

Barguns have two general classifications - post-mix and pre-mix.

A post-mix bargun delivers carbonated water and syrup into the bargun and mixes the two while dispensing. The per serving cost is less with a post-mix system because you are only buying soda syrup from your local distributor or Sams Club/Costco membership store. The cost of installation is higher for a post-mix system because a carbonator pump is required to create and supply carbonated water to the bargun. A carbonator pump is a self contained pump, motor and tank that turns tap or R.O. Water into Carbonated Water /Seltzer or Soda Water that can be delivered on demand. A dedicated 110VAC outlet is required for the carbonator pump.

A pre-mix bargun dispenses pre-mixed soda. The soda can be purchased from your local distributor or club store. Pre-mixed 5 gallon cans or can it yourself with the use of a Cornelius Keg and 2 Liter or Canned Sodas. Also, 1 gallon of Syrup and 4 gallons of Filtered Water makes 5 gallons of pre-mixed soda. Regulated CO2 is needed to Force Carbonate the mix which is available at your local Gas Supply, IPS has the CO2 Regulators you need in wall or bottle mount. The per serving cost is more with a pre-mix system because the soda cost is higher- Unless you are mixing your own- but the installation cost is considerably less as a pre-mix system does not require a carbonator pump or BIB Syrup Pumps. A permanently installed pre-mix bargun system that is frequently used will still require 110VAC power for refrigeration, however a portable system like a jockey box or event used only system will not need any AC power...just ice.

Refrigeration

All bargun systems require refrigeration or chilling prior to dispensing. Dispensing warm soda into a glass full of ice, will cause the CO2 to "Off-Gas" immediately and will result in a flat glass of soda.

Commercial refrigeration is usually accomplished using a cold plate. IPS cold plates are constructed as a block of aluminum with stainless steel tubing coiled inside. A Beverage Cold Plate will have several feet of stainless steel tubing inside the aluminum block for each flavor. Beverage Cold Plates can have single to multiple circuits and outer dimensions vary depending on number of circuits. Larger cold plates are more effective than smaller cold plates due to surface contact with ice. In most post-mix systems, only the carbonated water is sent through the cold plate, and the tubing is bundled and insulated keeping the soda lines slightly chilled. This method relies on the chilled carbonated water line to be chilled enough to keep the soda syrups chilled and preventing "Off Gassing" when dispensed.

Beverage Cold Plates must be submerged under ice or in constant 32 F water to be effective. As the soda or carbonated water passes through the tubing, the temperature exchange occurs in the aluminum and chilled water or ice. Counter mounted ice bins, coolers or Jockey Boxes work for a temporary or permanent installations that will only be used on occasions. An under counter refrigeration unit can be installed in place of an ice bin / cold plate for permanent installations with regular usage.

When dispensing pre-mix sodas from Cornelius type soda kegs, a cold plate or under counter iceing unit can be eliminated when the kegs are kept as close to 32° F as possible. This is done by setting up one or more mini-refrigerators under the bar, large enough to house the flavors you intend to dispense. When considering a mini-fridge, plan for a minimum of 25" inside height and at least 18" width to accomodate 1 or 2 pre-mix tanks.

CO2

A CO2 source and one or more CO2 regulators will be required regardless of the type of system installed,

Post-mix systems use CO2 to carbonate water through a carbonator pump and uses CO2 to operate the BIB pumps - BIB pumps are used to deliver the soda syrup to the bargun. See www.ips247.com for Shurflo or Flojet Bag IN Box Pumps.

Post-mix systems require a dual CO2 regulator, one set to the correct pressure for the carbonation pump, typically around 100 PSI and the other set to the correct pressure for the BIB pumps, typically 35 PSI.

Pre-mix systems need CO2 to push the pre-mixed soda out of the Cornelius style kegs. Pre-mix systems typically only require a single pressure regulator.

CO2 tanks are available in 2.5, 5, 10, 20 and 50 lb. cylinders. 20 lb. cylinder are the most economical for home use-space permitting. You will need 27" high by 8" wide space for a 20# CO2 tank.

Warning - CO2 gas is a deadly poison in high concentrations and all instalations should be thoroughly checked and tested for leaks.

Plumbing

Clean, potable water (city water) and an in-line pressure regulator are required for a post-mix bargun installation. An Omnipure in-line water filter is also needed if your water supply has any taste or odor issues such as chlorine.

A drain or drain bucket will be needed to catch water run-off when using a cold plate and a direct drain tube from your bargun drip cup to a floor drain or drain saddle as may be required by your local code.

CO2 and syrup lines can be run with food grade 1/4" or 3/8" ID braided line such as our BT4 or BT6 172-Series Beverage Tube. If installing a post-mix (BIB) system, the lines from the BIB syrup and BIB pumps should be run with heavy duty 3/16" or 3/8" BIB tubing such as our BB610 200-Series Bag in Box tubing for flexibility.

Placement and Location

Cold plates and/or mini-refrigerators should be as close to the bargun dispenser as possible to reduce the amount of warm soda in the lines. A single cold plate or mini-refrigerator can supply more than one bargun by teeing and insulating the supply lines. When installing a carbonator pump, mount on a solid surface. Mounting on a shelf or counter can vibrate and be very noisy..

Installing a Post-mix system

Place or mount the CO2 tank & CO2 regulator upright and in a location where it can not be tipped or knocked over. Consider strapping it down.

Install the carbonator pump as instructed per manufacturers instructions. Installation is easy, mount the pump, run and connect the water supply, supply 110VAC power and run CO2 from the CO2 regulator to the carb pump.

Install your www.ips247.com Supplied BIB rack and run a CO2 line from the lower pressure CO2 regulator to the BIB pumps. You may need to supply tee fittings to split the CO2 out to more than one BIB pump. If not using a BIB rack then mount the BIB pumps on a secure surface such as the wall or cabinet or a small plywood base mounted under your bar/counter will work.

Install your www.ips247.com Supplied BIB tubing to the BIB pump IN ports, leaving enough length to easily reach over to the BIB rack or shelf where you plan to place the BIB flavor boxes. Install the BIB fittings on the ends of the BIB hoses.

Install your ice bin and cold plate some ice bins come with the cold plate already installed.

Install your www.ips247.com Supplied bargun, make sure that you can access the metering (adjustment) screws located in the manifold for flavor calibration later.

Run your www.ips247.com Supplied beverage lines and carbonated water line from the cold plate to the barguns manifold.

Run your www.ips247.com Supplied beverage lines from the BIB pump to the cold plate.

Run the carbonated water line from the carbonator pump to the cold plate.

Setup and Calibration

Post-mix systems have 2 regulators, one for the carbonator pump and one for the BIB pumps. The carbonator pump CO2 regulator should be set to initial 100 PSI and the BIB pump CO2 regulator should be set to 35 PSI. The carbonator pump CO2 pressure can be adjusted up or down, but no more than 75 - 125 PSI. Your actual soda carbonation level is adjusted during brixing.

To test the system for leaks, turn the CO2 on and turn the valve back off & wait about 20 minutes for either pressure to drop down. If either gauge drops to zero, that branch has a leak and the leak needs to be chased and stopped before proceeding.

Warning - CO2 gas is a deadly poison in high concentrations and any install should be thoroughly tested for leaks.

Turn on the carbonator pump water supply, turn on the carbonator pump, attach the BIB boxes and hold down each bargun button until carbonated water and syrup flows from each flavor.

Brixing

Brixing is the process of verifying that the CO2 level is correct and then verifying that the ratio of syrup to carbonated water is correct. Systems need to be re-brixed once a month or any time the carbonator pump or BIB pump CO2 regulator pressure is changed; as both change the flow rate through the bargun.

Fill your ice bin with enough ice to thoroughly cover the cold plate and wait 15 minutes.

Following the bargun instructions, remove the dispense head and install the brixing head. Dispense a flavor into the brix cup & compare the results to the bargun brixing instructions. Adjust the syrup to carbonated water ratio with the metering screws located on the bargun manifold until the brix is correct.

System Troubleshooting

No carbonation present

Verify that the carbonator pump is plugged in and is on.

Verify the carbonation CO2 regulator is on & set to 100 PSI.

Verify that the CO2 regulator ball valve (if equipped with one) is turned on.

Verify that the carbonator pump is plugged in and is on and is operational.

Dispenses syrup only

Verify that the carbonator pump is plugged in and is on and is operational.

Verify water is turned on.

Dispenses carbonated water only - one flavor

Verify that the BIB box is not empty.

Check the connection at the BIB box to make sure it has not come loose.

Verify the BIB pump is working correctly.

Dispenses carbonated water only - all flavors

Verify the BIB pump CO2 regulator is on & set to 35 PSI.

Verify that the BIB pump regulator ball valve (if equipped with one) is turned on.

Dispenses non-carbonated water only - all flavors

Verify that the CO2 tank main valve is all the way on and that the regulator high pressure gauge is above the red "Fill" range.

Soda tastes weak, watered down or too sweet

Re-brix the system.

Other issues related to flow not stopping, syrup or water leaking from places it should not, etc

Although the bar-gun can be disassembled and all parts are replaceable, we recommend that you send the bargun in for professional repair, testing and calibration.

Installing a Pre-mix system - using a mini-fridge to house and chill the premix tanks

Install

Trial fit the mini-fridge(s) under the bar, leaving at least 1/2" of clearance on each side for air circulation and cooling.

Place or mount the CO2 tank & CO2 regulator upright and in a location where it can not be tipped or knocked over.

Mount the bargun.

Remove the mini-fridge from under the bar.

Drill holes in the mini-fridge wall to run CO2 in and beverages out, taking care to not drill through any refrigerant lines. If possible, the beverage lines should be run through the same side the bargun is mounted to keep the lines as short as possible.

Run the beverage and CO2 line through the mini-fridge wall, leaving more than enough length to reach the CO2 regulator and bargun manifold. Seal the holes with silicone type sealant or try using our through wall beer shanks for a cleaner look.

Install a tee on the inside branch of the CO2 line, attach 2 short pieces of line to the tee & attach 2 gas disconnects to the ends of the lines.

Install 2 liquid disconnects on the inside branches of the 2 beverage lines.

Install the mini-fridge under the bar.

Route the CO2 line to the CO2 regulator & attach to the regulator output.

Route the beverage lines to the bargun manifold and attach.

Turn on the CO2 and test the system for leaks by turning the valve back off & waiting 20 minutes for the pressure to drop down. If the low pressure gauge drops to zero then you have a leak and the leak needs to be chased and stopped before going any further.

Warning - CO2 gas is a deadly poison in high concentrations and any install should be thoroughly tested for leaks.

Setup and Calibration

If mixing your own product, pour in the syrup and top off with filtered water to make 5 gallons.

Place premix tanks/Cornelius kegs in the mini-fridge and wait for them to fully chill.

Determine the mini-fridge inside temperature and use the following chart to set the initial CO2 regulator pressure to 3.5 - 3.6 volumes of CO2 (marked in yellow).

Soda water is carbonated to a much higher level, 4.5 volumes of CO2 instead of 3.5 volumes of CO2. If dispensing soda water, set the initial CO2 regulator pressure to 4.5 volumes of CO2 (marked in blue).

Volumes Temperature

Pressure	32 F	35 F	40 F	45 F	50 F	55 F	60F
15 PSI	3.7	3.4	3.1				
20 PSI	4.0	3.7	3.4	3.1			
25 PSI	4.3	4.3	3.7	3.4	3.1		
30 PSI	5.2	4.8	4.3	3.9	3.6	3.3	
35 PSI			4.8	4.4	4.0	3.7	3.4
40 PSI			5.3	4.8	4.4	4.0	3.7
45 PSI				5.7	4.8	4.4	4.0
50 PSI					5.2	4.8	4.3
55 PSI						5.1	4.7
60 PSI							5.0
To read this chart:	Find your temperature across the top of chart Drop down to the desired volumes of CO2 Read the CO2 pressure from the left column If your pressure and / or temperature falls in the middle of two values, use the average the two values						
Example:	<i>Your temperature measures 43° degrees, which is a little past mid way between 40° & 45°. The chart shows 3.4 volumes @ 20 PSI & 3.7 volumes @ 25 PSI. The correct starting pressure would also be a little past the mid way - 23 PSI.</i>						

If mixing your own product, wait a week for the soda to fully carbonate.

Dispense soda into an ice filled glass. Adjust the CO2 pressure down if the soda is all foam with no carbonation left after dispensing or adjust the CO2 pressure up if the soda dispenses too slow.

Juice, Lemonade and Tea

Juice, lemonade and tea can also be dispensed from a pre-mix system but using CO2 will carbonate these beverages in less than a week. Long term dispensing of juice, lemonade or tea needs to be done with nitrogen and the setup is identical to a CO2 based system.

System Troubleshooting

System troubleshooting starts with the correct installation. Setting the wrong CO2 pressure or attempting to dispense above 40° F will result in foaming. All tubing runs should be complete with no splicing. If installing 2 bar guns, install full size stainless steel tees with Oetiker Clamps and keep the runs to a minimum.

Foaming

Dispensing soda at more than 40° F will cause foaming.

Pre-mixed carbonated beverages should not contain more than 3.5 - 3.6 volumes of CO2. If you suspect over carbonation, disconnect the CO2 and shake the tank to drive CO2 into the head space. Then re-connect the CO2 and test dispense.

Storing tanks in a relatively cold location without adjusting your CO2 pressure will cause over carbonation and foaming. For example, if you have an outdoor bar set-up, the refrigerator typically cools to 40° F but when the outside temperature drops to 32° F at night, the refrigerator inside temperature will also drop to 32° F and the soda will absorb more CO2 into solution. The next day, when the inside of the refrigerator warms back to 40 degrees F, the soda will be over carbonated.

Any obstruction in the lines can cause foaming. Most common causes are an over tightened flare washer, a burr inside a barb fitting, a hose that has been spliced with a cheap plastic fitting that has a small inside diameter and re-using old hose or tubing.

Spitting (air in lines)

Excessively long tube runs without refrigerating or insulating the lines will allow the soda to warm. The CO₂ will come out of solution and will cause spitting.

Dropping your CO₂ pressure and dispensing without allowing the soda to reach a new equilibrium will cause foaming. The soda will still be carbonated to the previous CO₂ pressure level resulting in insufficient pressure behind the soda to prevent the CO₂ from coming out of solution in the lines.

Attempting to dispense from room temperature kegs through a cold plate will cause the CO₂ to come out of solution in the lines between the kegs and cold plate and will cause spitting.

Good Luck and Cheers!