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## Deluxe Fridge Conversion Kit

*The deluxe fridge conversion kit contains:*

- 5# CO2 cylinder (empty – see note)
- Dual-gauge CO2 regulator
- Keg coupler assembly
  - Sanke tap
  - Hex nut
  - 1/4" barbed tail piece
  - Vinyl washer
- Faucet assembly
  - Chrome faucet
  - Faucet handle
  - Shank assembly
    - 5" beer faucet shank
    - Hex nut
    - 1/4" barbed tail piece
    - Vinyl washer
- Drip tray
- 3' of 1/4" ID food-grade beverage tubing
- 5' of 3/16" ID food-grade beverage tubing
- Hose clamps (4)
- Barbed swivel nut



**Note:** By federal law, CO2 cylinders must be shipped empty — you'll need to have them filled locally. Look under "Gas Suppliers" in the yellow pages.

**Congratulations on the purchase of your Fridge Conversion Kit from Northern Brewer! This kit contains all of the equipment you will need to turn an ordinary refrigerator into a beer-dispensing keggerator!**

### **Warning**

Working with carbon dioxide is potentially very dangerous. CO2 cylinders are under very high pressure. If the valve were to break off of the cylinder, it would become an unguided missile, possibly causing injury or death. For this reason it is important that you immobilize CO2 cylinders by securing them with chains, bungee cords, etc. Additionally, a CO2 gas leak in an enclosed area could displace oxygen and cause asphyxiation. Always test gas handling systems for leaks.

## The CO2 cylinder

A filled CO2 cylinder contains carbon dioxide in a liquid state. This liquid CO2 exerts *vapor pressure*, filling the head space of the cylinder with gaseous CO2. At room temperature, the vapor pressure of carbon dioxide is about 800 pounds per square inch (PSI). If you put your CO2 cylinder in the refrigerator, you may notice the vapor pressure drop as low as 400 PSI.

As you draw CO2 gas from the cylinder's head space, the liquid CO2 evaporates to maintain a constant vapor pressure. If you monitor the pressure inside the CO2 cylinder, you will notice that the pressure remains constant even as you draw off CO2. The pressure in the cylinder will not drop until the liquid CO2 is depleted, at which point the pressure will drop rapidly.

Because of this phenomenon, the best way to measure CO2 usage is to weigh the cylinder, and subtract the cylinder's *tare weight*, or the weight of the empty cylinder. The tare weight is usually stamped into the cylinder and is prefixed by the letters "TW". An experienced brewer will know when the cylinder needs more gas just by lifting the cylinder and assessing its weight.

A shutoff valve is located at the top of the cylinder. Keep this valve closed until you attach a regulator to the cylinder. To open this valve, you need only crack it open 1/2 turn.

## The regulator

As you might expect, CO2 pressures in your keg system are regulated by a CO2 regulator. The regulator is attached to the high-pressure CO2 cylinder by the cylinder coupling nut. The regulator is attached to the keg through a low-pressure port; our regulators have a shutoff valve installed in this port, which allows the brewer to conveniently, quickly, and absolutely shut off CO2 flow to the keg. When the valve's lever is perpendicular to the valve stem, the shutoff valve is closed; it is open when the lever is parallel to the stem.

The regulator has two pressure gauges. The high pressure gauge, opposite the coupling nut, measures the pressure inside the CO2 cylinder in pounds per

square inch. The low pressure gauge, located on the top of the regulator body, measures the internal regulator pressure. If this pressure is greater than the pressure inside the keg, the regulator will deliver gas to the keg until the regulator pressure and the keg pressure are equal. You can simultaneously increase the regulator's internal pressure and the pressure in the keg 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 regulator also contains a pressure relief valve that will help to protect the regulator from damage if the internal regulator pressure gets too high.

## Assembling the components

### Equipment needed:

- adjustable crescent wrench
- standard flathead screwdriver
- tape measure or ruler
- electric drill
- 1" hole saw bit
- two screws with 1/4" heads (see below)

### Before you begin

To install your Deluxe Fridge Conversion Kit, you will need to drill a 1" hole in the refrigerator for the shank, and two small holes for screws to mount the drip tray. Before drilling, plan where the faucet and drip tray will go. It's very important to avoid drilling into the refrigerator's coolant lines; if you install the shank and drip tray in the refrigerator door, this will not be a problem. If you will be installing these components in a different part of the refrigerator, consult your refrigerator's owner's manual or contact the manufacturer.

### Gas line

- Use the wrench to attach the barbed swivel nut to the male threaded fitting on the regulator – the barbed part of the swivel nut should be protruding. The nut should be snug, but do not overtighten.
- Attach one end of the 3' section of 1/4" ID tubing to the barbed fitting on the swivel nut. Leave a small amount of space between the end of the hose and the nut, so that the nut can move freely.

- Slide a hose clamp over the hose and position it over the barbed fitting. Use a screwdriver to tighten the clamp down and securely fasten the hose to the barbed swivel nut.

### **Keg coupler**

- Opposite the black lever on the Sanke tap is post labelled “Gas In;” this post should already have a barbed tail piece and hex nut attached. The remaining post is the “Liquid Out.” Assemble the remaining pieces in the following order: 1/4” barbed tail piece goes into the hex nut (barbed end should protrude), followed by the black vinyl washer. Use a wrench to tighten the hex nut assembly on the male threads of the “Liquid Out” post. The nut should be snug, but do not overtighten. **Note:** if the hex nut assembly on your keg coupler is already attached, use a wrench to make sure it's tight before proceeding.

### **Shank and liquid line**

- Drill a 1” hole in the refrigerator. If you choose to install the faucet/shank assembly in the door, keep in mind that you will need to open the door while the system is connected. There will be 5 feet of tubing connecting the shank to the keg, so if the faucet/shank assembly is installed too far above the top of the keg, opening the fridge could be problematic.
- Install the shank from the outside of the refrigerator. Remove the nut from the back of the shank and push the shank through the 1” hole; the black plastic skirt should rest against the outside wall of the refrigerator. Working from inside the refrigerator, thread the nut back onto the shank and tighten it against the inside wall.
- Prepare the hex nut assembly for the shank as for the keg coupler – see above. Use a wrench to tighten the hex nut assembly on the end of the shank inside the refrigerator. The nut should be snug, but do not overtighten.
- Attach one end of the 5' section of 3/16” ID tubing to the 1/4” barbed tail piece on the shank. A useful trick is to soak the end of the hose in very hot water to make it soft and pliable – it should slide right over the barb. Leave a small amount of space between the

end of the hose and the hex nut, so that the nut can move freely.

- Slide a hose clamp over the hose and position it over the barbed fitting. Use a screwdriver to tighten the clamp down and securely fasten the hose to the barb.

### **Faucet and drip tray**

- Attach the faucet to the shank on the outside of the refrigerator. Attach the faucet handle to the male threaded fitting on the faucet.
- Measure the space between the mounting holes on your drip tray. Mark the spots for the mounting holes on the refrigerator, centered beneath the faucet. Remember to allow enough room between the drip tray for a glass or pitcher!
- Install the screws in the refrigerator in the marked spots; the screw heads should **not** be snug to the outside wall of the refrigerator.
- The mounting holes fit over the screw heads and down to secure. The drip tray can be removed as needed for emptying or cleaning.

### **Gas cylinder and regulator**

- Place the nylon washer (included with the regulator) in the female threaded port of the regulator's cylinder coupling nut. Attach the regulator to the CO2 tank. Tighten firmly with a wrench.

### **Connecting the system**

- Slide a hose clamp over the 1/4” ID gas line that is attached to the regulator. Attach the free end of the 1/4” ID gas line to the “Gas In” post of the keg coupler. Position the hose clamp over the barb. Use a screwdriver to tighten the clamp down and securely fasten the hose to the barb.
- Slide a hose clamp over the 3/16” ID liquid line that is attached to the shank. Attach the free end of the 3/16” ID liquid line to the “Liquid Out” post of the keg coupler. Position the hose clamp over the barb. Use a screwdriver to tighten the clamp down and securely fasten the hose to the barb.

## Cleaning

Clean the keg coupler, liquid line and faucet before and after tapping each keg using beer line cleaner or a no-rinse sanitizer. Dirty lines can cause foaming and off-flavors in the beer. Northern Brewer's Faucet Cleaning Kit (#K086) contains all the necessary items and makes this job easier to do.

## Dispensing beer

- **Important!** Make sure that the gas flow is shut off (valve on the CO2 tank is closed, shutoff valve on the regulator is closed) and that the valve on the faucet is closed before proceeding.
- Attach the keg coupler to the keg.
- Use the pressure relief valve on the side of the keg coupler (beneath the "Gas In" post) to bleed off the excess pressure inside the keg. This can be messy if the keg was handled roughly or recently moved.
- Open the valves on the CO2 tank and regulator to start gas flow; use the adjusting screw on the front of the regulator to set the pressure to between 3 and 5 psi.
- Take a moment to check all threaded connections on your system for gas leaks. Even a small leak will drain your CO2 cylinder, and in some cases it could even be dangerous.
- Open the faucet to pour a beer. Adjust dispensing pressure as needed using the adjustment screw on the regulator.