Carbonating and Serving with your PicoBrew Z system

What's included:

- 5 lb aluminum tank (CO_2 not included)
- 2.5 Gallon Ball Lock Serving Keg
- Taprite Dual Gauge Regulator
- Gas line assembly
- Serving line assembly with party faucet

You will need:

- Large crescent wrench or 1 1/8" wrench (for assembly)
- Your keg of fermented beer
- Bucket or waste container
- Transfer Tube
- Keg Wand

Warnings:

- Never connect your CO_2 tank directly to your keg. (always use regulator)
- Always store your CO_2 tank in an upright position, and secure it so that it cannot fall over.
- Always make sure that the valve on your CO_2 tanks is closed before removing the regulator.
- Do not expose your CO_2 tank to extreme heat such as fire or leaving it inside of a car on a hot day.
- Do not throw or drop your CO_2 tank.
- Close the valve on your CO_2 tank when not in use.
- Be sure to completely tighten your regulator to the tank using a wrench.
- Every CO_2 tank will be stamped on the neck with a date of a DOT static pressure test. This date is in MM-YY format and is good for 5 years for aluminum CO_2 tanks. Be sure to check this date when exchanging or filling your tank.

- When exchanging or filling your tank, always use a new fiber or nylon washer between the tank and your regulator when changing your tank. Most gas suppliers will include a new fiber washer, and homebrew shops should carry these washers.
- Make sure that you have the gray pressure relief valve in place on your keg lid when carbonating and serving, not the red FastFermentation valve.
- CO_2 is a dangerous gas. If you are experiencing headaches, having trouble breathing, or are unable to focus; close the valve on your tank immediately and move to a well-ventilated area.

Initial Setup:

1. Fill tank (or exchange) at your local beverage gas or welding supply store.

2. Connect Tank Fitting Nut on regulator to the CO_2 tank. Be sure that there is a washer in place between the tank and regulator. Do not reuse this washer, it should be replaced every time you change your CO_2 tank.

3. Turn on the flow of gas from the tank to the regulator by turning the main valve on top of the tank counterclockwise. Keep this valve closed when not in use.

Racking:

Purging and racking using CO_2 helps to prevent oxidation of your beer during transfer. *Be sure to do this in an open and well-ventilated area.*

1. Purge your serving keg

    a. Seal your serving keg with the metal lid, making sure that the gray pressure relief valve is in place, not the red FastFermentation valve.

    b. Set your regulator to about 5 PSI.

    c. Connect the gray ball lock fitting of your gas line to the *IN* post on your serving keg.

    d. Allow the keg to pressurize with CO_2 for about 20 seconds, then disconnect the gray ball lock fitting.

    e. Lift pressure relief valve on your keg lid until you no longer hear gas escaping.

2. Sanitize your racking tube assembly and serving keg.

3. Seal your fermentation keg with the sanitized metal lid, making sure that the gray pressure relief valve is in place.

4. Close the ball valve at the bottom of your regulator.

5. Leaving the regulator set to about 5 PSI, connect the gray ball lock fitting of your gas line to the *IN* post of your fermentation keg.

6. Connect one end of the racking hose assembly to the *OUT* post of your fermentation keg and insert a keg wand into the ball lock at the other end.

7. Direct the keg wand to a bucket/waste container or sink.

8. Open your regulator's ball valve to start the flow of liquid.

9. Once you no longer see trub (sediment) running through the line, remove the keg wand from the end of the racking hose assembly, this will stop the flow.

10. Lift the ring of the pressure relief valve on your serving keg lid to release any remaining pressure, then remove the keg lid.

11. Connect the end of the racking hose assembly to the *OUT* post on your serving keg.

12. Allow beer to transfer from the fermentation keg to the serving keg until you see gaps in the flow, (or until the liquid in the keg has reached the upper welded seam if you are using a keg that is smaller than 5 gallons), then disconnect the black ball lock fitting from the *OUT* post on your serving keg.

13. Disconnect the racking hose assembly from the fermentation keg, and set it aside to be cleaned and sanitized.

14. Seal your serving keg with the metal lid, making sure that the gray pressure relief valve is installed.

15. Disconnect the gas line's gray ball lock fitting from the fermentation keg and connect it to the *IN* post on the serving keg. Pull the ring to open the pressure relief valve for a few seconds to make sure that any air has been purged from within the serving keg and replaced with CO_2.

16. Continue with carbonation instructions

17. Pull the ring on the lid of the fermentation keg to release pressure from within the keg before cleaning. Clean and sanitize your keg, racking hose assembly, and serving line immediately.

Carbonation:

1. During the carbonation steps, you are ideally keeping the keg under refrigeration.

2. Determine at which temperature your keg will be stored during carbonation and consult the carbonation table below to find the correct setting for your regulator. 2.5 volumes of CO_2 is and acceptable level of carbonation for most beer styles. To achieve this at the temperatures of most refrigerators, you would set your regulator to 8 - 12 PSI.

3. Allow the keg to carbonate for 3-5 days before serving.

Temperature \ PSI	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
30°F	1.82	1.92	2.03	2.14	**2.23**	**2.36**	**2.48**	2.60	2.70	2.82	2.93	3.02	3.13	3.24	3.35	3.46	3.57	3.67	3.78	3.89	4.00	4.11	4.22	4.33	4.44	4.66	4.77	4.87	4.98	4.98
31°F	1.78	1.88	2.00	2.10	**2.20**	**2.31**	**2.42**	**2.54**	2.65	2.76	2.86	2.96	3.07	3.17	3.28	3.39	3.50	3.60	3.71	3.82	3.93	4.03	4.14	4.25	4.35	4.46	4.57	4.68	4.78	4.89
32°F	1.75	1.85	1.95	2.05	2.15	**2.27**	**2.38**	**2.48**	**2.59**	2.70	2.80	2.90	3.00	3.11	3.21	3.31	3.42	3.52	3.63	3.73	3.84	3.94	4.04	4.15	4.25	4.36	4.46	4.57	4.67	4.77
33°F	1.71	1.81	1.91	2.01	2.10	**2.23**	**2.33**	**2.43**	**2.53**	2.63	2.74	2.84	2.96	3.06	3.15	3.25	3.35	3.46	3.56	3.66	3.76	3.87	3.97	4.07	4.18	4.28	4.38	4.48	4.59	4.69
34°F	1.68	1.78	1.86	1.97	2.06	2.18	**2.28**	**2.38**	**2.48**	**2.58**	2.69	2.79	2.90	3.00	3.09	3.19	3.29	3.39	3.49	3.59	3.69	3.79	3.90	4.00	4.10	4.20	4.30	4.40	4.50	4.60
35°F	1.63	1.73	1.83	1.93	2.02	2.14	**2.24**	**2.34**	**2.43**	**2.52**	2.63	2.73	2.83	2.93	3.02	3.12	3.22	3.32	3.42	3.52	3.62	3.72	3.82	3.92	4.01	4.11	4.21	4.31	4.41	4.51
36°F	1.60	1.69	1.79	1.88	1.98	2.09	2.19	**2.29**	**2.38**	**2.47**	**2.57**	2.67	2.77	2.86	2.96	3.05	3.15	3.24	3.34	3.43	3.53	3.63	3.72	3.82	3.92	4.01	4.11	4.21	4.30	4.40
37°F	1.55	1.65	1.74	1.84	1.94	2.04	2.14	**2.24**	**2.33**	**2.42**	**2.52**	2.62	2.71	2.80	2.90	3.00	3.09	3.18	3.27	3.37	3.46	3.56	3.65	3.75	3.84	3.94	4.03	4.13	4.22	4.32
38°F	1.52	1.61	1.71	1.80	1.90	2.00	2.10	**2.20**	**2.29**	**2.38**	**2.48**	**2.57**	2.66	2.75	2.85	2.94	3.03	3.12	3.21	3.30	3.40	3.49	3.59	3.68	3.77	3.87	3.96	4.06	4.15	4.24
39°F	1.49	1.58	1.67	1.77	1.86	1.96	2.06	2.15	**2.25**	**2.34**	**2.43**	**2.52**	2.61	2.70	2.80	2.89	2.98	3.07	3.16	3.25	3.34	3.44	3.53	3.62	3.71	3.81	3.90	3.99	4.08	4.18
40°F	1.47	1.56	1.65	1.74	1.83	1.92	2.01	2.10	**2.20**	**2.30**	**2.39**	**2.47**	**2.56**	2.65	2.75	2.84	2.93	3.01	3.10	3.19	3.28	3.37	3.46	3.55	3.64	3.73	3.82	3.91	4.01	4.10
41°F	1.43	1.52	1.61	1.70	1.79	1.88	1.97	2.06	2.16	**2.25**	**2.34**	**2.43**	**2.52**	2.60	2.70	2.79	2.88	2.96	3.05	3.14	3.23	3.32	3.41	3.50	3.59	3.68	3.77	3.86	3.95	4.04
42°F	1.39	1.48	1.57	1.66	1.75	1.85	1.94	2.02	2.12	**2.21**	**2.30**	**2.39**	**2.48**	**2.56**	2.65	2.74	2.83	2.91	3.00	3.09	3.18	3.26	3.35	3.44	3.53	3.62	3.70	3.79	3.88	3.97
43°F	1.37	1.46	1.54	1.63	1.72	1.81	1.90	1.99	2.08	2.17	**2.26**	**2.34**	**2.43**	**2.52**	2.61	2.69	2.78	2.86	2.95	3.04	3.13	3.21	3.30	3.39	3.47	3.56	3.65	3.74	3.82	3.91
44°F	1.35	1.43	1.52	1.60	1.69	1.78	1.87	1.95	2.04	2.13	**2.22**	**2.30**	**2.39**	**2.47**	**2.56**	2.64	2.73	2.81	2.90	2.99	3.07	3.10	3.24	3.33	3.41	3.50	3.58	3.67	3.76	3.84
45°F	1.32	1.41	1.49	1.58	1.66	1.75	1.84	1.91	2.00	2.08	2.17	**2.26**	**2.34**	**2.42**	**2.51**	2.60	2.69	2.77	2.86	2.94	3.02	3.11	3.19	3.28	3.36	3.45	3.53	3.62	3.70	3.79
46°F	1.28	1.37	1.45	1.54	1.62	1.71	1.80	1.88	1.96	2.04	2.13	**2.22**	**2.30**	**2.38**	**2.47**	**2.55**	2.64	2.72	2.81	2.89	2.98	3.06	3.15	3.23	3.31	3.40	3.48	3.57	3.65	3.74
47°F	1.26	1.34	1.42	1.51	1.59	1.68	1.76	1.84	1.92	2.00	2.09	2.18	**2.26**	**2.34**	**2.42**	**2.50**	**2.59**	2.67	2.76	2.84	2.93	3.02	3.09	3.18	3.26	3.35	3.43	3.51	3.60	3.68
48°F	1.23	1.31	1.39	1.48	1.56	1.65	1.73	1.81	1.89	1.96	2.05	2.14	**2.22**	**2.30**	**2.38**	**2.46**	**2.54**	2.62	2.71	2.79	2.88	2.96	3.04	3.13	3.21	3.30	3.38	3.46	3.54	3.63
49°F	1.21	1.29	1.37	1.45	1.53	1.62	1.70	1.79	1.86	1.93	2.01	2.10	2.18	**2.25**	**2.34**	**2.42**	**2.50**	**2.58**	2.67	2.75	2.83	2.91	3.00	3.07	3.15	3.23	3.31	3.39	3.47	3.56
50°F	1.18	1.26	1.34	1.42	1.50	1.59	1.66	1.74	1.82	1.90	1.98	2.06	2.14	**2.21**	**2.30**	**2.38**	**2.46**	**2.54**	2.62	2.70	2.78	2.86	2.94	3.02	3.10	3.17	3.25	3.33	3.41	3.49
51°F	1.18	1.26	1.34	1.42	1.49	1.57	1.64	1.71	1.79	1.87	1.95	2.02	2.10	2.18	**2.26**	**2.34**	**2.42**	**2.49**	**2.57**	2.65	2.74	2.82	2.90	2.97	3.05	3.13	3.19	3.27	3.34	3.42
52°F	1.16	1.23	1.31	1.39	1.46	1.54	1.61	1.68	1.76	1.84	1.92	1.99	2.06	2.14	**2.22**	**2.30**	**2.38**	**2.45**	**2.53**	2.61	2.68	2.76	2.84	2.92	3.00	3.06	3.13	3.22	3.30	3.37
53°F	1.14	1.21	1.29	1.36	1.44	1.51	1.59	1.66	1.74	1.81	1.89	1.96	2.03	2.10	2.18	**2.26**	**2.34**	**2.41**	**2.49**	**2.57**	2.64	2.71	2.79	2.86	2.94	3.01	3.09	3.16	3.24	3.31
54°F	1.12	1.19	1.27	1.34	1.41	1.49	1.56	1.63	1.71	1.78	1.86	1.93	2.00	2.07	2.15	**2.22**	**2.30**	**2.37**	**2.45**	**2.52**	**2.59**	2.66	2.74	2.81	2.89	2.96	3.04	3.10	3.17	3.24
55°F	1.10	1.17	1.24	1.31	1.39	1.46	1.53	1.60	1.68	1.75	1.82	1.89	1.97	2.04	2.12	2.18	**2.26**	**2.33**	**2.40**	**2.47**	**2.54**	2.62	2.69	2.76	2.83	2.89	2.97	3.04	3.11	3.18
56°F	1.07	1.15	1.22	1.29	1.36	1.43	1.50	1.57	1.65	1.72	1.79	1.86	1.93	2.00	2.08	2.15	**2.22**	**2.29**	**2.36**	**2.43**	**2.50**	**2.57**	2.64	2.71	2.78	2.85	2.92	2.99	3.06	3.13
57°F	1.05	1.12	1.19	1.26	1.33	1.40	1.47	1.54	1.62	1.70	1.77	1.83	1.90	1.97	2.04	2.11	2.18	**2.25**	**2.32**	**2.39**	**2.46**	**2.53**	2.60	2.66	2.73	2.80	2.87	2.94	3.00	3.08
58°F	1.03	1.10	1.17	1.24	1.30	1.37	1.44	1.51	1.59	1.67	1.74	1.80	1.87	1.94	2.01	2.08	2.15	**2.21**	**2.28**	**2.35**	**2.42**	**2.48**	**2.55**	2.62	2.69	2.75	2.82	2.88	2.95	3.02
59°F	1.02	1.09	1.16	1.22	1.29	1.36	1.43	1.49	1.56	1.64	1.71	1.77	1.84	1.91	1.98	2.04	2.11	2.17	**2.24**	**2.31**	**2.38**	**2.43**	**2.50**	**2.57**	2.64	2.70	2.77	2.84	2.91	2.97
60°F	1.01	1.08	1.15	1.21	1.28	1.34	1.41	1.47	1.54	1.62	1.62	1.75	1.82	1.88	1.95	2.01	2.08	2.14	**2.21**	**2.27**	**2.34**	**2.40**	**2.47**	**2.53**	2.60	2.66	2.73	2.79	2.86	2.92
61°F	0.99	1.05	1.12	1.18	1.24	1.31	1.37	1.44	1.50	1.57	1.63	1.69	1.76	1.82	1.89	1.95	2.02	2.08	2.14	**2.21**	**2.27**	**2.34**	**2.40**	**2.47**	**2.53**	**2.59**	2.66	2.72	2.79	2.85
62°F	0.96	1.02	1.09	1.15	1.21	1.27	1.34	1.40	1.46	1.52	1.59	1.65	1.71	1.78	1.84	1.90	1.97	2.03	2.09	2.15	**2.22**	**2.28**	**2.34**	**2.41**	**2.47**	**2.53**	**2.59**	2.66	2.72	2.78
63°F	0.93	0.99	1.06	1.12	1.18	1.24	1.30	1.36	1.42	1.49	1.55	1.61	1.67	1.73	1.79	1.85	1.92	1.98	2.04	2.10	2.16	**2.22**	**2.28**	**2.35**	**2.41**	**2.47**	**2.53**	**2.59**	2.65	2.71
64°F	0.91	0.97	1.03	1.09	1.15	1.21	1.27	1.33	1.39	1.45	1.51	1.57	1.63	1.69	1.75	1.81	1.87	1.93	1.99	2.05	2.11	2.17	**2.23**	**2.29**	**2.35**	**2.41**	**2.47**	**2.52**	**2.58**	2.64
65°F	0.88	0.94	1.00	1.06	1.11	1.17	1.23	1.29	1.35	1.41	1.46	1.52	1.58	1.64	1.70	1.76	1.82	1.87	1.93	1.99	2.05	2.11	2.17	**2.23**	**2.28**	**2.34**	**2.40**	**2.46**	**2.52**	**2.58**

Volumes of CO2

Under-Carbonated - 0 - 1.49 volumes CO2
Low Carbonation - Stouts and porters - 1.50 - 2.19 volumes CO2
Moderate Carbonation - Most Lagers, Ales, Ambers 2.20 - 2.59 volumes CO2
High Carbonation - Ales, Lambics, Wheat Beers 2.60 - 4.0 volumes CO2
Over-Carbonated (except for some specialty ales) - 4.01+ volumes CO2

Serving:

1. Sanitize your serving line.

2. Set your regulator to the pressure recommended by the carbonation table.

3. Make sure that the party faucet on the serving line is closed and connect the black ball lock fitting to the *OUT* post on your serving keg.

4. Pour off and discard the first pint which will contain some sediment.

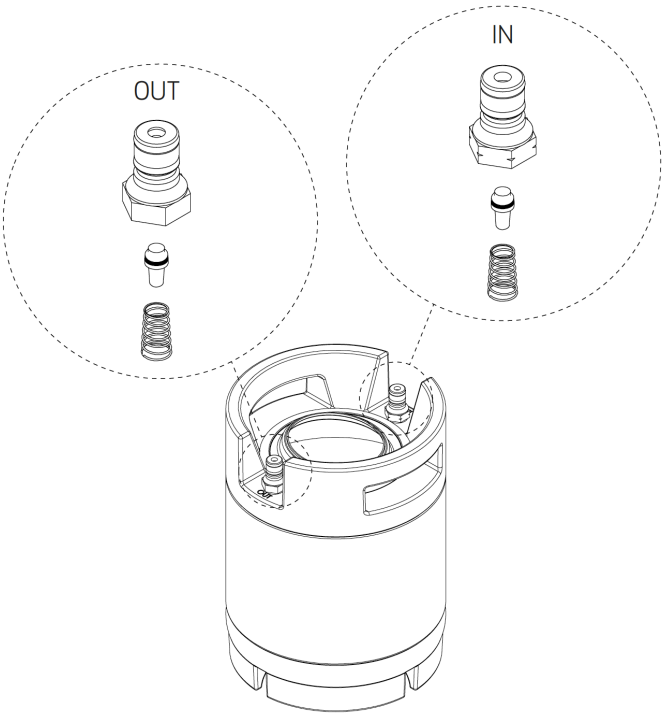
5. Make sure that you are completely opening the party faucet when pouring. If you are only opening the party faucet partially it will pour foamy.

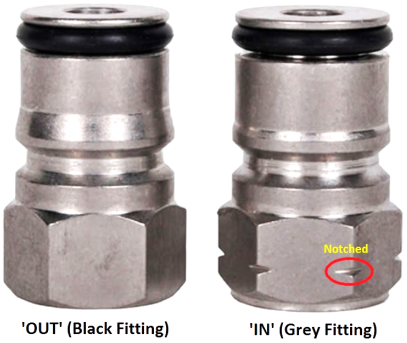
6. Your serving keg line is the ideal length and diameter for serving your keg under refrigeration. If you feel that your beer is pouring too fast or foamy, reduce your regulator's pressure slightly and temporarily vent the kegs pressure relief valve to release excess pressure.

7. Once your keg is empty, be sure to clean and sanitize your keg and serving line immediately.

Cleaning and Sanitizing:

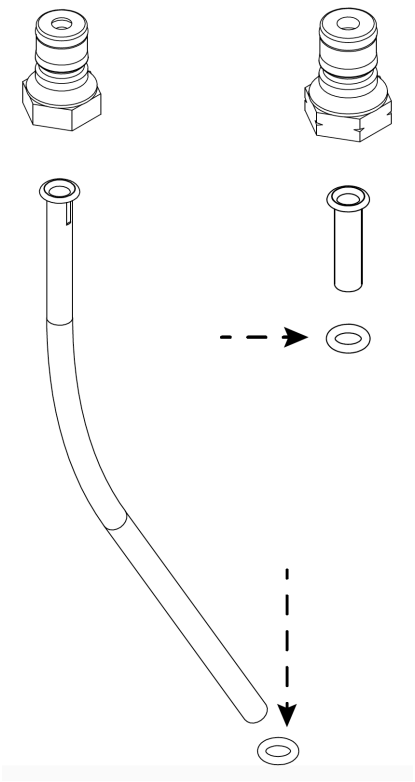
- Always clean, rinse, and sanitize your keg and serving line before use.
- Wash your keg using a solution of powdered dishwasher detergent, PBW, or a similar product. Examine your keg for any remaining soil before rinsing and sanitizing.
- Disassemble, clean, and sanitize the keg post assemblies before use. Be sure to reinstall in the correct positions on the keg.





'OUT' (Black Fitting) 'IN' (Grey Fitting)

- Examine your keg post and dip tube O-rings when reassembling to make sure that they are in good condition and there are no nicks that may prevent a good seal. A light film of keg lube (food grade lubricant) can be applied to the O-rings when reassembling to increase the lifespan of your O-rings.



- Sanitize your keg and line using StarSan or a similar product. Do not use bleach.
    - The serving line and racking hose assembly can be cleaned and sanitized by inserting a Keg Wand into the ball lock fittings.
    - Lift the handle on the party faucet so that it is locked in the open position which will allow liquid to flow through the line. The party faucet can also be disassembled for deep cleaning by unscrewing the top portion.
    - Allow these to soak in a sanitizer solution for at least 3 minutes, but no longer than 5 as this can cause damage to the plastic components and tubing.
    - Drain as much liquid from the line as possible before using.

Component Details:

- CO_2 Tank
    - Valve – Open by turning counter-clockwise. Keep valve closed when not in use.
    - DOT Static Test Stamp – MM-YY, is good for 5 years
    - Tare Weight – TW X.XX lb, can be used to determine how much gas is left if your CO_2 tank by weighing and subtracting this amount.
    - Gas outlet – Secure regulator to the tank here.

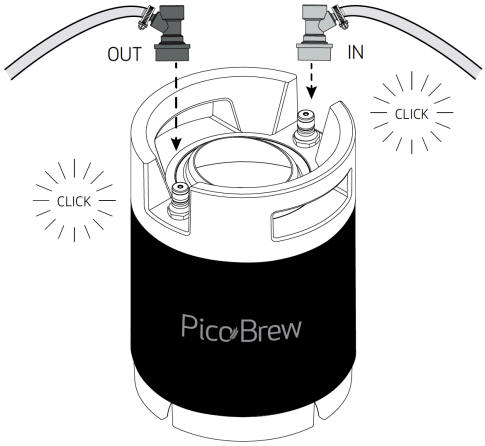
- Regulator
    - High Pressure Gauge (side) – Tank pressure, this will remain fairly steady until the tank is near empty, then you will see a significant drop in pressure.
    - Low Pressure Gauge (top) – How much pressure is being sent to the keg
    - Locking Dial – Used to adjust pressure being sent to your keg, a setting can be locked by pushing the knob inward. Be sure to unlock before adjusting

pressure. Increase pressure by turning clockwise, decrease pressure by turning counter-clockwise.
    - Ball Valve – Used to shut off gas to the line, also includes a check valve to prevent backflow into the regulator
    - Tank Fitting Nut – Connects the regulator to the CO_2 tank. Be sure that there is a washer in place between the tank and regulator. Do not reuse this washer, it should be replaced every time you change your CO_2 tank.

- Gas Line – Delivers CO_2 from the regulator to your keg
    - Gray ball lock fitting connects to *IN* post on your keg.

- Product Line – Delivers beer to your glass
    - Party faucet – Squeeze handle down while pointing spout into glass. Be sure to open completely when pouring, otherwise your beer will come out foamy.
    - Black ball lock fitting – Connects to *OUT* post on your serving keg.

- Keg
    - Keg Body
    - Keg Lid – Is sealed in place with the locking bale. The ring can be pulled to open the pressure relief valve to release pressure from the keg. The gray pressure relief valve should be in place when carbonating and serving, not the red FastFermentation valve.
    - Keg Posts – *IN* and *OUT*, connect to your ball lock fittings. Be sure to orient these correctly.
    - Dip Tubes – The long should go on the *OUT* location, the short should be on *IN*. Make sure that the long dip tube is centered on the bottom of the keg when assembling.



    - Poppet valves – Seal the keg posts when the ball locks are not in place. Make sure that these are assembled correctly with the wide end of the spring pointing down and the black seal at the topmost position.
    - O-Rings – There are four different sizes of O-rings in your keg:
        - The largest O-ring seals the keg lid
        - The second largest O-rings are for the keg posts
        - The slightly smaller O-rings seal the dip-tubes
        - The smallest O-rings seal your poppet valves

Troubleshooting:

- My beer isn't carbonating
    - Make sure that your CO_2 tank isn't empty
    - Make sure that your CO_2 tank valve is open
    - Make sure that the regulator's ball valve is open
    - Make sure that the gray ball lock fitting on your gas line is correctly connected to the keg post
    - Try increasing your regulator pressure slightly
    - It's best to carbonate under refrigeration

- I think I have a leak
    - Fill a spray bottle with a StarSan solution, or water with 2 drops of dish soap
    - Pressurize the keg and line, and spray around all connections and fittings. Look for any points where bubbles are being produced. This is where you are leaking.

- My beer is overcarboanted or foamy
    - Make sure that your regulator is set to the correct pressure according to the carbonation chart
    - Your keg should be refrigerated when serving
    - Remove the gray ball lock fitting from your keg and close the valve on your CO_2 tank
    - Lift the pressure relief valve on your keg to release pressure, and allow the keg to sit for 30 minutes
    - Lift the pressure relief valve again to release any pressure that has built up
    - Reconnect the gas line to your keg. Repeat if your beer is still overcarbonated.