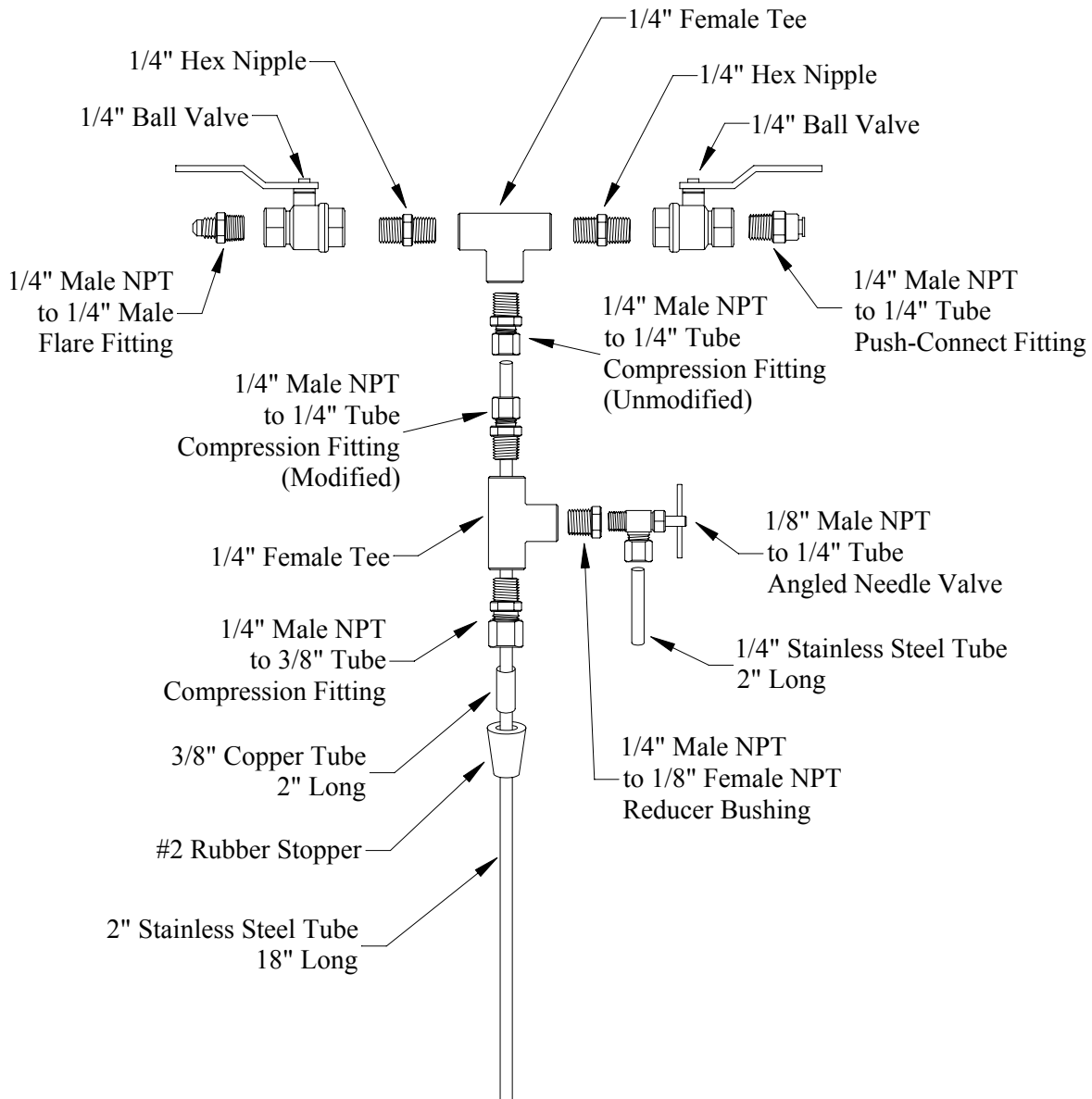


## Assembly Instructions for the Barbless Counter Pressure Bottle Filler

The Barbless Counter Pressure Bottle Filler is made for use on a system with flare fittings on the liquid side and push-connect fittings on the gas side. This design can also be adapted for barbs (but for God's sake, why?), just substitute the flare and push-connect fittings on the materials list with the appropriate barbs.

1. Take one of the 1/4" NPT - 1/4" compression tube fittings and remove the cap and ferrule. Using a 1/4" drill bit, drill out the hole through the fitting so that the 1/4" stainless steel tube can slide completely through it.
2. Soak all brass (not the short copper tube) parts in a solution of 2 parts vinegar and 1 part hydrogen peroxide for about 5 minutes. This will remove all of the surface lead on the parts. Do not over soak. After the proper soak, the brass should be a bright buttery yellow color.
3. Remove the parts from the solution and thoroughly rinse everything and allow them to dry.
4. For all non-brass parts, make sure they are clean.
5. Using the Teflon tape, wrap every male thread connection with 3-4 wraps of tape. Doing this before hand will save you some time. Make sure that you cut away any of the tape that hangs over the openings of the fittings.
6. Attach the ball valves to one of the tee fittings using the 1/4" hex nipples as shown in the figure. You can install the ball valves in either direction, but make sure the ball valve handles rotate in the direction you want them. I found it convenient to have the open position pointing outward away from the filler.
7. Install the non-modified 1/4" compression fitting into the bottom of the tee as shown.
8. Insert the 18" piece of stainless steel tube completely into the compression fitting and tighten it. See the materials list for why stainless is a much better choice for this part than copper.
9. Install the modified 1/4" compression fitting into the other tee fitting as shown.
10. Install the 3/8" compression fitting into the opposite end of the tee.
11. Install the 1/8" - 1/4" adapter fitting and needle valve into the remaining port on the tee. Point the needle valve discharge opening downward.
12. Install the short 2" piece of stainless steel tube into the discharge opening of the needle valve.
13. Slide the long stainless steel tube into the modified compression fitting on the other tee and completely through the other side so it comes out through the 3/8" compression fitting on the other side. Slide the tee up so that only about 1 inch of the stainless steel tube is showing. Rotate the tee fittings so that the flat sides line up. At this point, it doesn't matter which side the needle valve is on. Once aligned, tighten the compression fitting to secure the stainless steel tube in the second tee.

14. Take the 2" piece of 3/8" copper tube and slide it over the end of the stainless steel tube. Insert the copper tube completely into the 3/8" compression fitting and tighten to secure.
15. Take the #2 rubber stopper and slide it over the copper tube with the small end pointing towards the end of the stainless steel tube.
16. Install the flare fitting into one of the ball valves. This will be the liquid side. At this point it would be wise to give some thought as to how you want to use your filler; in other words, with which hand do you want to operate the needle valve, what side do you want the beer on, which side should the gas be on, etc. For me, I operate the needle valve with my right hand (because I'm right handed), with the beer on the left and the gas on the right. This just works well for me. It really doesn't matter, but pick a configuration that will be convenient for you.
17. Install the push-connect fitting into the other ball valve. Your Barbless Counter Pressure Bottle Filler is now complete.



## How to Use Your Barbless Counter Pressure Bottle Filler

The operation of a CPBF can be a little tricky the first couple of times. I managed to spray some beer and successfully bottle beer foam a couple of times, but after a little practice, it works pretty well.

The procedure is as follows:

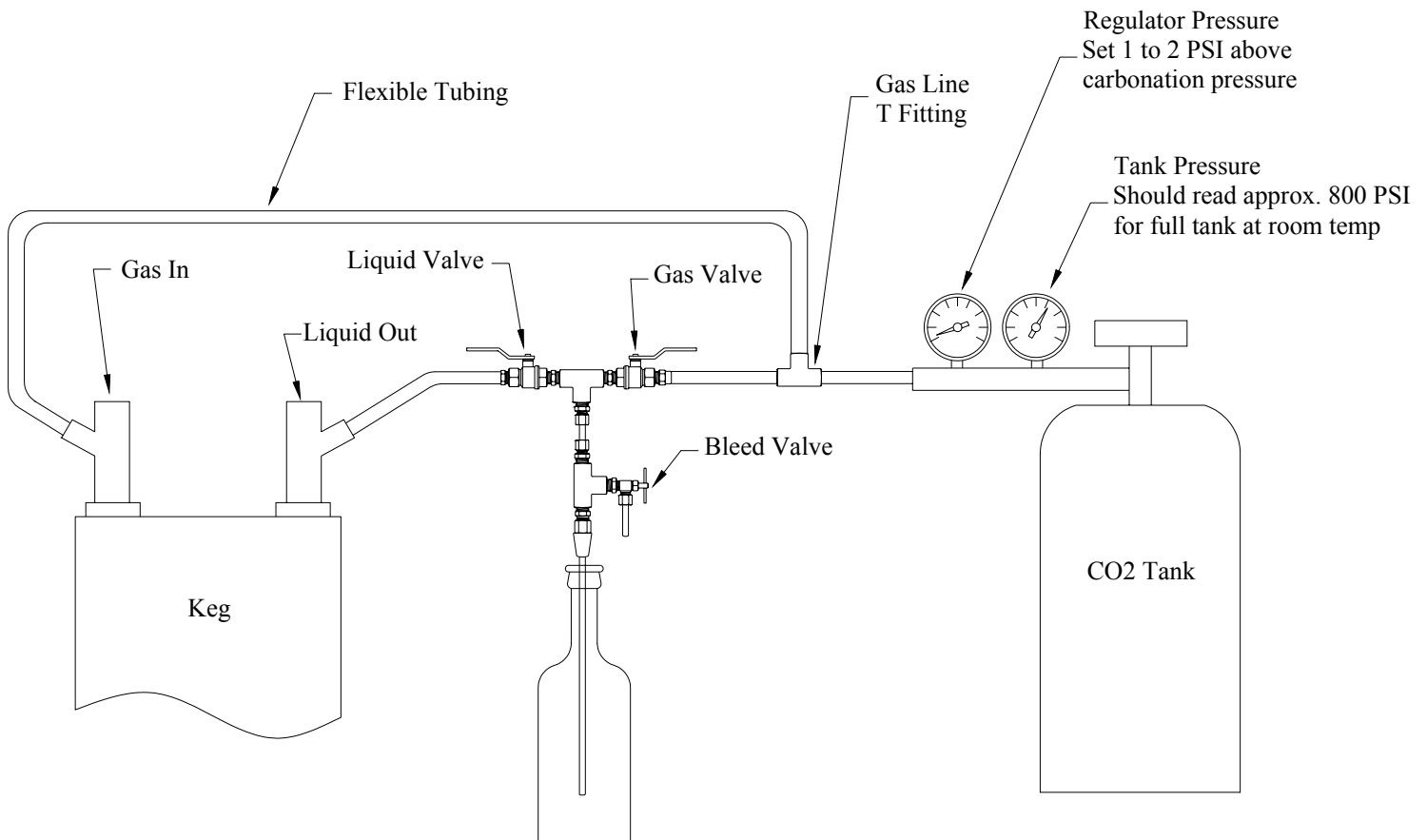
1. Set up your keg, CO<sub>2</sub> tank, and Counter Pressure Bottle Filler (CPBF) as shown in the figure.
2. Make sure all 3 of the valves on the CPBF are closed (gas, liquid, and bleed).
3. Open the valve on the CO<sub>2</sub> tank and set your regulator pressure 1 to 2 PSI above your carbonation pressure.
4. Insert the fill tube into the bottle without seating the stopper.
5. Open the gas valve on the CPBF and let CO<sub>2</sub> flood the bottle from the bottom up, pushing the air out of the neck of the bottle. Do this for about 5 seconds.
6. With the gas still on, seat the stopper into the neck of the bottle to make a seal. The bottle will pressurize to the regulator pressure.
7. Shut off the gas valve on the CPBF while still maintaining a seal with the stopper. From here on, do NOT allow the stopper to unseat itself, you won't like it.
8. Open the liquid valve on the CPBF. No liquid should flow at this point because the kegged beer and the bottle are at the same pressure.
9. Take your hand off the gas valve and SLOWLY crack open the bleed valve. This will lower the pressure in the bottle slightly and allow beer to flow from the keg into the bottle. The beer should flow very slowly to avoid any foaming, so crack the valve gently and adjust the valve to meter the flow of beer. For a 12 oz bottle, it should take about 30 seconds or so to fill the bottle.
10. Fill the bottle leaving about 1.5" of head space. Realize that when you remove the CPBF, the level will drop slightly, so adjust accordingly.
11. Shut-off the bleed valve completely.
12. Shut-off the liquid valve completely.
13. SLOWLY open the bleed valve to reduce the pressure in the bottle. When you do this, some of the carbonation in the beer will come out and the beer will foam a little. This is ok. Just bleed the pressure very slowly to minimize this. As the foam rises, it will flow into the 3/8" tube and out of the needle valve until the bottle is at ambient pressure.
14. Once all of the pressure is bled off, remove the CPBF and cap the bottle quickly. Capping on foam is actually desirable because the foam has pushed out the bulk of any air that was left in the bottle. When you cap, you are capping on almost all CO<sub>2</sub> which will reduce any potential oxidation.

The key to a successful CPBF experience is to remember that your beer will be carbonated at 12-14 PSI

for most styles. If you use the CPBF at a pressure less than what your beer is carbonated at, it will foam when it goes into the bottle. Don't be in a hurry. Fill the bottle slowly. After the bottle is filled, bleed the pressure from the bleed valve very slowly. You will get some foam, but the slower you bleed the pressure, the less foam you will have. You can attach a hose to the outlet of the bleed valve to direct the foam from the bottle to a pot or other container.

After you fill the first bottle, there will be a small "slug" of beer inside the fill tube. Before filling the next bottle, point the fill tube over a container and open the gas valve to blow out this small slug, otherwise, when you go to purge the next bottle, you will shoot this slug into the bottle which will create foam on the next fill and increase the likelihood of oxidation. When you are finished filling all of your bottles, flush the filler thoroughly with water to rinse out any beer residue. Remember there are two separate flow paths in the CPBF, the path through the gas and liquid valves, and the path through the 3/8" tube and the bleed valve. Be sure to flush each one thoroughly. Once it is thoroughly rinsed, it is important that it dry out so that you don't put it away wet. The small orifices inside will grow mold very quickly if not dried out. You can blow it out with an air hose or flush CO<sub>2</sub> through it or even put it into an oven at 250° F or so (minus the rubber stopper). In any case, make sure you put it away dry and leave all of the valves completely open. Once mold starts to grow, you will have to clean it more thoroughly which may require disassembly. If you rinse it and dry it out, you should never have to do this.

### Counter Pressure Bottle Filler Set-Up



<b>Materials List for Barbless Counter Pressure Bottle Filler</b>		
<b>Item</b>	<b>Part</b>	<b>Quantity</b>
1	1/4" Ball Valve., Brass	2
2	1/4" Hex Nipple, Brass	2
3	1/4" Female Tee, Brass	2
4	1/4" Male NPT - 1/4" Compression Tube Fitting, Brass*	2
5	1/4" Male NPT - 3/8" Compression Tube Fitting, Brass	1
6	1/4" Male NPT - 1/8" Female NPT Adapter Bushing, Brass**	1
7	Needle Valve, Angled, 1/8" Male NPT - 1/4" Compression Tube Fitting, Brass	1
8	1/4" Stainless Steel Tubing***	18"
9	1/4" Stainless Steel or Copper Tubing	2"
10	3/8" Copper Tubing	2"
11	#2 Rubber Stopper	1
12	1/4" Male NPT - 1/4" Male Flare, Brass	1
13	1/4" Male NPT - 1/4" Push Connect Tube Fitting, Plastic	1
14	Teflon Tape	As Required

\* One of these fittings must be drilled out so that the 1/4" stainless steel tube can be inserted completely through the fitting. Use a 1/4" dia drill.

\*\* Item 6 is necessary to adapt the needle valve to 1/4" NPT. If you can find a needle valve with 1/4" NPT threads, item 6 is not necessary.

\*\*\* Stainless steel tubing is listed here instead of copper because when bottling, there is a fair amount of force put on the tube while holding the filler in the bottle. A copper tube would be very soft and could possibly bend. You can try copper if you want, but be forewarned.