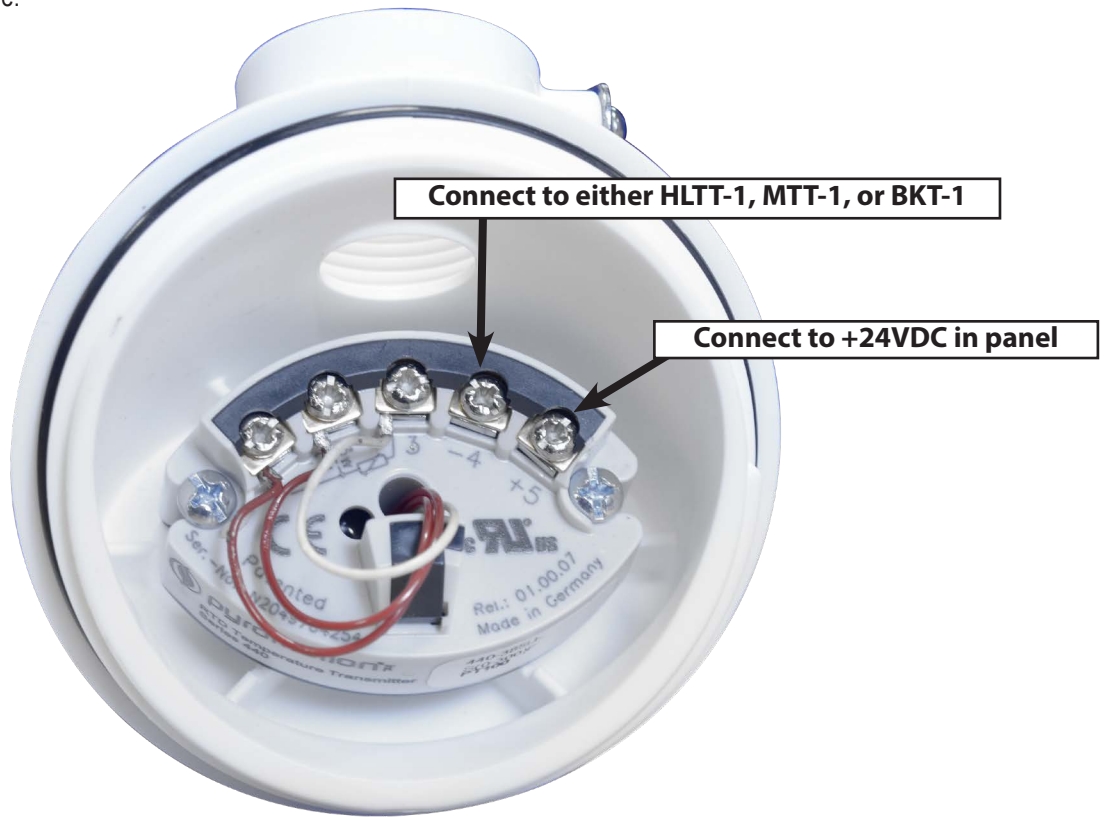
11 inches Deep

Main Power GFI Breaker – This industrial grade GFI (ground fault interrupting) breaker is the connection point for main power cables connected to the panel. Consult your local codes to determine if you can utilize this breaker as a main disconnect as well. In any case, we highly recommend a suitable disconnect switch be installed prior to the panel for safe servicing of the panel. Your contractor will need to punch a hole in your panel for the main power cable conduit in your desired location. Power demand for the brewhouse is 140A at 230V (three phase), 154A at 208V (three phase), 70A at 460V (three phase) or 242A at 230V (single phase). Select a main breaker setting for 20% above the appropriate amperage to avoid nuisance tripping or as directed by your local codes.

RTD's – The brewhouse is equipped with two durable high precision 4-20mA RTD's (resistance temperature detectors). Wire the sensors to the control panel terminal block shown in the image. The wiring diagram in the RTD junction box is also shown.



Important: Use shielded 2 conductor cable designed specifically for wiring RTD's for most accurate readings. We recommend 18 gauge wire.



RTD and Low Level Float Switch Terminal Block

Boil Kettle

BKT-1 to -4
+24VDC to +5

Mash Tun

MTT-1 to -4
+24VDC to +5

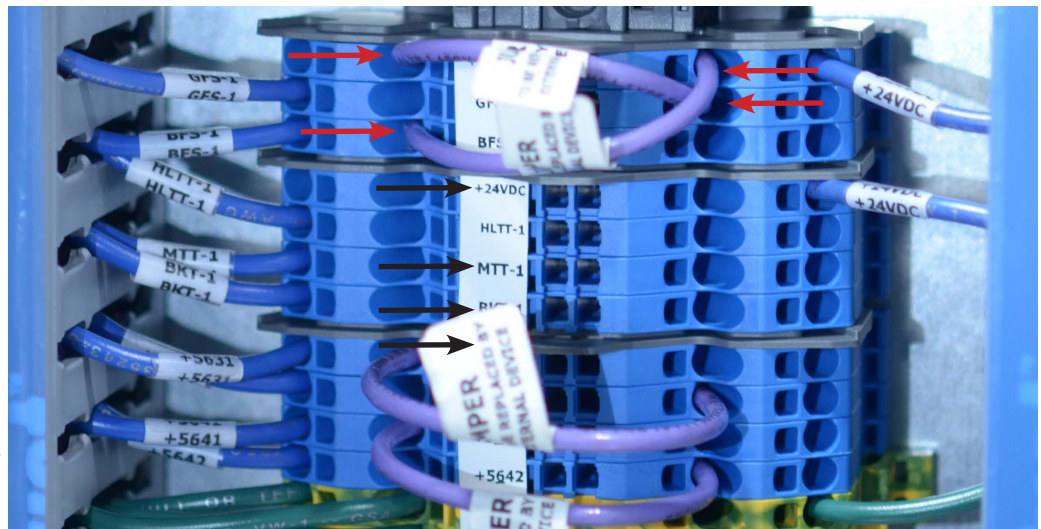
HLT

HLTT-1 to -4
+24VDC to +5

Float Switch Wiring

Remove the purple jumper wire from BFS-1 and +24VDC and wire in the low level float switch for the Boil Kettle.

Remove the purple jumper wire from GFS-1 and +24VDC and wire in the low level float switch for the Hot Liquor Tank.



Heating Elements: The brewhouse is supplied with six 9,000 W ultra-low watt density heating elements. Each heating element will draw 25A at 208V, or 23A at 230V. Each of these heating elements are pre-wired for 208V or 230V operation and has a pigtail with an L14-30P twist lock connector for easy removal for cleaning. We recommend SJOOW type cable 10 gauge minimum. For 230V single phase and 460V three phase there is no pigtail provided. Your local codes will dictate the cable type and gauge as well as plug type.

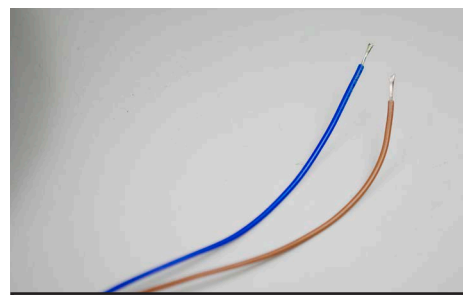
IMPORTANT: Always consult your local codes to determine what type of cable is acceptable, what gauge is required, and maximum lengths of flexible cable allowed.



Picture shows float switch down. In this position the heating elements will not energize.



Picture shows float switch up. In this position the heating elements will energize.



Picture shows blue and brown pre-stripped wires.

Float Switches – Float switches are provided to help prevent unintended energizing of the heating elements. It is vital that the heating elements be immersed in liquid prior to energizing them. Failure to immerse the heating elements will cause them to fail and potentially cause a fire! Using the wires included, run the wire from the float switches to the terminal block shown in the panel (Fig. 10). **Polarity is not important.** Hook your HLT float switch blue and brown wires into terminals GFS-1 and +24VDC in the panel. Hook your BK float switch blue and brown wires into terminals BFS-1 and +24VDC in the panel. **Again, polarity is not important.** If jumper wires are installed in the panel remove them when you install the switch wires.

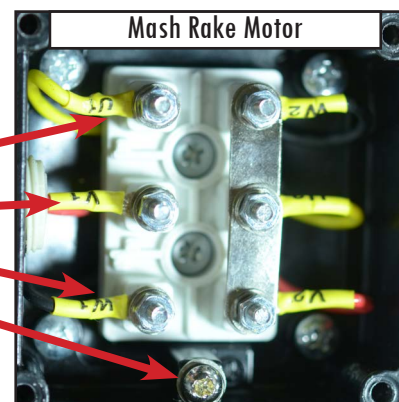
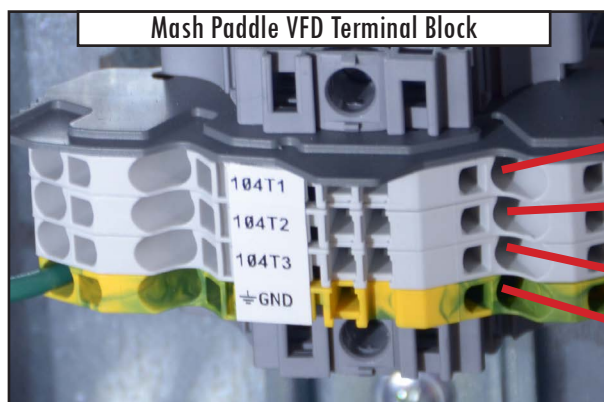
When wiring the float switches to the control panel use a continuity tester on the leads to ensure that the switch is open when in the down (empty) position, and is closed (has continuity) in the up (full) position.

CAUTION: The low water level switches are a backup to an unintended energizing of the heaters. They are NOT intended to be normal shutoff switches and solely relied upon to keep the heaters from unintentionally energizing! Dry-fired heating elements are not covered under warranty!

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Mash Paddle VFD Terminal Block

Wire three phase mash paddle motor into the mash paddle VFD terminal block. Connect wiring from 104T1 to U1, 104T2 to V1, 104T3 to W1 for power and GND to the grounding screw for ground.



Chillers: Sanitize the chiller by either pumping StarSan or similar copper friendly sanitizer through the chiller. Alternately the chiller may be submerged (fittings up) into a pail of sanitizer. Drain the chiller after the recommended time with the fittings facing down. Connect the chiller per the instructions on the nameplate.

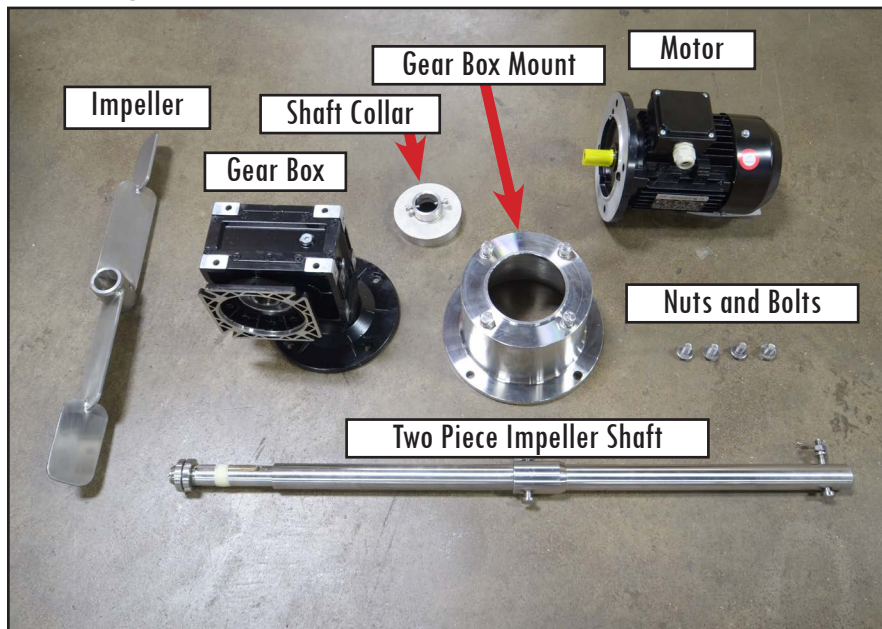
Drain off the first gallon or so of wort from the boil kettle to a waste drain to eject any solids in the piping and to ensure only clear wort flows through the chiller, use the higher drain point to prevent plugging. Then divert the flow to the chiller. Adjust the wort flow and/or the cooling water 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, with 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, with fittings down, then store with the chiller horizontal. Following this procedure consistently will give you a very long service life for your chiller.

Pumps: The pumps included with the system **MUST NOT** 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.

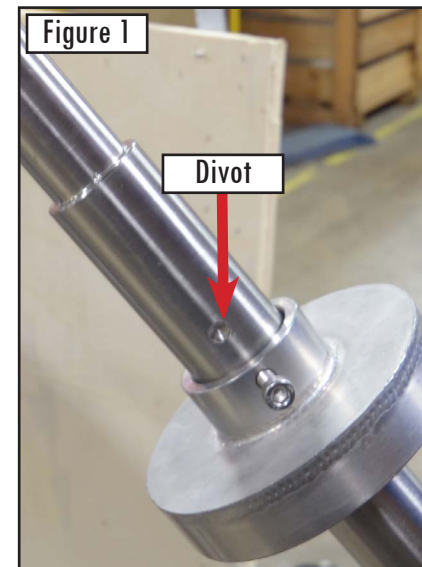
Installing the Mash Rake



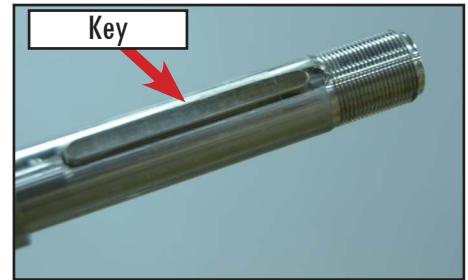
Step 2: Place the shaft into the kettle as shown in Figure 2.



Step 1: Dissassemble the two piece impeller shaft by removing the cotter pin. Remove the threaded nuts from the top of the impeller shaft. Slide the shaft collar over the impeller shaft as shown in **Figure 1**. Screw the mounting bolts into the divots on the impeller shaft.



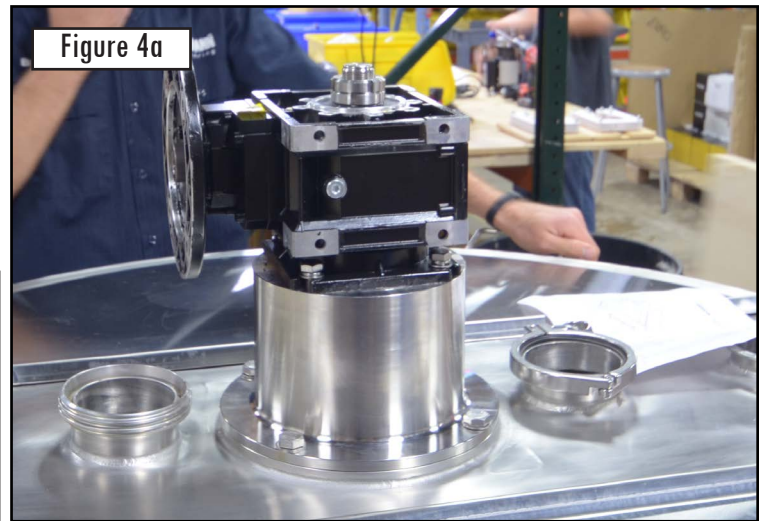
Step 3: Place the gear box mount over the end of the impeller shaft and secure the gear box with the four bolts as shown in **Figure 3**.



Step 4: Remove the tape holding the key to the impeller shaft.

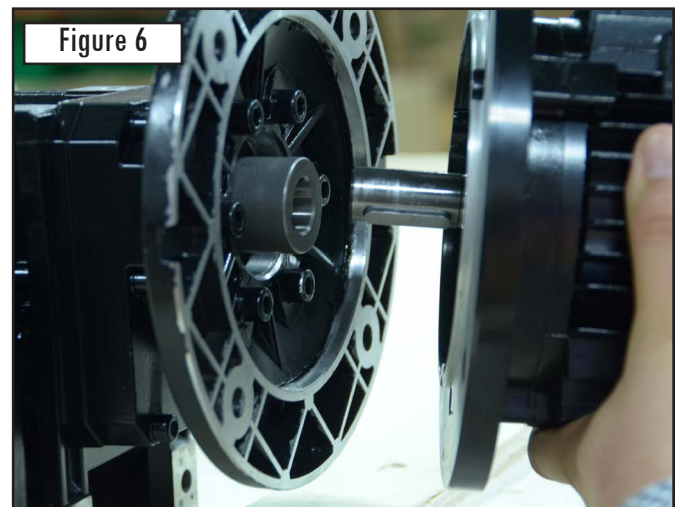
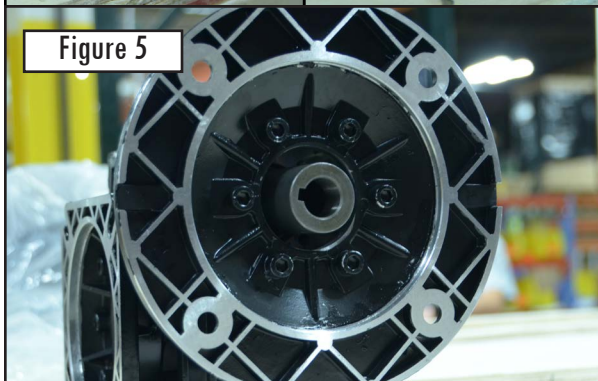
Align the key with the groove in the gear box as you lower the gear box onto the shaft. Use the 4 bolts to bolt the gear box to the gear box mount shown in **Figure 4a**.

Lift the impeller shaft on the inside of the kettle and tighten the nuts above the gear box. (**Figure 4b**)



Step 5: Place the star end of the gearbox adapter into the gear box as shown in **Figure 5**.

Align the motor shaft with the gear box adapter shown in **Figure 6**.



Step 7: Using the nuts and bolts provided, secure the gear box to the motor.

Hoses

Length (1.5 inch ID)	Quantity
7 Feet	3
12 Feet	1

Construction:

Tube: FDA white EPDM (non oily transfer applications)

Reinforcement: Multiple plies of polyester tire cord with wire helix

Cover: Grey EPDM

Temperature Range: -40°F to +225°F

Not for continuous steam service

Stainless Steel 1.5 Inch Tri-Clamp ends

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

Additional hoses can be purchased.



Blichmann Engineering Product Warranty

A. Limited Warranty

- 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.
- 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:
 - Improper maintenance or modification;
 - Damage due to incorrect voltage or improper wiring by customer;
 - Operation outside of the product's specifications;
 - Carelessness or neglect to operate the product in accordance with instructions provided with the product;
 - Damaging the tamper label on the product;
 - Damage by over-tightening the fasteners;
 - Failure to follow cleaning and / or maintenance procedures; or
 - Exceeding published operational temperatures.
- 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.
- 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.
- Blichmann Engineering's limited warranty is valid in any country where the product is distributed.

B. Limitations of Warranty

- 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.
- 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.
- 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

- The remedies provided in this warranty are the customer's sole and exclusive remedies.
- 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.
- 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.
- 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.
- 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

- 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.
- 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.

This product uses food grade materials anywhere the product touches the beverage.

Warning: This product contains or may contain chemical(s) known to the State of California to cause cancer, birth defects, or other reproductive harm.