

NORTHERN BREWER KEGGING OVERVIEW

Although more expensive than bottling, keggling is the fastest and easiest way to serve beer. Each keggling system is usually slightly different but will contain three items: a cylinder full of carbon dioxide (CO₂), a regulator to dispense the CO₂ and a keg.

THE CO₂ CYLINDER

A CO₂ cylinder is different than most gas tanks because it is measured in poundage of liquid, not volume. When other gases, nitrogen for instance, are compressed they stay in a gaseous form but when CO₂ is compressed it turns into a liquid. Due to this fact a CO₂ 'tank' measured in poundage capacity of liquid CO₂ with a five pound tank being the standard home brew size.

NOTE - Keep the valve located on the top of the cylinder closed until you attach a regulator to the cylinder. To open the tank one only needs to turn the valve a half turn.

THE REGULATOR

The pressure in your keg system is dispensed and controlled by a CO₂ regulator. Our regulators have a shutoff check-valve installed, which allows you to quickly and completely shut off CO₂ flow to the keg without having to shut the main valve. There is also a check-valve that ensures beer will not be able to flow back into your regulator and ruin it.

The regulator has two gauges which measure pressure in pounds per square inch (psi). The low pressure gauge, located on the top of the regulator body, measures the internal regulator pressure (e.g. dispensing pressure). The high pressure gauge, measures the pressure inside the CO₂ cylinder. The pressure is regulated by adjusting the setscrew. Turning it clockwise will increase the dispensing pressure and counter-clockwise will decrease it. If the keg pressure is greater than the dispensing pressure no CO₂ will be dispensed until the pressures equilibrate. The regulator also contains a pressure relief valve that will help to protect the regulator from damage. If the internal regulator pressure gets too high it will set off the valve until the pressure is reduced to non-critical levels.

You can simultaneously increase the pressure in the keg and the regulator's internal pressure by turning the regulator's adjusting screw clockwise. You can decrease the regulator's internal pressure (but not the keg pressure) by turning the adjusting screw counterclockwise.

THE KEG

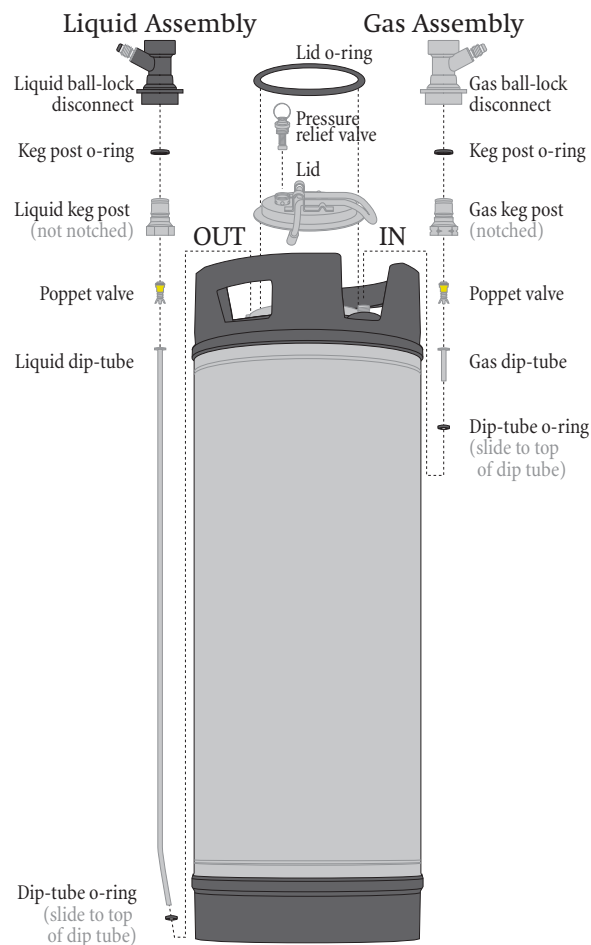
The keg you received from Northern Brewer is guaranteed to hold pressure. These kegs are stainless steel ball-lock soda kegs and can be slightly different from each other. Some have one handle vs two, some have different relief valves and some are cleaner than others. The thing that remains the same is that they all have the same function and all have the same connections.

POSTS: Each keg has two 'posts' on the very top of the keg that are responsible for dispensing the beer. The one labeled 'in', can be identified by its notches around its base, is connected to a short (~2in) dip tube and responsible for delivering the CO₂ to the keg. The other post, labeled 'out', has no notches and it connects to the long dip tube that travels the length of the keg and is responsible for dispensing the beer. **NOTE** - there are basically two different 'size' posts. One is six-point and 11/16inch in diameter. The other is twelve-point and 7/8inch in diameter.

POPPETS: Poppets are little spring-loaded valves that insert into the posts. When the disconnects are hooked up to the posts the 'pin' in the disconnect will push these valves down opening the system.

LID: Each keg contains an oval shaped lid that contains a pressure relief valve for safety. **NOTE** - each keg has its maximum pressure stamped on it (~120psi) which is massively over home brew pressures.

O-RINGS: There are five (5) rubber O-rings responsible for ensuring the keg stays sealed. There are two small 'dip tube' O-rings that go on each dip tube and seal underneath the posts. There are two larger O-rings that go on the top of each post to seal the beer and gas connections. The largest O-ring is the one that goes around the lid and completely seals the keg. It is critical that all these rings are clean and free from cracks. These should be replaced upon signs of wear. **NOTE** - we highly advise purchasing a replacement O-ring set (kx15) when purchasing our used kegs. These kegs usually would have contained various different sodas which will taint your beer with their own individual character.



CONNECTION ASSEMBLY

Gas connections

- Attach the regulator to the CO₂ tank. Make sure to place the nylon washer between the cylinder and the regulator and ensure that its facing the correct direction. **NOTE** - the nylon washer has specific faces with different ridges that fit specifically on the regulator face and the tank face. Tighten firmly with a wrench and **DO NOT** use teflon tape.
- Attach the gas connector kit to the regulator's red shutoff valve and tighten with a wrench. Ensure the gas disconnect (grey) is tightened down on the gas connector kit.
- Make sure the regulator's red shutoff valve is closed (perpendicular) and the adjusting screw is backed all the way out.
- Open the main valve at the top of the CO₂ cylinder one half turn. The high pressure gauge should 'jump' but there should be no reading on the low pressure 'serving' gauge.
- Open the red shutoff valve (parallel)
- Using a flathead screwdriver turn the adjusting screw until the low pressure gauge starts to pressurize and reads about 5psi.
- The system is now pressurized. Check for leaks. Test all threaded connections, quick disconnects and pressure relief valves with soapy water. Even a small leak will drain your CO₂ cylinder.
- **ALWAYS** store your tank with the main top valve closed and the shutoff valve off.

Liquid connections

- Ensure that the faucet tubing kits liquid disconnect (black) is tightened to the tubing.
- Ensure the tap end is secured to the tubing.

CLEANING

The most rigorous way to keep kegs clean and sanitary is to completely disassemble them after each use. You will need:

- A wrench to remove the posts. We highly suggest the use of a ratchet with deep sockets for this purpose. Other types of wrenches have a tendency to strip the treads on the posts. Depending on the size of your posts you will need a 6-point 11/16th inch deep socket, a twelve-point 7/8th inch deep socket or both.
- Cleaning product. We suggest the use of Powdered Brewery Wash (PBW) or B-brite for cleaning of all keg components. These are both very powerful cleaners that are safe on stainless steel and on the environment. **DO NOT** use cleaners with chlorine on stainless steel.
- (optional) New set of O-rings. As stated before, sometimes you need to replace your O-rings. Don't waste a batch of beer over a few bucks for a replacement set.

Keg cleaning - A step-by-step guide

- Pull the pressure relief valve on the lid to ensure all of the pressure is bled out of the keg.
- Unscrew the pressure relief valve and put aside.
- Remove lid and lid sealing O-ring. **NOTE** - sometimes the lid sticks so use the butt end of your wrench to hit the top to loosen.
- Remove the posts and then the poppets. Poppets can get stuck so use a narrow diameter philips head screw driver to push them out from the top if necessary.
- Remove the dip tubes, in and out, from the keg and slide off the O-rings.
- Fill the keg with cleaning solution per their instructions. Heavily soiled kegs may need to soak longer to come clean.
- Put all small parts into a small pail and add some cleaning solution. The long dip tube can be inverted into the keg for cleaning.
- Once clean, pour off cleaning solution and rinse thoroughly with warm water to remove any residue. **NOTE** - if using the keg directly move to the **SANITATION** section below.
- Put the keg back together as you had taken it apart ensuring that all O-rings have been included.
- Pressurize the keg for storage. **NOTE** - Connect the gas to the keg and turn it on to a low pressure before you try and seat the lid. This will ensure the lid will always seal completely.

Sanitizing your keg

- Your keg should be completely clean at this point
- Depressurize and break down your keg completely if not already there.
- Make 2.5 gallons of sanitizer directly in your keg. We suggest using either Star San or One Step to sanitize.
- Pour some of this sanitizer into a small bowl and add all of your small parts including all of your loose O-rings.
- Invert your long dip tube in the keg.
- Let sit 5-10 minutes.
- Put the O-rings on the dip tubes and slide them to the top.
- Insert the dip tubes into the keg ensuring they are going to the correct sides. Small dip to to the gas 'in' side and vice versa.
- Turn over the post on a flat surface and drop the poppets into them. Use the poppets as a little 'cup' and fill with sanitizer.
- Pour this sanitizer over the top of the dip tubes and hand tighten the posts on their proper side. The 'notched' post is the gas side.
- Screw the pressure relief valve into the lid while it is still under the sanitizer solution. Put the lid sealing O-ring on the lid ensuring its snapped down into place.
- Insert the lid into the keg but **DO NOT** lock it down yet.
- Connect the **GRAY** gas disconnect to the keg's notched **GAS / IN** post and turn on CO₂ cylinder.
- Open the red-handled regulator shutoff valve (parallel) and lock down lid as you pressurize the keg.
- Give the keg a good shake and invert it standing it on its head. One handled kegs can be laid on their sides and turned half way through.
- Let sit 5-10 minutes.
- Bleed off pressure, open lid and empty out sanitizer. This sanitizer is fresh and may be used again.
- As before, seal the lid under pressure and allow keg to pressurize.
- With the gas hooked up pull the pressure relief valve and bleed off some of the pressure to remove most of the oxygen in the keg.
- Connect the **BLACK** liquid disconnect to the keg's **LIQUID / OUT** post and bleed off all of the remaining sanitizer in the keg.
- The keg is now ready to be filled.

KEGGING

When fermentation is complete, you are ready to keg. You can keg beer, wine, mead, cider, soda or just plain drinking water. Simply transfer your beverage of choice to a clean, sanitized keg and hook it up to your system. Basically any beverage you want carbonated you can keg. That being said, this discussion will focus only on kegging beer. **NOTE** - once your beer is carbonated you must always shut off the gas to your keg. If not, the beer will over-carbonate.

Hooking up your keg

- Transfer beer to clean, sanitized, and fully assembled keg.
- Insert the lid into the keg but **DO NOT** lock it down yet.
- Attach the disconnects to the proper posts. The **BLACK** liquid disconnect attaches to the keg's **LIQUID / OUT** post. The **GRAY** gas disconnect attaches to the keg's notched **GAS / IN** post.
- Open the main CO₂ tank valve.
- Open the red-handled regulator shutoff valve (parallel) and lock down lid as you pressurize the keg to 10-15 PSI by turning the adjusting screw clockwise.
- You are ready to serve! Some fiddling with the pressure to get your best pour may need to be done.

Forced carbonation

When beer is stored under CO₂ pressure, it will gradually absorb the carbon dioxide gas until it reaches a state of equilibrium. The carbonation level is determined by the temperature of the beer and the pressure of which it is being carbonated. American brewers express the amount of carbonation in a beer in volumes. Each individual style has its own standard of carbonation levels. The chart below is a very general guideline:

TYPICAL BEER STYLE CO2 VOLUMES

STYLE	Volumes of CO ₂
American ales	2.2-2.7
American lagers	2.5-2.8
Belgian ales	2.3-4.0
British ales	1.6-2.5
German ales	2.2-3.5
German lagers	2.5-2.8

Using the chart below you can achieve a specific carbonation level by simply adjusting your fridge temperature and the regulator's dispensing pressure.

FORCED CARBONATION CHART

+	5 PSI	10 PSI	15 PSI	20 PSI	25 PSI	30 PSI
30°F	2.23	2.82	-	-	-	-
35°F	2.02	2.52	3.02	-	-	-
40°F	1.83	2.30	2.75	3.19	-	-
45°F	1.66	2.08	2.51	2.94	-	-
50°F	1.50	1.90	2.30	2.70	3.10	-
55°F	-	1.75	2.12	2.47	2.83	3.18
60°F	-	1.62	1.95	2.27	2.60	2.92

Many brewers speed up the carbonation process by shaking the keg back and forth, which drastically increases the surface area of beer in direct contact with CO₂. As you do this, you will hear the regulator delivering CO₂ as it is being rapidly dissolved into the beer. You should shake the keg until it becomes increasingly difficult to hear the CO₂ hissing. When you are finished, leave the CO₂ line attached to the beer so it may complete the process.

If the beer becomes over-carbonated, it is possible to de-carbonate the beer. You should warm the beer and periodically pull the pressure relief valve on the keg. This will cause CO₂ to come out of solution and re-pressurize the head space, at which point you can repeat the process.