BeerBlast™

Mixed Gas Dispense System

Installation & Operations Manual

Plus Models v4

STS South-Tek Systems, LLC

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I. Introduction

The BeerBlast™ provides an economical, precise means of supplying mixed beer gas to "push" the beer to the tap within restaurant and bar establishments. Beer brewers have established recommended Carbon-Dioxide (CO_2) and Nitrogen (N_2) mixed gas ratios to protect the kegged product quality, eliminating over-foaming or under-carbonation, while increasing the keg life. Precise mixed beer gas lowers operational costs, increases yields/profits, and ultimately provides a higher level of customer satisfaction. This system can also be used for wine or specialty mixed drink dispensing systems.

South-Tek System's line of BeerBlast™ products consist of an internal a) N_2 generator, b) compressor, and c) CO_2 /N_2 dual output gas blender. Since air is comprised of ~79% N_2 we simply and cost-effectively separate the N_2 from the air. Nitrogen is an inert gas (non-combustible), which is even used to package food products for increased shelf life. The N_2 is "generated" by means of the air compressor pushing air into the simple, safe membrane element, which in turn mechanically separates N_2 molecules from other molecules found within air. As needed, the high purity N_2 is then forwarded to the integral McDantim™ dual output gas blender which precisely blends the N_2 with the CO_2 from the restaurant/bar's in house storage cylinder/tank. The standard CO_2 /N_2 blends available are 60% / 40% and 25% / 75%. The blends are accurate to within 2%. Custom CO_2 /N_2 blends are available if desired.

This manual should be read in its entirety by the Installer and the Restaurant/Bar Operator/Supervisory Staff prior to operation.

II. Important Information

**** * * Read before installing and operating the BeerBlast™ * * ****

All personnel (and their supervisors) installing, operating, and maintaining the BeerBlast™ must read and fully understand this manual prior to installing, operating or performing maintenance on the system.

The BeerBlast™ produces a blend of Carbon Dioxide (CO_2) and Nitrogen (N_2) at a low flow rate, which quickly dissipates into the air. CO_2 and N_2 gases are not poisonous but they should not be directly inhaled, since in high concentrations, they can cause asphyxiation. **Ensure that the unit is installed within a well-ventilated room, one that is not sealed off from normal living space air changes.**

All personnel involved with installation, operations, and maintenance of the BeerBlast™ must follow safe working practices, OHSA, and local health/safety code regulations during the installation, operation, and maintenance of the unit.

Electrical Requirements: Connect the BeerBlast™ to an electrical supply following all local safety regulations. Ensure the unit is supplied with 110V/60hz power rated at 15-amp service for 100/200Plus Models and 20-amp service for 400Plus Models. The unit must be grounded.

Servicing the BeerBlast™: Before personnel attempt to service the unit, ensure the power switch has been turned to the off position, then disconnect the unit's external power cord from the building electrical power supply.

III. Unpacking and Preparations

The BeerBlast™ System's carton should be carefully opened and all parts should be inspected for damage, upon receipt. Identify and verify that all parts listed on the packing list are present and undamaged. *South-Tek Systems (STS) is not responsible for damages that have occurred during the shipping and handling of the BeerBlast™.* Any visual damages should be immediately documented and reported to the shipping company responsible. Then contact STS at (888) 526-6284 to assess the damages only after the shipping company has been notified.

Until Installation:

- Store the BeerBlast™ in a dry and climate controlled (60-80°F) room.
- Always keep the BeerBlast™ in an upright position or in the shipping crate.
- Do not connect the AC power cable until this manual has been read completely and all connections are made as stated within.
- Keep all gas lines dry so you don't get the moisture in the generator upon hookup.
- Never place/stack objects on top of the BeerBlast™.

IV. Mounting your BeerBlast™

It is recommended that the BeerBlast™ be mounted to a weight-bearing wall that can support its weight as specified in Appendix A. If placed on a floor, it should still be fastened in place so that it cannot move due to vibration or be damaged from falling over. The BeerBlast™ should always be installed indoors in an environment between 40° and 85° F in the upright position where it will not be damaged by water and not located above a fryer or dishwasher.

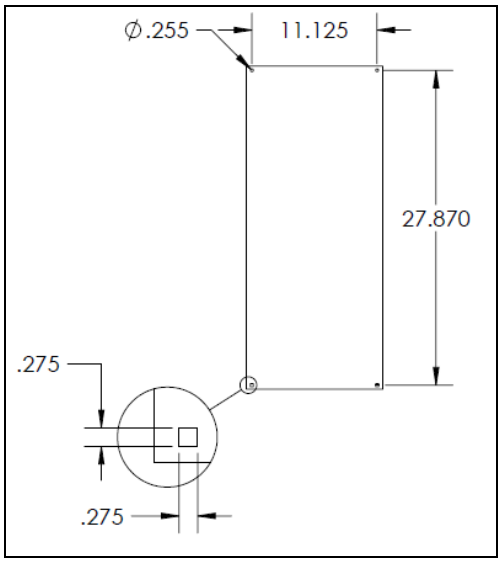


Figure 1: BeerBlast™ 200 Plus Back

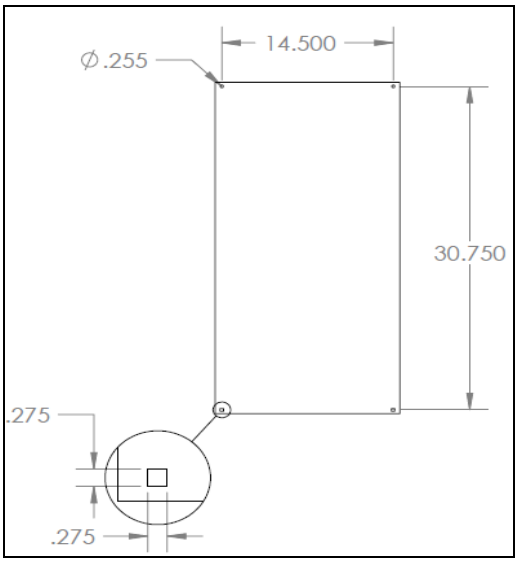


Figure 2: BeerBlast™ 400 Plus Back

There is an optional mounting bracket kit shown in Figure 3 that allows you to mount the BeerBlast™ System on a standard 16" wall stud width. Otherwise, use the mounting holes on the cabinet for mounting the BeerBlast™ securely and level, directly to the wall.

Ensure the wall can support the BeerBlast™ weight as specified in Appendix A.

Optional Mounting Bracket Kit Procedures:

1. All BeerBlast™ mounting holes and optional mounting bracket holes are for ¼" anchors).
2. All the brackets must be installed in the orientation as shown, to work correctly.
3. Install the bracket that has the rectangular cutouts on the lower cabinet flange using the provided carriage bolts as shown in the diagram.

100/200 Plus Models have a 12” upper bracket and 400Plus Models have an 18” upper bracket. Install the appropriate bracket on your model with supplied hardware.

4. Install the 18” mounting bracket on the wall at the desired height as shown.
    a. The width between the holes on the outside of the mounting bracket is 16” (for 16” stud centers). Extra holes are available on the bracket for extra support.
    b. Use the appropriate anchors (wood, sheet metal, masonry, etc.) and make sure that you are drilling them into the studs or wall materials capable of supporting the BeerBlast™ weight as specified in Appendix A.
5. Once the mounting bracket is firm on the wall, hang the BeerBlast™ Plus cabinet from the top bracket making sure it is centered. The cabinet should have at least 4” on either side to a wall or other equipment for cooling purposes.
6. Do not install the system beside any heat source such as a fryer or fridge exhaust.
7. Finally, the cabinet should then be anchored into the wall using the lower bracket or flange at the base of the BeerBlast™. This way the BeerBlast™ cannot slide from side to side or come off at the top mounting brackets.

Warning: Secure the BeerBlast™ to the wall at the top and bottom flanges. Failure to do so could cause damage or bodily injury.

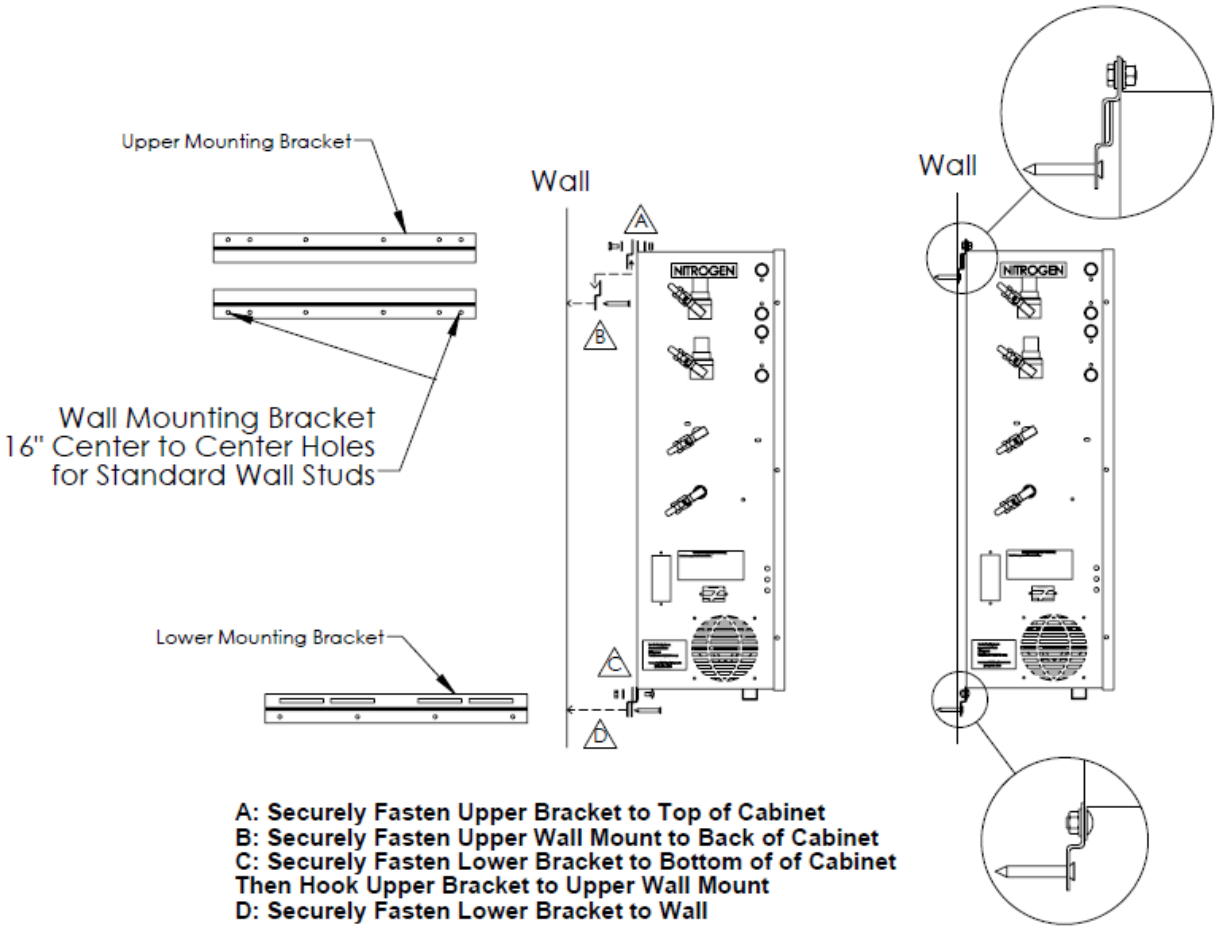


Figure 3: Optional Wall Mount Install Kit

V. BeerBlast™ Plus Installation Guidelines

The BeerBlast™ Mixed Gas Dispense System can be installed for one or multiple CO_2/ N_2 blends. It is necessary to use caution when working with pressurized gas, making sure that all fittings and gas lines are installed correctly. Always leak check every line before using the system.

Note: Line leaks will cause the BeerBlast™ to run excessively, shortening its life.

A basic installation layout is shown in the next section, but your system could be much more complex due to multiple taps. In most systems, the BeerBlast™ can supply two gas blends (of N_2 and CO_2) or a single Nitrogen output for N2-GEN™ Plus models. These lines can be split individually to provide the correct gas and/or blended gas to all of your beverage lines. Use only quality beverage tubing and fittings for all connections. Keep in mind your temperature and pressure requirements when selecting them.

You should always install a valve (on/off) on each individual line. Then, if you are troubleshooting or working on the draft system, you can shut off specific gas lines without interrupting the whole system. Never detach a line with pressure on it before closing the valve, you could cause damage to the equipment or bodily injury. Also avoid depressurizing the keg at all costs, you will possibly affect the beer quality by doing so. Always shut off the valve and remove the tap from the keg before changing or servicing the gas lines.

If your system requirements are more involved, please consult your sales representative or equipment installer for a customized installation drawing.

VI. BeerBlast™ General Installation Layout

1) Carbon Dioxide (CO_2) is supplied to the BeerBlast™ from the facility's CO_2 bottles/tank at 80-100psi.
2) The BeerBlast™ generates Nitrogen (N_2) within its cabinet.
3) The N_2 generated by the BeerBlast™ is stored in a N_2 storage tank.
4) The N_2 from the storage tank is returned to the BeerBlast™.
5) The McDantim™ gas blender housed within the BeerBlast™ mixes the CO_2 and N_2 to provide the correct ratio of 2 separate CO_2/N_2 blends.
6) The BeerBlast™ also has an unblended N_2 output for wine or mixed drink dispensing.

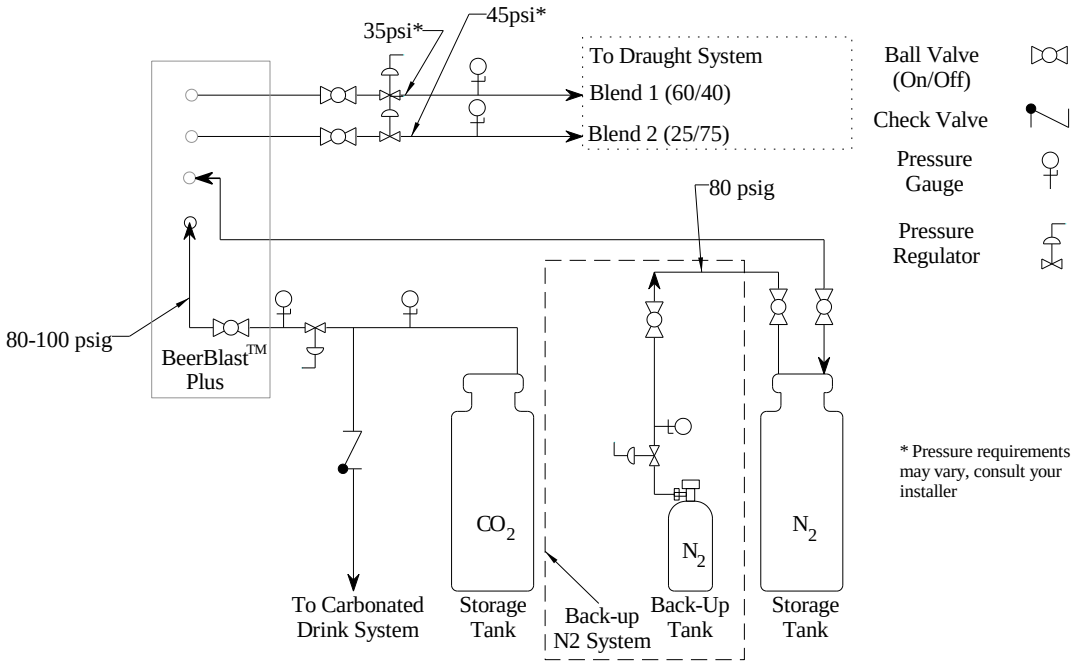


Figure 4: General Installation Layout

VII. Panel Layout and Gas Connections

All gas connections will be made on the left hand side of the cabinet. Double-check all connection locations and blends before turning on the system or opening any valves. Making an incorrect connection may result in beverage quality issues or system damages.

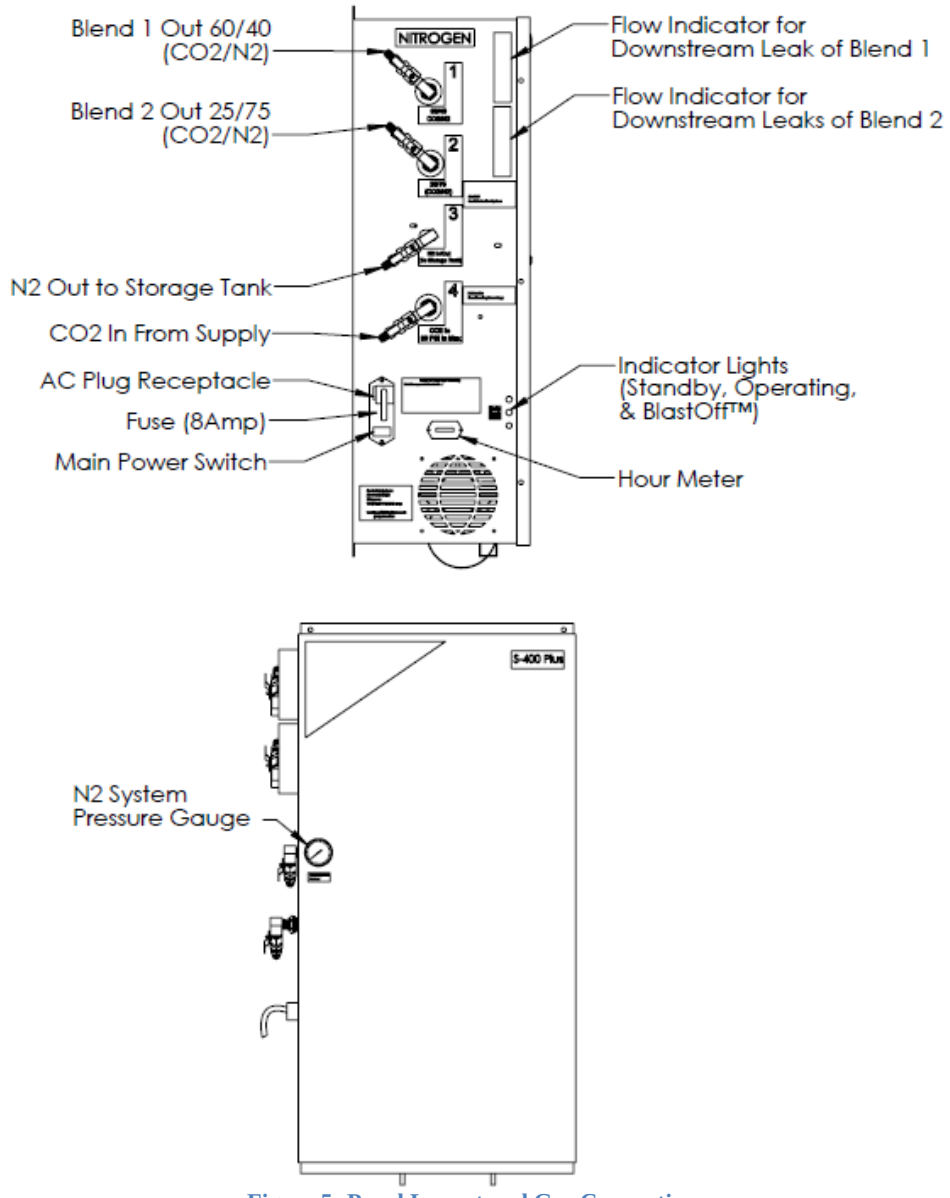


Figure 5: Panel Layout and Gas Connections

Note: All BeerBlast™ Plus Systems are factory sent with ¼"NPT Female connections. ¼" isolation valves and flare fittings on every port are recommended, but optional.

VIII. Installing the Gas Lines and Leak Checking

Always complete the connections and leak testing when the establishment is closed or when carbonated beverages are not being poured since it will cause a brief interruption of service to the faucets/taps. It is recommended that the storage tank be pre-pressurized to 65 psig using a regulated supply of N_2 from a high-pressure cylinder by your gas supplier.

Shut-Off Valves

Use Shut-Off Valves on all inputs and outputs if at all possible. These will allow you to work on the system much more efficiently and safely. This will also allow you to troubleshoot any potential issues much more effectively.

Check Valves

Check valves can be installed on the "Blend Outputs" only. **Do not install a check valve on the "N2 Out to Tank". This will interfere with the unit's pressure switch and not allow the blender to work.**

Connections

Be sure the gas supply (pressure) from the CO_2 storage vessel is turned off at the connection point before making the CO_2 connection. All gas connections on the BeerBlast™ are ¼" NPT Female fittings. You will need to attach fittings accordingly to meet your tubing/line connection needs.

1. Install beverage tubing on the N2 Out port and connect to the Nitrogen storage tank. Do not use check valves on either connection side. This is a two-way line, filling the tank and flowing back to the blender within the BeerBlast™ Plus.
2. Connect the CO_2 inlet port to the CO_2 supply line connection point. Again, we recommend a Shut-Off valve on the connection. The CO_2 should be regulated to 80-100psig .
3. Connect the Blended Gas Lines to the draft system. Make sure that the correct blend lines are attached to the correct beer types. Make sure that both blend lines are individually valved and turned off during this step.

Powering Up the BeerBlast™:

Your system is now ready for power once the connections installation is complete. All valves should be open and ready for gas to be distributed. Plug your BeerBlast™ into a 110VAC power outlet and turn on the rocker switch. Your system's compressor will come on if the N_2 storage tank is not up to the full specified max tank pressure (Appendix A). If it is at or above the specified pressure, you will see the "Standby" light illuminated and the compressor should be off. Once you drop below that pressure (5-7psi below max), your compressor will activate and generate the N_2 necessary to maintain system gas requirements. The "Operating" light will illuminate until the N2 storage tank pressure reaches its set point and the compressor shuts off.

Warnings:

- **If your compressor remains on and your system's N_2 pressure never reaches the specified level, double check for leaks, then contact your installer or the factory.**
- **If your compressor remains on and the N_2 pressure is more than 5psi above the specified maximum level, power off the system immediately and consult your installer or the factory.**
- **If the compressor is not running and you are more than 10psi under the specified N_2 pressure, make sure you have power, then call your installer or the factory.**

If a problem continues, valve out (off) the N2 Storage tank and valve in (on) your N2 Back-Up tank (if installed). Unplug the BeerBlast™ and consult your installer or the factory.

Leak Checking: Using the BlastOff and BeerBlast™ Plus Flowmeters:

The Nitrogen Tank needs to be pressurized and CO2 needs to be on and regulated to 80-100psig in order to perform leak tests. The power switch should be ON.

1. Turn off Valves 1 and 2, the blended outputs.
    a. The flowmeters should show no flow. If they show flow, there is a leak between the valve and the upper flowmeter port. Correct and retest.
2. Turn OFF Valve 3, "N2 Out to Tank", Valve 1 and 2 OFF.

a. The BeerBlast™ should enter "Stand-By" mode and the amber light should be illuminated. If the compressor cycles (or continues to run) and the flowmeters are showing no flow, then there is a leak on the pressure switch manifold, the Valve 3 or the blender. Make the correction and retest.
b. *Note: Acceptable leakage on push-to-connect fittings is typically 5ccm.* So there could be a cycling of the compressor once every few minutes. If your compressor doesn't cycle within 1 minute of closing the valve, there isn't an issue.
c. If the BeerBlast™ continues running without going into "Stand-By", you may have an issue with the compressor or other internal component, contact manufacturer.

3. Open all valves on the BeerBlast™ Plus and storage tank. If your flowmeter(s) shows flow, you are sending gas downstream of Valves 1 and/or 2. If the beer isn't flowing (being poured), you should not show flow on the flowmeters. Allow the cooler a few minutes to settle into full stable pressure if you have made any pressure changes in the cooler.
    a. If you are still showing any movement on bead in either flowmeter, you have a leak downstream of the BeerBlast™ that needs to be corrected, most-likely in the cooler.

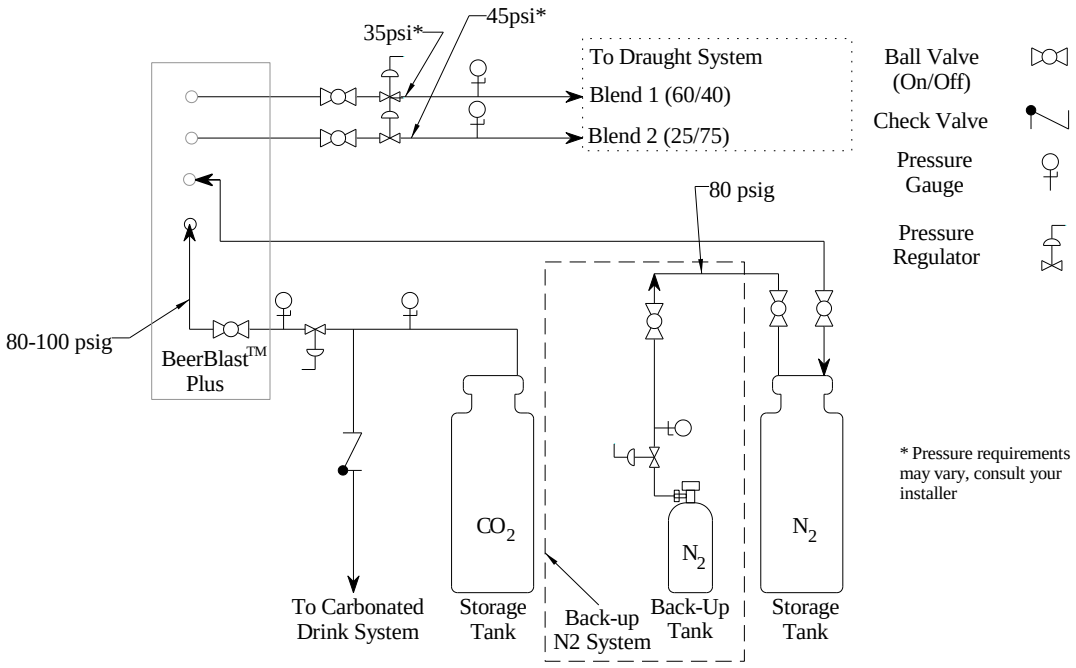
Isolating a small leak can be time consuming. **Ensure that all beer keg couplings are secure.** Leaking keg tap couplings are common. The leak(s) is likely to go unnoticed (except through excessive gas consumption). If this occurs, you will notice the BeerBlast™ run constantly and excessively or the BlastOff™ Leak Detection System Alarm will sound. Check all gas line connections, including the keg couplings, for leaks.

IX. **Nitrogen Cylinder Back-Up**

It is recommended that a backup system be installed incase of any unforeseen complications. A backup N_2 Cylinder tank can be used instead of the BeerBlast™'s generated N_2 and will allow the Nitrogen to go through the Blender to achieve the desired results. To install the back-up tank, you will need a cylinder with valve and regulator (regulated to 80psi). Install the N2 back-up on the gas line between the N_2 Storage Tank and the BeerBlast™ N_2 Input as follows:

1. Install to the 2nd valve on the BeerBlast™ Tank Manifold or tee between your N2 Storage tank and the BeerBlast™ N_2 Out (Port 3).
2. The cylinder and valve should be tied shut and labeled for "Backup use only".
3. If the Back-up system is turned on, the backup will fill the N2 Storage tank and flow to the BeerBlast™ Plus keeping the internal blender pressurized with Nitrogen.

See below for visual piping connections.



XI. BlastOff™ - Leak Detection System

Equipped with
The BlastOff™
"Leak Detection System"
Patent Pending

The BlastOff™ – Leak Detection System is a Patented system when installed into the BeerBlast™ or N2-GEN™ will detect line leaks within the downstream gas lines from the BeerBlast™ or N2-GEN™ to the kegs. Line leaks could be due to a keg not being tapped correctly, a beer gas line leak or fitting therein failing, etc. These leaks are potential safety hazards, they can cause the CO2 to deplete quickly, and could cause your BeerBlast™ or N2-GEN™ system to run in excess (decreasing the life of the unit).

Once a leak has been detected, the BlastOff™ can be set to either initiate a buzzer, activate a red warning light (inserted into the BeerBlast™ or N2-GEN™ cabinet), and/or shut off the BeerBlast™ or N2-GEN™ until the problem has been remedied. To reset the BlastOff™, simply turn off the BeerBlast™ or N2- GEN™ power switch and turn it back on. The BeerBlast™ or N2-GEN™ can be ordered with the BlastOff™ System Factory installed or the system can be retrofitted in the field. Some rewiring and drilling required to field install.

Factory settings will give both an audible and visual alarm as well as shut the compressor down. The buzzer and light will continue until the system has been reset . Never reset over and over, if the BlastOff™ goes off, there is a real potential issue. Consult your installer or the factory for a solution.

The label below and the Logo above will be on your BeerBlast™ or N2-GEN™ if factory installed.

Buzzer or Red Light Warning

This unit is equipped with **The BlastOff™ - Leak Detection** feature. If the red light and buzzer are on, you may have a leak in one of the beergas lines or one of your kegs may not be properly tapped, causing beergas leaks. **Note:** Turn off this unit's on/off rocker switch and check for leaks. If none are found, leave the unit turned off and contact your service company. Once the leak has been fixed, turn the BeerBlast™ on/off rocker switch back on to resume normal operation.

Appendix A
BeerBlast™ Specifications

There are several BeerBlast™ Plus System models available; S-100Plus, S-200Plus, and S-400Plus as well as N2-GEN models (no blender). Each model varies in volumetric CO_2 /N_2 mixed gas flow output, thus they are sized to the amount of beverage volume the end users facility maintains. Below are the S-100 and S-200 Specifications:

	100Plus Models	200Plus Models	400Plus Models
Maximum pints per minute	5	10	20
5 Hour Surge (kegs)	10	20	40
Kegs per month	up to 100	up to 200	Up to 400
Nitrogen storage tank recommended	30 gallon	30 gallon	30gallon
Mounting	wall or floor	wall or floor	wall or floor
Display	Hours/Power on/Operating	Hours/Power on/Operating	Hours/Power on/Operating
CO_2 gas requirement	80 psig (60min/100max)	80 psig (60min/100max)	80 psig (60min/100max)
Blender	McDantim Trumix™	McDantim Trumix™	McDantim Trumix™
** Blends (%)	60/40 & 25/75 (CO_2/N_2)	60/40 & 25/75 (CO_2/N_2)	60/40 & 25/75 (CO_2/N_2)
N_2 Generation Pressure	60-70 psig	60-80 psig	60-80 psig
Blend Outlet Pressure	40-50 psig min	50-60 psig min	50-60 psig min
Cabinet Port Connections	¼ " NPT Female	¼ " NPT Female	¼ " NPT Female
Electrical	110 VAC; 15A breaker	110 VAC; 15A breaker	110 VAC; 20A breaker
Compressor	Integral / Oil-free	Integral / Oil-free	Integral / Oil-free
Ambient Temperature	40 to 85°F	40 to 85°F	40 to 85°F
Noise level (dbA)	under 60	under 60	under 60
Size	27"H x 12"W x 9"D	27"H x 12"W x 9"D	32"H x 16"W x 11"D
Weight	46 lbs	50 lbs	75 lbs

***Custom Blends Available*

Appendix B
Troubleshooting and Maintenance

Power Issues
If the BeerBlast™ or N2-GEN™ doesn't have power, the production and storage of Nitrogen will become apparent once the storage pressure drops. The taps will begin to pour slowly or not at all.

1. Check the power cord
2. Has the building's circuit breaker or GFCI tripped? Locate the breaker and reset. If the breaker continues to trip, you may have that circuit overloaded.

Pressure Issues
Whether you are using a BeerBlast™ Plus with an integrated gas blender or an N2-GEN™ with an external gas blender, you have to have both gases (N2 and CO2) available with pressures over 50psi. Blenders will shut down output if either gas is not present over 40 psi.

The BeerBlast™ S-100 and the N2-GEN™-100 will produce and store Nitrogen at 70psi. Once the storage tank reaches 70psi, the system will go into Stand-By Mode. When the pressure drops by about 5psi, the system should go into Operation Mode and begin to refill the storage. All 200 and 400 models will operate the same, but store the Nitrogen at 80psi. If you are out specifications, we need to determine where the issue is. Contact the manufacturer or factory trained technician.

CO2 Pressure Check:

If you have a BeerBlast™, look at your CO2 regulator pressure gauge. It should read between 80 and 100psi. If it is lower, check the Bulk Storage tank to see if it needs refilling or if the pressure regulator needs adjustment. The pressure going into the BeerBlast™ is recommended to be set at 80psi.

If you have an N2-GEN™, check the pressure gauge on the Blender's CO2 In. It should also read over 80psi typically. If it is lower, check the Bulk Storage tank to see if it needs refilling or if the pressure regulator needs adjustment.

Nitrogen Pressure Check:

Look at the pressure gauge on the cabinet panel; is it between 50 and 80psi? If the pressure is low, a few things need to be checked.

- Check the power.
- Perform a complete Leak Test, ("Leak Checking" pg 12) . This will determine if the unit is operating properly and ensure that the unit is holding pressure.

Pressure Regulation Check:

Lastly, if the CO2 and N2 are both present and the blender is outputting gas, maybe a regulator is malfunctioning or needs adjustment. The mixed gas coming from the blender should be between 50-80psi (dependent on the N2 and CO2 pressures going into the blender). A primary regulator is usually installed on the output lines coming

from the BeerBlast™. The primary regulator is there to "step down" the available pressure to the kegs. There are secondary regulators located further downstream on the mixed gas lines going to the kegs. The secondary regulators are there to individually tune each keg. Some beers require more/less pressure and regulating each keg individually will allow the beer pouring to be optimized.

If the BeerBlast™/N2-GEN™ is operating correctly, then the restaurant/pub should contact their Draft Beer System Technician to adjust the regulators for optimal performance.

Gas Leaks*:*

As with any gas system, only use a spray bottle on non-electrical equipment to find leaks. Fix or replace leaking fittings or old hose. Push-to-connect fittings will show bubbles and typically have up to a 5ccm acceptable leakage rate. Contact the manufacturer for help.

Temperature Issues*: **Very Common Issue***

Consistent beer temperatures are crucial to a good pour. The beer in the keg should be kept between 36-38 degrees F. It should be sent from the keg to the tap at the same temperature. If there is a change in temperature of the beer between the keg and the glass, then you may experience foaming. Take the temperature of the beer at the glass and if it is above 40 degrees, you may need to see if the Glycol line cooling system is operating properly. If a keg(s) is warm, change to a properly chilled keg and resume. Contact your refrigeration expert if you have temperature issues, the BeerBlast™/N2-GEN don't influence temperature.

BlastOff™ - Leak Detection System:

> "There is an alarm sounding in the BeerBlast™/N2-GEN™ and a red light is illuminated on the side panel of the unit."

The unit is equipped with *"The BlastOff™ - Leak Detection"* feature. If the red light and buzzer are on, there may be a leak in one of the beergas lines, regulators, or one of the keg couplings may not be properly seated, causing beergas leaks. Note: Turn off this unit's on/off rocker switch and check for leaks. If none are found, leave the unit turned off and contact your Draft Beer System Technician. Once the leak has been fixed, turn the BeerBlast™ on/off rocker switch back "On" to resume normal operation. By turning the system power off, then back on, this will reset the BlastOff™ automatically.

Filters Maintenance (3 locations):

Filters should be replaced every year or every 1000 hours (hour meter on the side to keep up with hours run), whichever comes first on 100Plus or 200Plus Models. 400Plus models should be replaced every 750hours or every 9months, whichever comes first. Only replace with Factory Replacement parts. If filters are not maintained on schedule, the unit's performance specs and warranty are void. See Filter Replacement Procedure for instructions (comes with replacements filters).

Appendix D
Warranty

The BeerBlast™ System is warranted against any defects in workmanship and materials for 24 months (or 2000 hours) from the date of shipment from South-Tek Systems, whichever comes first. The purchaser has the liability to ensure that the system is fully inspected upon delivery and shall contact the appropriate shipping company to make any claims on damaged goods due to transit within that shipping company's policies. If the system is received with defects that are not due to shipping, a written claim should be submitted to South-Tek Systems within 1 week of receiving the shipment. South-Tek Systems can deny all other claims at their discretion.

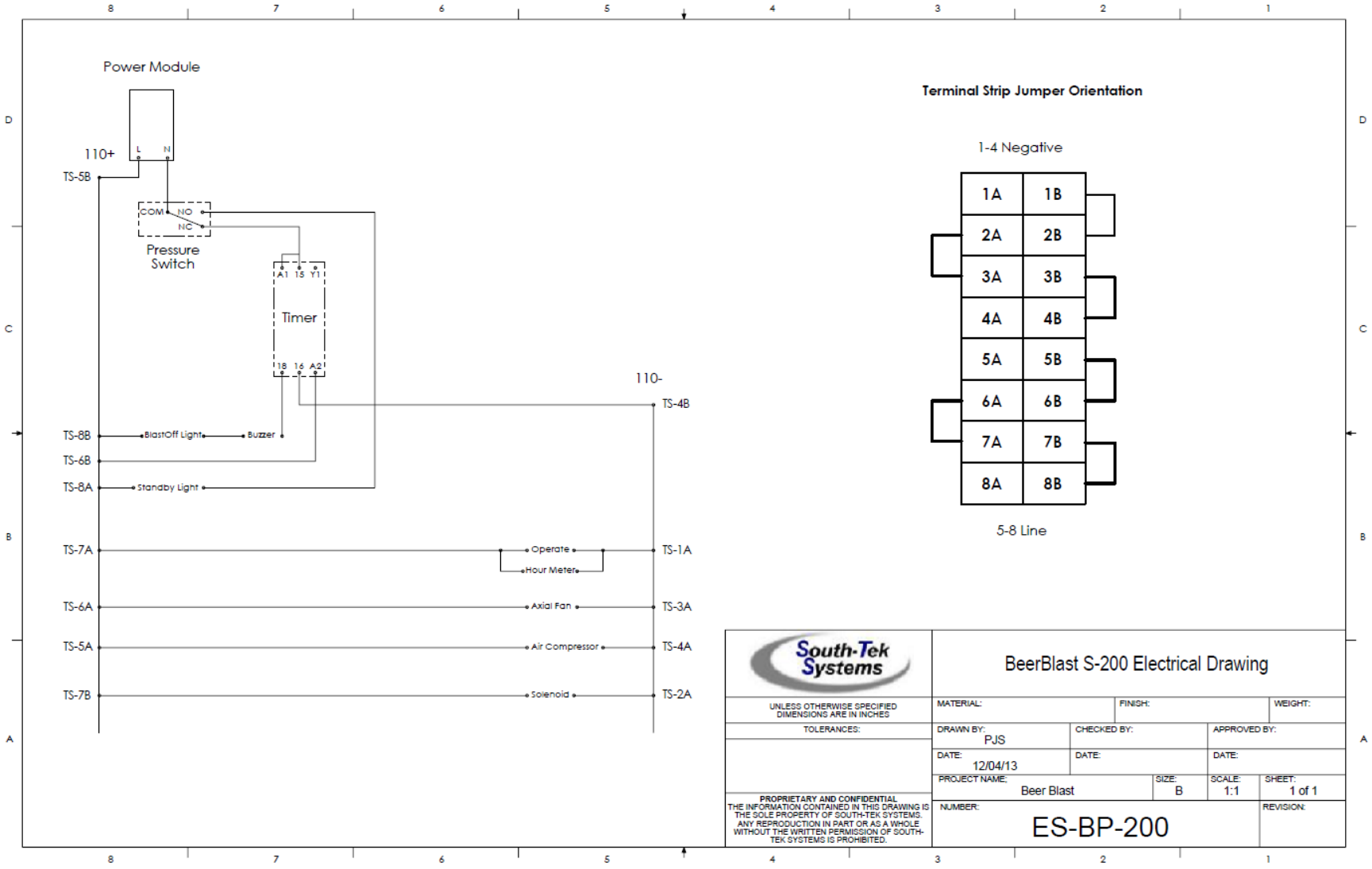
All warranty work shall be done at a South-Tek System facility or at a BeerBlast™ Authorized Service Center. Only factory trained and authorized personnel are covered under warranty. Any part that is returned/repaired/replaced under warranty may be remanufactured or changed to a different specification at the factory's option. Any work performed by an unauthorized person/company or usage of non-factory parts, may void all warranties to the product.

Any item not manufactured by South-Tek may carry its own warranty from its manufacturer and will be warranted by that manufacturer. All parts that need to be returned should be announced. Any item(s) that is returned to South-Tek Systems without an RMA number (return authorization number) may be denied and returned to the sender. Contact the factory for RMA #'s, prior to return shipment.

South-Tek Systems is not liable for damages caused by normal wear and tear, water, fire, erosion, corrosion, explosion, misuse, oil/gas vapors or unauthorized modifications. South-Tek Systems is also not liable for any losses (including CO_2), damages, or cost of delays, including incidental or consequential damages. There are no warranties or guarantees, expressed or implied, including the warranties of merchantability or fitness for a particular purpose or use, other than those warranties expressed herein.

For Claims, contact South-Tek Systems LLC at:
tel (919) 847-3800 fax (919) 847-0255
email: support@southteksystems.com
or write to
South-Tek Systems, Warranty Claims, 4724 Sharpstone Lane, Raleigh, NC 27615

Appendix E
Wiring Diagram – BB-200



Wiring Diagram – BB-400