

# Fermentor™ G4

## Assembly, Operation, & Maintenance



Congratulations on your purchase and thank you for selecting the Fermentor™ G4 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](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.

#### ABOUT THIS MANUAL

This manual is for the G4-7 gallon, 14 gallon, 19 gallon, and 1 BBL tri-clamp models.

This manual is broken down into the following sections:

**Assembly:** Proper assembly procedures to ensure reliable, safe, leak-free operation of your G4 Fermentor™. Be sure to read the sanitizing section before the first use your Fermentor™ since most parts are sanitized before assembly. We recommend an initial assembly to familiarize you with the process prior to your first use.

**Sanitation:** Steps to properly sanitize your fermentor before each use.

**Operation:** Techniques to get the most out of your fermentor.

**Storage & Maintenance:** Get years of service by properly maintaining and storing your fermentor.

# What's In the Box?

Please check your box to make sure you have received all parts.

**NOTE:** Some parts will be partially assembled to protect them during shipment.

Item Number	Description	Quantity
	G4 Fermentor™	1
BE-001740-00	Tri-Clamp Thermometer	1
FV-065-00	Racking Arm	1
BE-001797-00	Aseptic Valve Assembly	1
BE-001717-00	#8 Stopper	1
BE-500019-00	Airlock	1
FV-029-00	4" x 1.5" Adapter	1
BE-000863-00	1.5" TC Elbow	1
BE-000865-00	1.5" TC Butterfly Valve	1
BE-000630-00	1.5" TC Cap	3
BE-000627-00	1" x 1" Barb	1
BE-000633-00	1.5" TC Clamp	8
BE-000868-00	1.5" Gasket	8
BE-001739-00	4" TC Clamp	1
BE-001738-00	4" TC Gasket	1
BE-001758-00	Foot	3
BE-001782-00	Squirt Bottle	1

## CLEANING AND SANITATION

After you have received your new equipment and removed it from the box it is very important that you properly clean the equipment thoroughly with a general detergent such as Dawn dish soap. This will remove any debris and oils that may have been left behind from shipping and the manufacturing processes.

Cleaning and sanitizing all your home brew equipment before every use is an important aspect of brewing. Using good cleaners and sanitizers can make the difference between having a great beer and a spoiled one. Good preparation for your upcoming brew day is key. Make a checklist of the equipment you will be using and note whether it needs to be sanitized or only cleaned. In prepping for your brew day, always make sure your equipment is ready to go when you are.

### ALWAYS START WITH A CLEANING AGENT

Before you do any sanitizing, you need to thoroughly clean your equipment. Sanitizers do not work on equipment with soils on the surface, and bacteria and wild yeasts will remain. It is always best to immediately wash your equipment after use while the soils are soft and easier to remove.

There are a number of good cleaning agents on the market. One Step™, Straight-A™, and Powdered Brewery Wash™ (PBW) are three of the most popular. These products may be used on bottles, fermenters, and other equipment. Cleansers should be rinsed after use. Don't soak your equipment in a cleansing solutions for longer than the time recommended on the packaging or you can damage your equipment.

As with ALL chemicals, ALWAYS thoroughly read the instructions, material compatibility, and safety warnings. Never use more than the recommended concentrations or soaking times or you may damage your equipment.

## CLEANING STAINLESS STEEL

For general cleaning of stainless steel, mild unscented detergents, PBW, or percarbonate-based cleaners are excellent choices. Bleach should not be used to clean or sanitize stainless steel as it will corrode and pit them.

## SANITIZING

Only when your equipment is clean, can you sanitize it.

All items that contact the wort or beer below 140F need to be sanitized. This includes the fermentor (including the lid), airlock, rubber stopper, yeast rehydration or starter container, thermometer, funnel, spoon, and siphon etc. On bottling day, bottles, caps, hoses etc. also need to be sanitized. Chemical sanitizers can be prepared in a bucket and used throughout the brew day. Chemical sanitizers are by far the most common. Most can be used on metal, plastics and glass. Most do not require rinsing; a good feature since your tap water, particularly well water, may contain small amounts of bacteria. Again, always follow the manufacturer's recommendations for concentration, contact time, and the need to rinse before use.

Five Star Chemical's™ StarSan™ is one of the most popular sanitizers on the market. Always use according to the manufacturer's directions.

If you have a particularly tough stain, liked burned malt extract, stains, or other buildup, Barkeepers Friend (oxalic acid) works very well to remove them from metallic surfaces. This product is available at your local grocery store.

## AFTER USE CLEANING

For keeping your equipment clean and looking new, we strongly recommend cleaning immediately after brewing as soils and residue will be much easier to remove before it dries. Never toss components in a bucket of cleaning agents "to clean tomorrow" as these chemicals may damage the product if you exceed the recommended contact time.

Once you've thoroughly cleaned your stainless products, wipe them dry with a towel and let them air dry thoroughly. A clean surface will instantly passivate once it is dry, leaving a durable corrosion resistant surface.

### CLEAN IN PLACE (CIP)

The Blichmann CIP Spray Ball was specifically designed for use with homebrewing pumps and works great to quickly remove heavy soil from the fermentor after fermentation. Please refer to the product's manual for more information. Some surfaces and components, like the lid seal and upper tri-clamp gaskets may need to be sanitized individually after a sanitizer wash is circulated. Other attachments, including valves, carb stones, thermo-wells, and caps will need to be cleaned and sanitized individually by soaking/scrubbing as needed.

**WARNING:** Do NOT use any cleaner or sanitizer containing chlorine such as bleach. This will pit and erode stainless steel. If the ball valves ever begin to drip, remove the handle and tighten the packing nut under the handle. If this persists, replacement valve seal kits are available through your retailer.

### PASSIVATION

Passivation is a natural chemical reaction with the chromium used in stainless steel and oxygen in the air. As long as stainless steel can react with oxygen, a 'passive' chromium oxide will form on the surface protecting the metal from corrosion. All of our products have been passivated, but common manufacturing processes may leave free iron and an isolated area of corrosion may form. If this happens, it is recommended to passivate the tank. This can be as easy as scrubbing the effected area with a scouring pad or household chemicals can be used. Bar Keeper's Friend (BKF) is very effective at maintaining a passive surface on stainless steel. It aids in passivation of stainless steel and will help remove iron oxides. A routine scrub with BKF will keep the surface prepped for years to come.

Thoroughly dry all seals and o-rings and store them in a plastic bag and place inside the tank for the next use. Be sure to remove all the o-rings from the fittings to prevent from taking a "set". Install the lid and V-band clamp (without seal) to prevent dust from settling inside the unit during storage.

John Palmer also has a more in depth discussion about removing rust and how to passivate stainless steel at this link - <https://tinyurl.com/passivation>



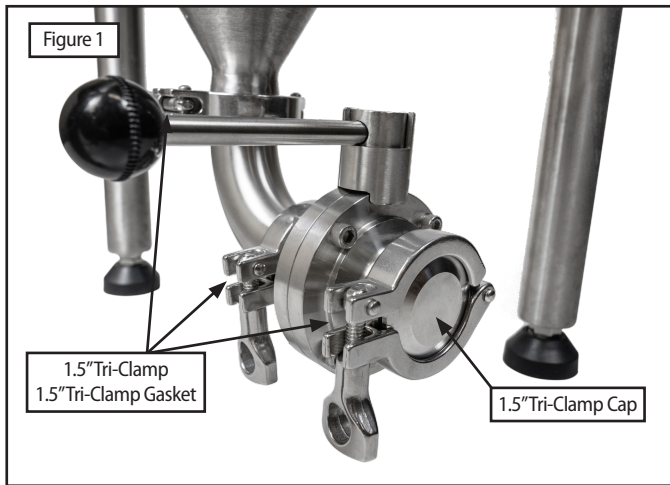
# ASSEMBLY

**NOTE:** We recommend a trial assembly of your new Fermentor™ G4 before using it to ferment so you are familiar with the procedures and are sure you have all the parts. When you are ready to use the fermentor for an actual brewing session, read the sanitizing procedures before assembling your Fermentor™ since many parts are sanitized before assembly.

**NOTE:** Some of the components have not been pre-assembled at the factory to prevent shipping damage.

## BOTTOM DUMP

Assemble the bottom dump assembly as shown in **Figure 1** using a 1.5" gasket between each flange. Orient the clamps and valve as shown so that they clear the floor and tank and do not interfere with the rotation of the valve handle. Be sure the handle of the valve faces up, and that the handle rotates outward. Then attach the assembly onto the tank, again using a 1.5" gasket.

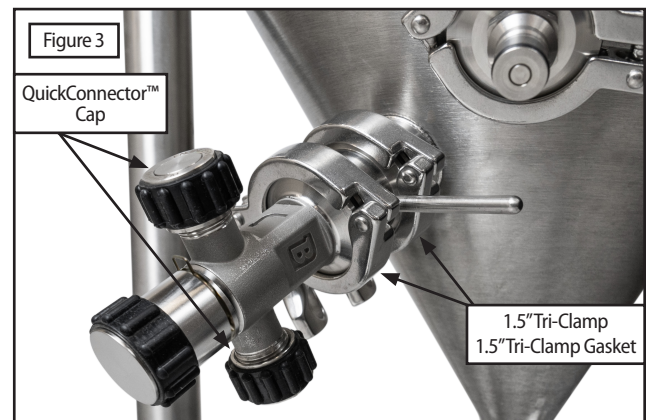
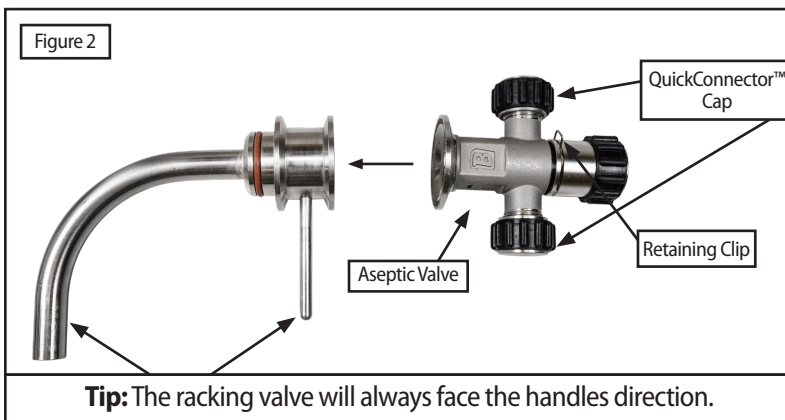


**NOTE:** Before each use soak all fittings, valves, o-rings and lid seal in a sanitizing solution. To ensure that the inside of the aseptic valve is sanitized, disassemble and soak in sanitizer.

**NOTE:** If you are using the optional leg extensions, it is not necessary to use the elbow, and this will allow the trub and yeast to flow more freely. Simply install the valve directly on to the bottom dump fitting. You'll be pressure testing all the fittings during the sanitation process, so if a leak is present you'll be able to tighten it then.

## ASEPTIC VALVE AND ROTATING RACKING ARM

Install the 2 QuickConnect™ caps onto the ends of the aseptic valve. Mount the aseptic valve to the rotating racking arm as shown in **Figure 2** with a tri-clamp and gasket. Install the racking arm and aseptic valve to the tank with a tri-clamp and gasket as shown in **Figure 3** (leg lock)

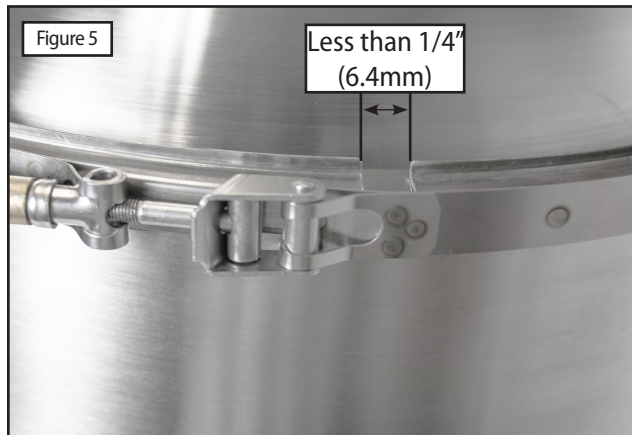


During operation, install the racking arm horizontally to keep this from filling with sediment.

## LID ASSEMBLY

Assemble the Brass Tee-Handle and the Bolt as shown. Place around the lid and flange and engage the latch over the bolt. Initially tighten the clamp to about 1/2" (13mm) of gap between the band segments (**Figure 5**).

**NOTE:** ALWAYS apply a dab of Vaseline or drop of oil on the threads of the draw bolt before each use to prevent wear and galling of the threads. Galled or worn threads are NOT covered under warranty.



If using the included airlock, install the 4" cap with gasket on the lid with the 4" tri-clamp. Install the #8 stopper with air lock as shown in **Figure 6**.



If using the blowoff or spunding valves, see those manuals for assembly and operation.

**BEFORE USE, SPRAY ALL SURFACES WITH STARSAN AND ASSEMBLE**

## PRESSURE RELIEF VALVE (PRV)

Before inserting the sanitized PRV (**Figure 7**) into the lid (**Figure 8**), verify that the PRV cavity is clean and free of debris and foreign material. Sanitize the cavity and insert the PRV. Do not over tighten the cap. Pull on the ring to verify that operation is smooth and the PRV fully extends. Install the spring type filter to the boss on the underside of the PRV port (**Figure 9**). This is required to prevent debris from passing through the PRV.

### WARNING:

- Release all pressure and remove the PRV from the lid before removing the lid clamp
- NEVER** tamper with the PRV
- The PRV is an emergency pressure release **ONLY**
- Use **ONLY** genuine Blichmann replacement parts and seals
- NEVER** use this product without an airlock, blowoff tube, or spunding valve



# OPERATION

## MAXIMUM FERMENTABLES CAPACITY

	Beer
<b>7 Gallon</b>	5.5 US Gal
<b>14 Gallon</b>	11 US Gal
<b>19 Gallon</b>	16 US Gal
<b>1 BBL</b>	34 US Gal

**WARNING:** Exceeding these capacities can cause the fermentation material (krausen) to clog the pressure relief valve and airlock causing a dangerous overpressure of the fermentor. Approximately 20% excess capacity is required for krausen space for beer. The use of Ferm Cap additive is highly recommended. In addition to greatly reducing krausen, it improves head retention.

## DRY HOPPING

Do not use loose whole leaf hops for dry-hopping! Not only will they possibly clog the pressure relief valve, the leaves tend to clog the racking arm. If you use whole hops be sure to use a hop bag. Pellet hops can be used with or without a hop bag. In all cases, using a hop bag will reduce the carry-over of hop particles in the finished beer and harvested yeast and leave you with more finished beer. Boiling the bag before placing the hops inside is an easy way to reduce the risk of introducing bacteria in to the fermentor from the bag. In practice, pre-boiling of the hops is not needed due to the natural bacterial inhabitation from hops, and the low pH of the beer. This will also preserve the volatile aromatic compounds from being lost.

## AFTER USE CLEANING AND STORAGE

After use, rinse with hot water and completely disassemble the fermentor and fittings. Soak the fittings and seals in hot PBW solution. Scrub the fermentor and lid with a soft scouring pad and ordinary dish detergent (or your favorite non-chlorine cleanser such as PBW) and rinse and dry thoroughly.

## MAINTENANCE

Inspect lid seal and o-rings before each use. If they have cuts, abrasion or have taken a permanent set replace them. Never scrub the seals or o-rings with an abrasive pad or cleanser.

# ASEPTIC VALVE OPERATION

After installing the aseptic valve, angle it so that the fittings are vertical. Install the bottom QuickConnect™ cap. Using the included squeeze bottle, fill the inside of the aseptic valve with Star San™ or vodka through the top and install the top QuickConnect™ cap. Keeping this full ensures every sample will be sanitary.

**WARNING:** When using pressure to sample or drain the unit, a few PSI is all that is needed. If counter pressure filling into the keg, it is highly recommended to use a spunding valve. The PRV is **NOT** to be used as a normal pressure control!

**IMPORTANT:** Open the pressure relief valve on the lid prior to draining beer/wort from the tank or you will suck the liquid out of the airlock and into the fermentor! The CO<sub>2</sub> from the actively fermenting beer is generally sufficient to purge any ingested air from the tank.

## WORT SAMPLE

1. Remove bottom cap of the aseptic valve and let liquid drain.
2. Open valve slowly and take sample
3. Replace bottom cap.
4. Remove top cap, fill with sanitizer/vodka and replace top cap.

Alternatively, the unit can be sealed and a few PSI of pressure can be applied prior to sampling to keep O<sub>2</sub> from entering.

## RACKING AND SERVING FINISHED BEER

Transferring beer out the G4 Fermentor can be done with either gravity or using CO2 pressure to transfer into a bottling bucket or keg. To pressurize the fermentor, you can use either the Blichmann Tri-Clamp Spunding Valve or our 1-1/2" Tri-Clamp to Keg post adaptor. Simply attach the device to the top port on the lid and pressurize the tank to the desired pressure. Do not attempt to exceed 15 PSI.

The other method is gravity transfer. Simply elevate the vessel and drain into a keg or bottling bucket. Oxygen contact with the beer is minimized by purging the vessel prior to transfer. Purge the keg with CO2 after transferring to eliminate any residual O2 in the headspace. Purge the keg prior to filling through the liquid out post to ensure all O2 is displaced from the bottom up as CO2 is heavier than air. After filling, pressurize the keg through the CO2 post and pull the keg vent/PRV valve 4-5 times to ensure all O2 has been removed from the head space.

# PRESSURE FERMENTATION

**WARNING: THE PRV IS NEVER TO BE USED AS A PRESSURE CONTROL FOR FERMENTATION!**

**RELEASE ALL PRESSURE AND REMOVE THE PRV FROM THE LID BEFORE REMOVING THE LID CLAMP!**

**EQUIPMENT REQUIRED:** SPUNDING VALVE TO REGULATE THE FERMENTATION PRESSURE AT THE DESIRED PRESSURE.

Pressure fermentation up to 15 PSI (1 BAR) is one of the key new features of the Fermentor G4 conical fermentor. Fermenting under pressure suppresses the formation of esters by the yeast (fruity character) and allows the brewer to produce lager-like beer at room temperature, and in less time. In addition to ester reduction, diacetyl precursor production by the yeast is also significantly reduced. Blichmann Engineering and White Labs have done extensive research on various pressures and the effect on quantitative ester and diacetyl production. In addition, qualitative testing was done through National and Master ranked BJCP judges. While pressure fermenting at higher pressure such as 30 PSI (2 BAR) does reduce esters even further, it also gives a perceived thinner body, and also a harsher presentation of the hop bitterness. The panel found the traditional lager method to produce the best overall flavor, but the 15 PSI at room temperature produced the best balance of ester reduction and hop flavor quality. While esters are reduced, also is diacetyl. Not from the pressure, rather from the higher fermentation temperature. At low levels that are appropriate for the style, diacetyl does add a perceived roundness to the malt character and the tasting panel noted that this was missing from the pressure fermented beer. In summary, pressure fermentation produces a lager-like beer. Is best done at approximately 15 PSI. But is not as rounded as a beer that is lagered in the traditional style.

**TIP:** Do not use pressure fermentation when producing ales or you will not achieve the fruity character and balance necessary in these styles. If you are unable to control temperatures of your ales to 66-72F, it may be necessary to apply 7-8 PSI to suppress enough esters to achieve desired levels for the style. Experimentation with this is highly advised.

### WARNING:

- Do not exceed 15 PSI
- Do not remove the lid clamp before releasing all pressure and removing the PRV from the lid
- Do not tamper with or press on the PRV stem
- Do not leave the fermentor unattended during transferring
- Do not use loose whole hops, wood chips, or other similar material in the fermentor. Use a hop or grain bag to prevent loose material from plugging the pressure relief valve or airlock causing a dangerous overpressure of the fermentor.
- Ensure that the surfaces of the pressure relief valve and seat are free from fermentables or other material prior to pressurization. Clean as needed. Failure to do so may cause sticking and subsequent malfunction of the relief valve system.

**WARNING:** Use a hop bag when using whole hops, wood chips, and other similar materials in the fermentor to prevent loose material from plugging the pressure relief valve or airlock, which may cause a dangerous overpressure of the fermentor. In addition, these materials will clog the racking tube making draining the finished beer/wine difficult. It is highly recommended that you use a blow-off tube for primary fermentation! The optional tri-clamp blow-off assembly makes this very easy.



# BOTTOM DUMP OPERATION

Now you're about to see the real benefit to a conical fermentor: the ease of trub (cold break) and yeast removal for secondary fermentation or yeast harvesting and quick and sanitary removal of wort samples. Typically, cold break is removed just after wort chilling, but prior to pitching the yeast (allow time for settling to the bottom of the tank). Remaining trub and flocculated yeast can be removed after primary fermentation. To prevent air from entering the fermentor, a few PSI of CO<sub>2</sub> can be applied to the fermentor to displace the volume of liquid removed from the bottom dump.

## YEAST HARVESTING

If you're harvesting the yeast, you'll need to sanitize the hose and fittings first. The valve threads can easily be sanitized by a spray bottle of sanitizer a few minutes prior to installing the barbed fitting. Allow the trub to pass first, and collect the cream colored yeast. A wide mouthed glass jar 8-16 oz works well. If you have CO<sub>2</sub> available, purge the jar of oxygen before use. With proper sanitation techniques, yeast can be stored for 1-2 months and harvested up to 4 times in a typical homebrew environment. Since you'll have plenty of yeast to pitch (reactivate in a starter if more than 2 weeks old) you'll find your ferments starting faster and progressing much more quickly.

**PROCEDURE:** Connect a clear 1" ID X 24" long hose to the bottom dump valve with the hose barb fitting provided and place the other end into a suitable container. If you are not harvesting the yeast the hose and fitting do not need to be sanitized. If you have a large amount of sediment or it has compacted over time, it may take one to two minutes for the flow to begin. Over time, yeast takes on the consistency of toothpaste (as opposed to molasses) and even commercial breweries have trouble with plugging. More frequent dumping earlier in the fermentation process will alleviate this. It is recommended to dump when primary fermentation has slowed, and then every few days until the yeast has all been removed. Use proper techniques to leave trub in the boil kettle. Consult any homebrewing text for recommended procedures. If you are still having trouble with yeast cake compaction it is permissible to use pressure to provide additional force to remove the yeast. This is a common procedure in commercial breweries. See the "Racking finished beer – pressure transferring" section for instructions and warnings before attempting this!

Slowly open the valve until you have removed the trub or yeast. Watch the flow through the hose and close the valve when the trub and yeast have been drained. That's it!

# FERMENATOR™ G4 ACCESSORIES



TRI-CLAMP TO GAS POST ADAPTER



THERMOWELL



CIP SPRAY BALL



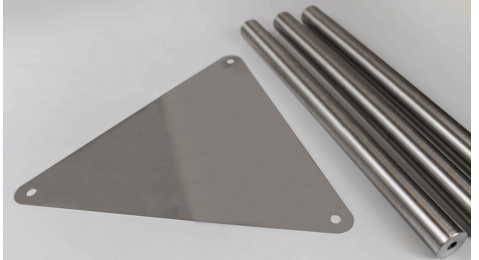
COOLING SYSTEM



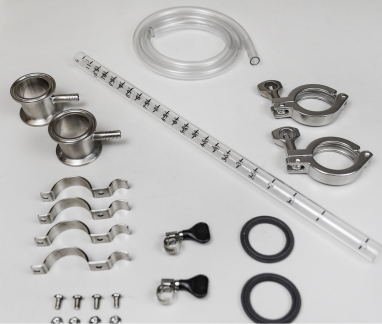
CASTERS



SPUNDING VALVE



LEG EXTENSIONS



LEVEL GAUGE



BLOW OFF KIT

**VIEW ALL  
FERMENATOR™ G4  
ACCESSORIES AT  
BLICHMANNENGINEERING.COM**

# Blichmann Engineering Product Warranty

## A. Limited Warranty

- Blichmann Engineering provides a limited lifetime warranty to the original purchaser that this product will be free from manufacturing defects in material and workmanship. 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.
  - Excluded from this limited warranty are seals, gaskets, accessories, and normal wear and tear.
- This product is for home use only. 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 warrantee 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.