A Bottler's Guide to Kegging

By Ed Westemeier

There's just something about fresh draft beer. It's not that the chore of bottling is such a big deal; after all, bottles are convenient to give to friends or send to competitions. It's great to be able to come home and grab a bottle of your own homebrew, but there's something even better about drawing a glass fresh from a keg.

You've probably admired those shiny cylinders many homebrewers use to "keg" their beers, but you may also have wondered how complicated it is to learn the techniques. In the words of a great homebrewer, relax. This article contains everything you need to know about dispensing your own beer from a keg. If you are a careful shopper you should be able to put a complete draft homebrew system together for $150 or so. That may sound like a lot, but it's a lifetime investment that will give you many hours of pleasure and save many hours of bottling time.

COLLECTING THE GEAR

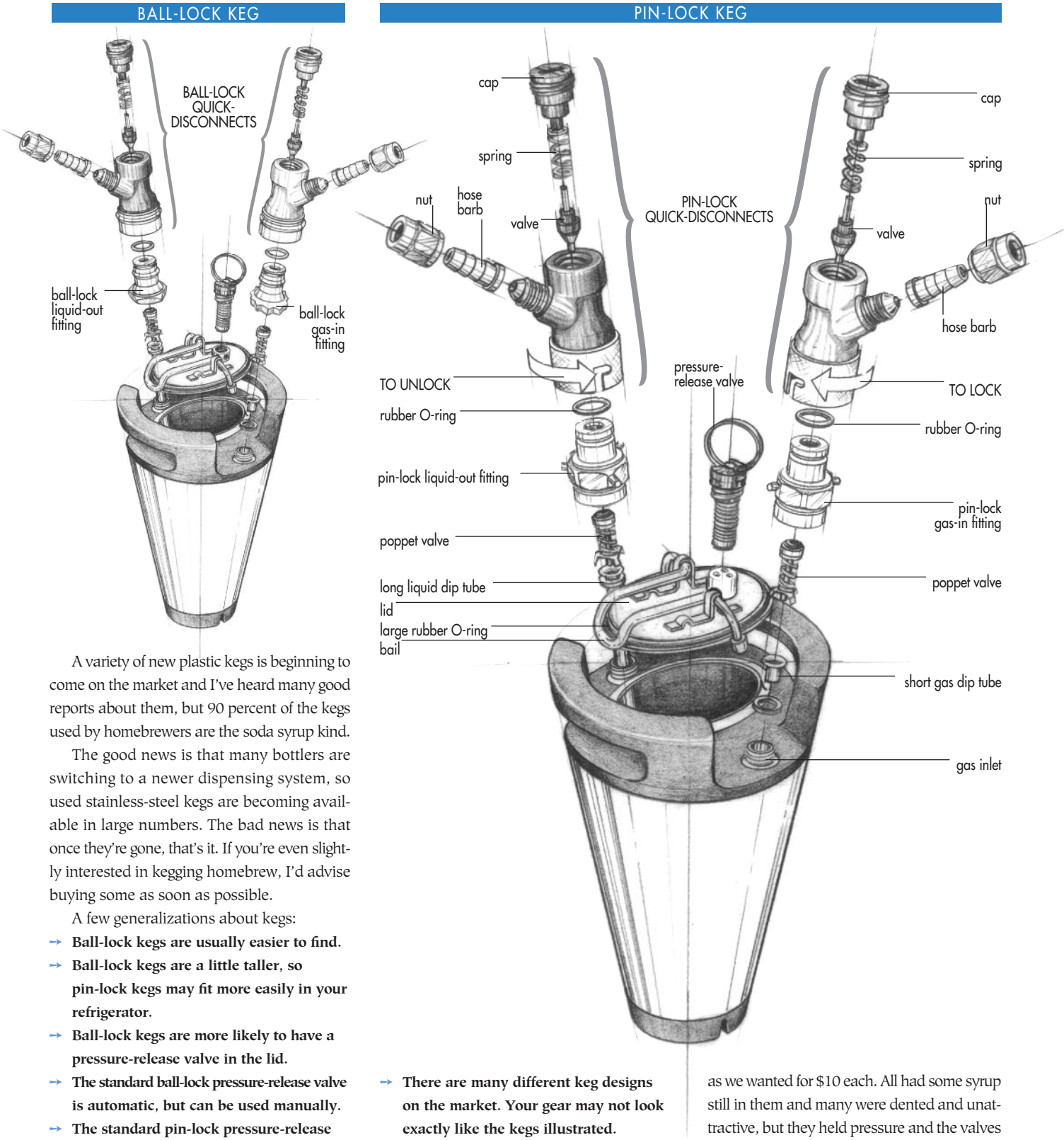
Kegs

The standard homebrewer keg is a five-gallon (19-liter) container used by soft-drink bottlers for their pre- or post-mix syrups. They're also made in three- and 10-gallon (11- and 38-L) sizes, but those can be hard to find on the used market. They are made by several manufacturers, but have several features in common: all stainless-steel construction, inlet and outlet valves, a hatch cover for filling and (usually) a safety valve to vent excess pressure. Some feature hard rubber protectors around both top and bottom.

Beyond those basics, they come in two styles: ball lock or pin lock, depending on whether the fittings on top of the keg use shallow grooves where the ball bearings in the quick-disconnects fit, or protruding pins to secure the disconnects. The two types are used by competing bottlers and are designed to be incompatible with each other to make it difficult for a restaurant to experiment with the rival brand. There are two types of lids, oval and racetrack (which is a flattened oval). They are not interchangeable.

It really doesn't matter which you use, but it is easier to stick with only one type. If you happen to obtain a keg of the other type, you could buy a second set of quick-disconnects, or trade with a friend who's in the same position.

ILLUSTRATIONS BY RANDY MOSHER



A variety of new plastic kegs is beginning to come on the market and I've heard many good reports about them, but 90 percent of the kegs used by homebrewers are the soda syrup kind.

The good news is that many bottlers are switching to a newer dispensing system, so used stainless-steel kegs are becoming available in large numbers. The bad news is that once they're gone, that's it. If you're even slightly interested in kegging homebrew, I'd advise buying some as soon as possible.

A few generalizations about kegs:

- **Ball-lock kegs are usually easier to find.**
- **Ball-lock kegs are a little taller, so pin-lock kegs may fit more easily in your refrigerator.**
- **Ball-lock kegs are more likely to have a pressure-release valve in the lid.**
- **The standard ball-lock pressure-release valve is automatic, but can be used manually.**
- **The standard pin-lock pressure-release valve is only automatic (cannot be operated manually), and if it blows it reseats automatically (doesn't require replacement). Your keg may or may not have a manual pressure-release valve, but models with this feature are recommended.**
- **There are many different keg designs on the market. Your gear may not look exactly like the kegs illustrated.**

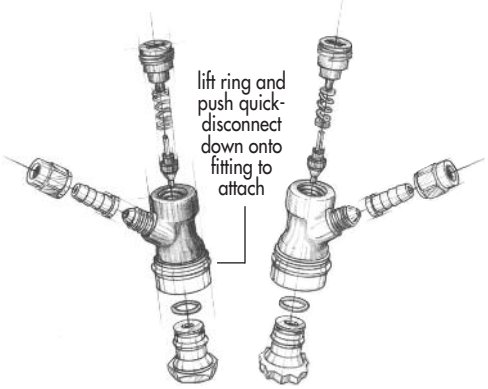
New kegs typically cost between $80 and $100, but used kegs are normally available from many sources for half that price. Try your local soft-drink bottler. Our club found thousands of used ball-lock kegs in a local Pepsi® bottler's yard, and we were able to buy as many as we wanted for $10 each. All had some syrup still in them and many were dented and unattractive, but they held pressure and the valves were in good condition. Cleaning them thoroughly and replacing the O-rings made them practically as good as new. Dealers in used restaurant equipment, scrap yards and restaurant auctions often have used kegs available. If none of these sources works out, several

homebrew suppliers carry used kegs. The price will be a little higher and often include shipping costs, but their kegs have generally been inspected and are quite a bit cleaner.

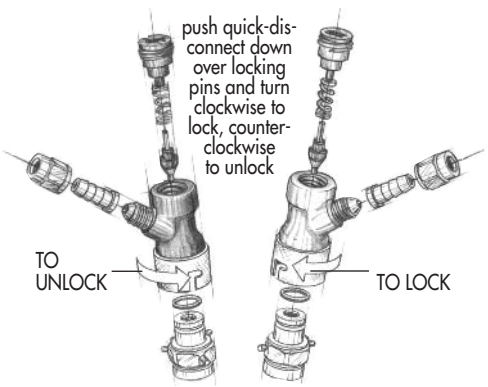
Connections

After acquiring your kegs (that's plural because you'll want a few), your next purchase probably will be some connectors, called quick-disconnects. There are two kinds for each style of keg; a gas-in connector and a liquid-out connector. If your kegs are the pin-lock style, it should come as no surprise that one fitting has two pins, the other has three. But if you have the more common ball-lock kegs, the fittings that the connectors attach to appear to be identical. If you look carefully, you'll see that their dimensions are slightly different. Trying to force a gas quick-disconnect onto a liquid keg fitting is a frustrating experience (that's the voice of experience speaking!).

Quick-disconnects are sometimes available in different colors to help you distinguish gas from liquid, which is a very good idea.



BALL-LOCK QUICK DISCONNECTS

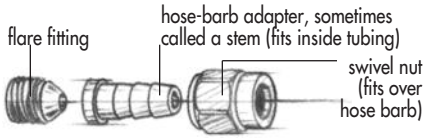


PIN-LOCK QUICK DISCONNECTS

These are some examples of gas and liquid connections. The base of the gas fittings for ball-lock kegs are usually indented with small notches.

Plastic quick-disconnects are fairly inexpensive at $4 to $7 each, but are prone to crack and break from frequent use. Stainless-steel versions generally are twice as expensive but should last a lifetime.

Quick-disconnects are available with either a hose barb to which you can clamp the end of your plastic tubing, or a threaded male flare fitting. Or by using a male flare fitting, you can attach a swivel nut and hose-barb adapter to the hose. A swivel nut that is part of a hose-barb adapter screws onto the flare fitting. Either method works well, but I prefer the male flare/swivel nut assembly. That way I can simply screw a keg connector onto the swivel nut and I'm ready to use my keg. This way it is also easier to clean and sanitize the hoses and connectors separately.



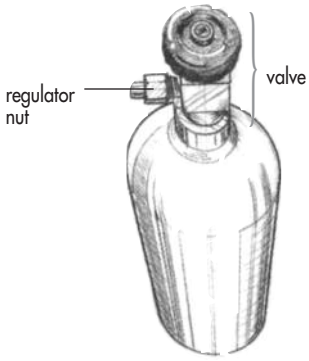
FLARE/HOSE BARB/SWIVEL NUT

CO_2 Tank

The next item on your shopping list is a carbon dioxide (CO_2) cylinder. The most common size for homebrewers seems to be the five-pound tank. It is the shape of a typical fire extinguisher and is made of either steel or aluminum. My CO_2 tank is aluminum, about five inches in diameter and 18 inches high. This is a handy size for taking with you when you travel with a keg, and one full tank this size should be enough to carbonate and dispense up to a year's worth of typical homebrewing output. The five-pound size sells for $50 to $100 new, half that amount if used. Check bar and restaurant suppliers, welding shops and fire extinguisher companies.

Filling a five-pound tank costs about $9 to $12 in my area, depending on where I go. Industrial gas suppliers, welding supply dealers, fire extinguisher companies and soft-drink bottlers are all good sources, so check your phone directory and call around. Not all are willing to bother with such small orders and some refuse to fill aluminum tanks.

When you buy a CO_2 tank, be sure it has a current certification. It is required by law to have a pressure test every five years, and to be stamped with the certification date. For



CO_2 TANK

example, mine has "5-91" stamped on it, so I'll have to get it recertified in May 1996 by taking it in to the place where I get it filled. If it fails the certification, which rarely happens, they'll drill a hole in the side, making it necessary to buy a new tank.

In many areas you can avoid the hassle of recertifying a tank by simply leasing one instead of buying it. With a leased tank, you merely exchange it for a full one when yours is empty. The supplier is responsible for having the tanks certified. The exchange costs a little more than a fill, but it may be worth it to you.

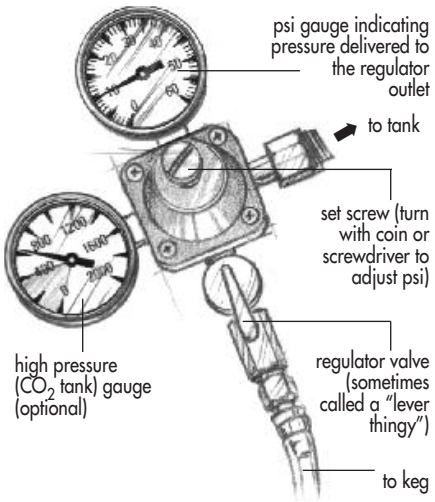
The empty (tare) weight of the cylinder also is stamped on it. For example, "TW 7.50" means it weighs 7.5 pounds when empty. After filling with five pounds of CO_2 it should weigh 12.5 pounds. Weigh your tank at home right after you get it filled so you'll be able to tell how much CO_2 is left in it by weighing it again.

If you don't plan to take your kegs to parties, or if your production of homebrew is starting to increase, you should consider a 20-pound CO_2 tank. My 20-pound tank is about eight inches in diameter, 27 inches high and weighs 50 pounds when full, including the regulator. The advantage of a 20-pound tank is that it only costs a few dollars more to fill it than a five pounder, but it holds four times as much. If you shop around, the 20-pound size can often be found for less than $100 new or $50 to $60 used, but in any case shouldn't cost more than $125.

Always keep CO_2 cylinders secured in the upright position to avoid accidents and injury. Keeping the keg upright will keep liquid CO_2 out of the regulator, which could damage it.

Regulator

A full CO_2 tank holds a pressure of 800 pounds per square inch (psi) at room temperature. That's a bit more than the 10 to 30 psi I need to carbonate or dispense my beer,



REGULATOR

so a regulator is a must. The regulator screws onto the tank valve and reduces the pressure to safe levels. A set screw lets you adjust the regulator's output pressure with an ordinary screwdriver (or even a dime) and a gauge shows the working pressure coming out of it (you rarely need more than 25 to 30 pounds).

The CO_2 in the tank starts out as liquid, and the pressure of the gas in the head space of the tank will be between 700 and 800 psi depending only on the temperature of the cylinder. The high-pressure gauge on the regulator will only begin to fall when all the liquid is gone. Depending on your tank size, this could be enough CO_2 to dispense only part of a keg. The accurate way to estimate how much CO_2 is left in a tank is by weight, not by pressure.

The regulator may have a hose barb adapter to which you can clamp a piece of tubing. Otherwise, it has a flare fitting to which you can screw a hose barb attached to your tubing. Regulators come in many styles and cost anywhere from $25 to $75 new. You can generally find them at any place that sells CO_2 tanks.

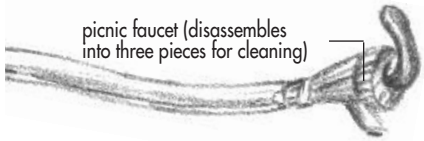
Miscellaneous Parts

The faucet is the familiar plastic gizmo with a lever that you press to start the flow of beer. You'll find them at most homebrew suppliers, beer distributors or bar-supply dealers. It's inexpensive at $4 to $7 and works well provided you have the correct pressure behind it. It may not be obvious, but the typical faucet easily disassembles into three pieces for cleaning.

Flexible plastic tubing is used between the CO_2 tank and the keg's gas-in connection, and between the keg's liquid-out connection and the faucet. Your best bet is three-sixteenths-inch ID (inside diameter) food-grade vinyl (not polyethylene) tubing. You can probably find this at a local hardware store for less than 50 cents per foot. Buy at least 10 feet to start. Cut it in half and use five feet for each line.

A gauge cage is a nice investment for $10 to $15. This is a steel wire frame that attaches to the regulator and protects the gauges from breakage in case the tank falls over.

Some regulators come with a one-way check valve that makes it impossible for beer to accidentally flow back into the regulator and ruin it. Check valves come in many shapes and sizes and can be difficult to spot. Check with the manufacturer to see if your equipment includes this feature. You can add it later to any regulator if you decide you want the extra peace of mind. Like the gauge cage, a check valve is not necessary, but I recommend getting both because a regulator is one of the most expensive parts to replace of your whole system.

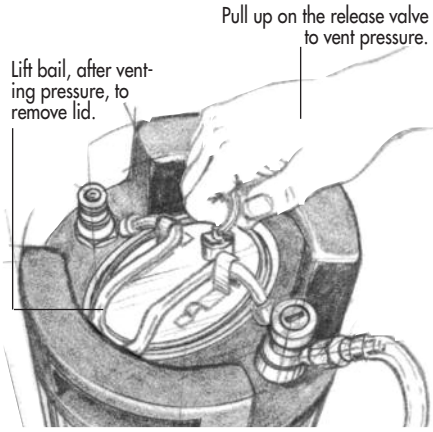


PICNIC FAUCET

Disassembly

When you get your used kegs home, the first order of business is a thorough cleaning. First, vent any pressure by lifting the tab or ring attached to the pressure-release valve. If there's no safety valve, press down on the poppet in the center part of the gas fitting (labeled "in") with a key or small screwdriver. If you vent the liquid or "out" fitting first, you will get an unpleasant shower. Kegs are almost always shipped with some pressure in them: be certain to release all of it for safety reasons.

With the pressure vented, you'll be able to open the hatch. Lift up on the bail. There are many different types, but you'll see a steel wire frame that obviously is meant to be lifted up. Using this bail as a handle, push the hatch cover down into the keg an inch or so (don't drop it). If you can't budge it, there is still pressure in the keg, so go back to the previous step and release the pressure. Caution: When new these kegs are rated to hold up to 130 psi of pressure so you could injure yourself if you try to force the lid open with pressure inside. After pushing the cover down a little, rotate it a quarter turn and you'll be able to lift it right out.



REMOVING LID

Notice the large rubber O-ring on the lip of the cover. After years of contact with soft-drink syrup, the rubber is thoroughly impregnated with the stuff and I've never found an effective way to remove the aroma. You don't want that flavor in your beer, so it's best to replace the O-ring. Many homebrew suppliers carry them, and some even offer kits to replace all the O-rings in a keg. If you're lucky enough to have a well-stocked hardware store nearby you may be able to find them, but take an old one along to be sure you get the same size and one of food-grade quality. A complete set of new O-rings for a keg shouldn't cost more than $5 to $7 in most areas.

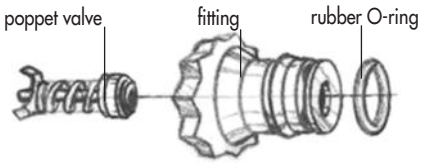
Using an open-end (your only option for pin-lock fittings) or deep-socket wrench, loosen both the gas and liquid fittings on top of the keg. There are several sizes of fittings, but the most common are seven-eighths-inch diameter for ball-lock kegs and thirteen-sixteenths-inch for pin locks. Loosening the fittings might take some strength, but once you have them loosened, they should be easy to unscrew with your fingers.

Remove both fittings as well as the tubes beneath them. The gas fitting has a short tube and the liquid fitting has a long tube that goes all the way to the bottom of the keg. Each tank fitting has a small O-ring around it on the outside, and each tube has an even smaller O-ring around it. All four of these O-rings should be replaced for the same reason as the large one. You may be able to find food-grade quality replacements at the local hardware store, but a homebrew supplier will be your best bet. Keep in mind that pin- and

ball-lock kegs use slightly different size O-rings. They are sometimes interchangeable.

Inside the fittings you'll find the actual valve, called a poppet, that may need to be replaced if you find out it leaks.

If either dip tube is plastic, try to replace it with a stainless-steel version. This can't always be done because some nylon dip tubes are a different size than their stainless counterparts, and are not interchangeable. Plastic will have absorbed soda smells — something you don't want. While you have the dip tubes disassembled for cleaning, trim the gas tube with a tubing cutter down to about one-half to three-quarters inch if it is longer. This will prevent beer from pushing into the gas tubing.



DISASSEMBLED FITTING

Cleaning

With the kegs disassembled, a thorough cleaning is a must. First, rinse the keg, fittings and tubes with hot water to remove obvious syrup residue. Then fill the keg with very hot water and one-quarter cup (59 mL) of a cleaning agent such as trisodium phosphate (TSP is available as wall cleaner in bulk sizes at paint stores), washing soda or B-Brite. Drop in the small parts, including the hatch cover, and let it all soak for no more than a few hours. You may need to scrub the inside of the keg with a nylon bristle carboy brush or nylon scrubbing pad to remove stubborn residue. Don't worry about scratching the inside surface, just get it clean.

Replace the tubes and fittings (with their new O-rings) and tighten them securely. Be sure you have put the gas fitting on the "in" side of your keg, and the beer fitting on the "out" side. Fill the keg with very hot water and cleaning agent again, then replace the hatch cover with its new O-ring and secure it by tightening the bail. Now turn the keg upside down and let it soak for another few hours. This step cleans the inside top of the keg as well as the inside of the fittings. Rinse thoroughly with hot water several times when you're done, giving the keg a good shaking when you do.

Some people like to store their kegs filled with a sanitizing solution like one-half ounce (15 mL) of iodophor in five gallons (19 L) of water. Don't use hot water because it will reduce the effectiveness of the iodophor. Don't use chlorine bleach for this purpose because prolonged exposure can damage the stainless steel — even short exposure can pit the kegs at the bleach-water/air interface.

USING THE GEAR

Filling the Keg

Among the advantages of kegging your homebrew is no longer having to wait a couple of weeks until your beer is carbonated. Another is being able to completely forget about the sediment on the bottom of the bottle. The solution to both problems is forced carbonation with CO_2 from your tank.

As soon as your fermentation has completely finished and your beer is clear, you're ready to keg. Here's the procedure I use: To sanitize the keg thoroughly, I fill it with five gallons (19 L) of water and one-half ounce (15 mL) of iodophor, seal the hatch and let it sit for at least 10 to 20 minutes. Then I turn it upside down and let it sit for another 10 to 20 minutes. Finally, I turn it right side up, open the hatch and empty it. I leave it upside down in the sink while I prepare everything else. That allows it to air-dry, so rinsing isn't necessary. If you use a different sanitizer than iodophor, a final rinse with preboiled water would be advisable.

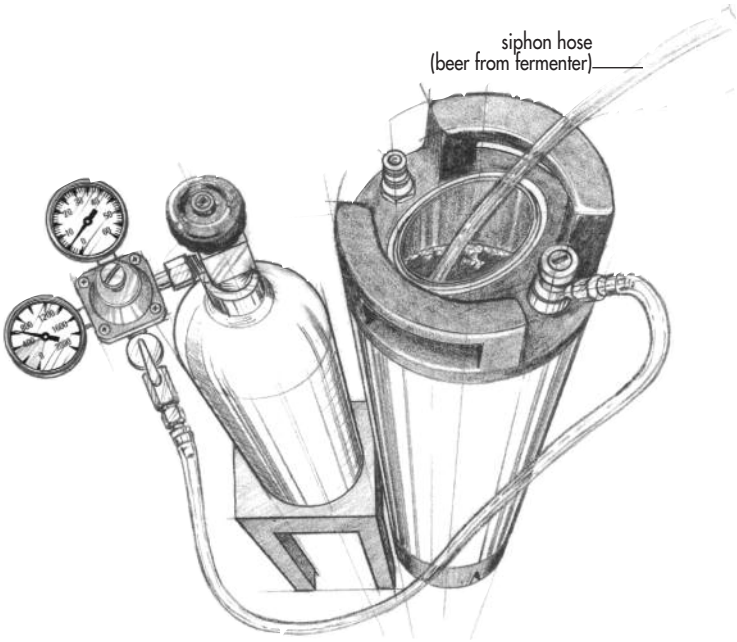
To connect the CO_2 tank to the keg, attach one end of a length of tubing to the regulator and the other end, with the gas-in quick-disconnect, to the gas fitting on the keg.

TABLE 1: Pressure Required for Desired Carbonation

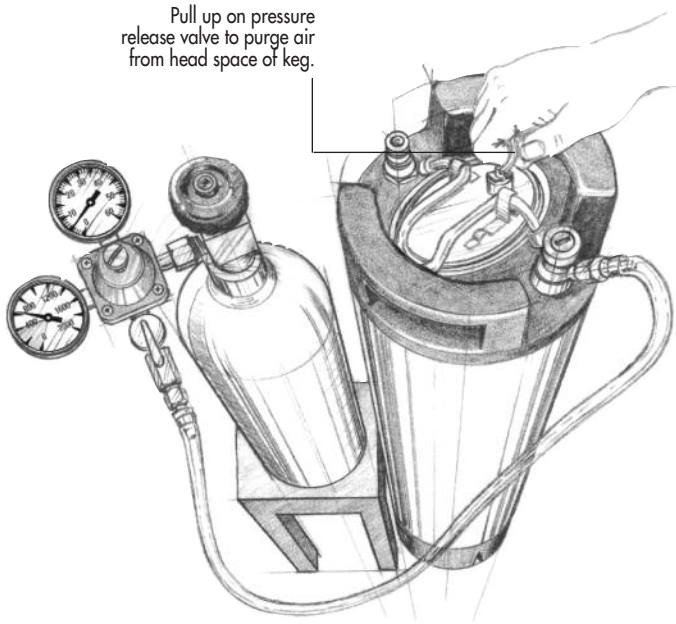
DIRECTIONS: Look down the left column to find your keg temperature and read across to the number in the column corresponding to the desired carbonation level. That number is the CO_2 pressure to apply to the beer, in psi.

Temp	Volumes of CO_2 desired													
(°F)	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9	3.0
32	0.6	1.6	2.5	3.5	4.4	5.4	6.3	7.3	8.2	9.2	10.1	11.0	12.0	12.9
34	1.3	2.3	3.3	4.3	5.3	6.3	7.3	8.2	9.2	10.2	11.2	12.1	13.1	14.1
36	2.1	3.1	4.1	5.1	6.2	7.2	8.2	9.2	10.2	11.2	12.3	13.3	14.3	15.3
38	2.8	3.9	4.9	6.0	7.0	8.1	9.1	10.2	11.2	12.3	13.3	14.4	15.4	16.5
40	3.6	4.7	5.7	6.8	7.9	9.0	10.1	11.2	12.3	13.4	14.4	15.5	16.6	17.7
42	4.3	5.5	6.6	7.7	8.8	10.0	11.1	12.2	13.3	14.4	15.5	16.7	17.8	18.9
44	5.1	6.3	7.4	8.6	9.7	10.9	12.1	13.2	14.4	15.5	16.7	17.8	19.0	20.1
46	5.9	7.1	8.3	9.5	10.7	11.8	13.0	14.2	15.4	16.6	17.8	19.0	20.2	21.3
48	6.7	7.9	9.1	10.4	11.6	12.8	14.0	15.3	16.5	17.7	18.9	20.1	21.4	22.6
50	7.5	8.7	10.0	11.3	12.5	13.8	15.0	16.3	17.6	18.8	20.1	21.3	22.6	23.8
52	8.3	9.6	10.9	12.2	13.5	14.8	16.1	17.3	18.6	19.9	21.2	22.5	23.8	25.1
54	8.9	10.4	11.8	13.1	14.4	15.7	17.1	18.4	19.7	21.1	22.4	23.7	25.0	26.3
56	9.9	11.3	12.6	14.0	15.4	16.7	18.1	19.5	20.8	22.2	23.6	24.9	26.3	27.6
58	10.7	12.1	13.6	15.0	16.4	17.8	19.2	20.6	21.9	23.3	24.7	26.1	27.5	28.9
60	11.6	13.0	14.5	15.9	17.3	18.8	20.2	21.6	23.1	24.5	25.9	27.4	28.8	30.2
62	12.4	13.9	15.4	16.9	18.3	19.8	21.3	22.7	24.2	25.7	27.1	28.6	30.0	31.5
64	13.3	14.8	16.3	17.8	19.3	20.8	22.3	23.8	25.3	26.8	28.3	29.8	31.3	32.8
66	14.2	15.7	17.3	18.8	20.3	21.9	23.4	25.0	26.5	28.0	29.6	31.1	32.6	34.1
68	15.1	16.6	18.2	19.8	21.4	22.9	24.5	26.1	27.6	29.2	30.8	32.4	33.9	35.5
70	15.9	17.6	19.2	20.8	22.4	24.0	25.6	27.2	28.8	30.4	32.0	33.6	35.2	36.8
72	16.8	18.5	20.1	21.8	23.4	25.1	26.7	28.4	30.0	31.6	33.3	34.9	36.5	38.2
74	17.8	19.4	21.1	22.8	24.5	26.2	27.8	29.5	31.2	32.9	34.5	36.2	37.9	39.5
76	18.7	20.4	22.1	23.8	25.5	27.2	29.0	30.7	32.4	34.1	35.8	37.5	39.2	40.9
78	19.6	21.4	23.1	24.9	26.6	28.4	30.1	31.8	33.6	35.3	37.1	38.8	40.5	42.3
80	20.5	22.3	24.1	25.9	27.7	29.5	31.2	33.0	34.8	36.6	38.3	40.1	41.9	43.7

(Table developed by Alan Edwards, ale@cisco.com. Used here with permission.)



FILLING THE KEG FROM FERMENTER



"BURPING" THE KEG

You can leave the gas tubing attached to the regulator for future use.

To avoid oxidation, purge the air from the keg by turning on the CO_2 for 10 seconds or so at 5 psi. CO_2 will enter the keg, sink to the bottom and push the air out the open top. Do this just before racking the beer into the keg because the CO_2 and air will mix together after a while.

Turn the regulator off and rack the beer from the fermenter to the bottom of the keg to avoid splashing. As the beer fills the keg, the CO_2 is gradually pushed out, leaving a blanket of carbon dioxide to protect the surface of the beer from the air.

Replace the hatch cover. The gas-in line is still connected to the keg, so set the regulator to about 5 psi and fill the head space of keg with CO_2 (listen for the gas to stop flowing). Turn off the CO_2. Open the safety valve to let almost all the pressure out, then fill the keg with CO_2 again. Do this three times to purge any remaining air from the head space in the keg. Now you're ready to carbonate the beer.

Carbonation

The first step is to determine how much carbonation you want. The dial gauge on your regulator is calibrated in pounds per square inch but carbonation is generally measured in volumes of CO_2 (for the quantity of gas that is actually dissolved in the beer). For English styles like bitter, about 1.5 to 1.8 volumes of CO_2 are about right. For effervescent styles like German weizens, 2.8 to 3.0 volumes can be used. For most other beers, something in the 2.4 to 2.6 range seems to work best.

The colder the beer, the more easily CO_2 can be dissolved in it, so it's important to know the temperature of the beer in your keg before you begin. Let's assume the beer you just kegged is 42 degrees F (6 degrees C). With most beers, you want carbonation to be in the range of 2.2 to 2.6 volumes of CO_2. By using Table 1, you learn you'll need about 10 psi at 42 degrees F (6 degrees C) for 2.2 volumes of CO_2. For this style at this temperature, you want to apply 10 psi of CO_2 pressure until as much CO_2 as possible is dissolved in the beer. The colder your beer is, the less pressure it will take to carbonate it.

So you are ready to carbonate. Your CO_2 tank is hooked up to the gas-in connection, hatch cover is on and air is purged from the keg's head space. Now turn on the CO_2. Turn the screw on the regulator to set it for (in this example) 10 pounds. Now listen to the CO_2 flow. As the pressure reaches equilibrium, the flow will slow down and eventually stop (this won't take more than a few minutes). The reason it stopped so soon is that when the keg is upright there is only a small surface area where the gas can dissolve into the beer.

Shaking the keg will agitate the surface and start the flow again. To make this process more efficient, I like to roll the keg on its side back and forth on the floor with my foot while listening to the gas flow. Don't try this unless you have a check valve in the system, though, otherwise there is a chance that beer will back up the gas line. If beer gets into the regulator the regulator could be ruined. The more vigorously I agitate the keg, the more gas flows. Eventually, it stops flowing no matter how much I shake the keg. That means my beer is fully carbonated. This process can take up to 15 minutes at 42 degrees F (6 degrees C), with faster results at lower temperatures.

Even though carbonation is complete, I know the beer will be foamy because of all the agitation, so I set the keg back upright and disconnect it. After a few hours the beer settles and is ready to serve.

An alternate method if you don't have a check valve or you don't have time to shake the keg is to simply leave the keg standing upright with the CO_2 connected and the pressure set at 10 psi (if you can't keep the keg at 42 degrees F, check Table 1 for the psi you should apply). The potential drawback with this method is that unless all the connections in the system are very tight you may lose some of your CO_2 to leakage. It can take a few days to carbonate the beer if the keg is standing upright at 42 degrees F, but you can reduce that time if you give the keg a bit of a shake every time you pass by.

If you plan to cool the keg to an even lower temperature, put a few more pounds of pressure on it first. The gas in the head space of the keg will dissolve quickly when the beer

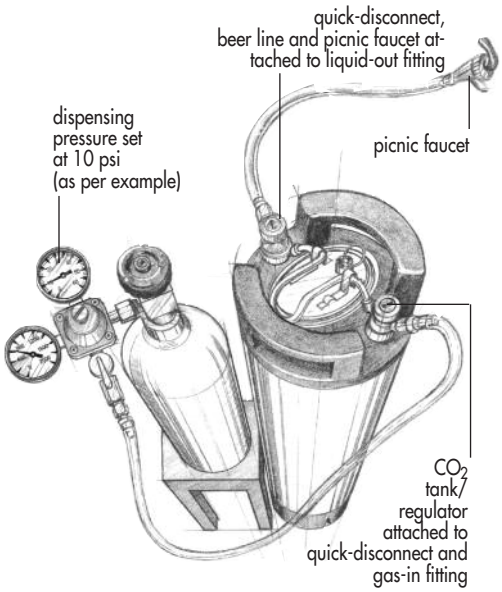
cools down and it's possible that this will let the O-ring leak on an old keg. If the seal isn't tight (from the internal pressure of the keg) all the gas can come back out of solution and escape through the leaky O-ring leaving you with flat beer.

The third way to carbonate beer in a keg is to simply treat it as a giant bottle, using one-half cup (118 mL) of corn sugar to prime. This method works as well as any other, but with two possible drawbacks. First, there's the problem of sediment on the bottom of the keg. That can be avoided to some extent by cutting off the bottom half inch of the liquid dip tube. Second, the large O-ring in some older kegs may not form a perfectly tight seal, and as carbonation is developed it could leak out through the seal, leaving you with flat beer.

Regardless of which method you use, you'll notice that the carbonation level improves with time. After a few days, the bubbles will seem finer and the head on your beer will probably be longer lasting. After a week or two, the carbonation will be so perfect you may never go back to bottling. Science still hasn't completely explained this effect, but it's clear that something wonderful is happening to the carbonation quality as the beer matures.

Dispensing Basics

So you are ready to sample a glass of your freshly kegged and carbonated homebrew — what do you do now? The simplest way involves a little trial and error, but don't worry.



Attach the beer-out quick-disconnect to the flexible dispensing hose and beer faucet then attach this assembly to the beer-out fitting of the keg. The pressure on your regulator should be at 10 psi (the carbonating pressure from our example). Depress the lever on the faucet completely and fill your beer glass. If your glass fills with foam, turn the pressure on the regulator down one or two psi and try again. If no beer comes out, double check to make sure the gas is turned on. If the beer just trickles out or seems undercarbonated or flat, increase the pressure one or two psi and try again. Believe it or not, this is the easiest way to dispense for the first time.

In reality, proper dispensing depends on several variables including length and diameter of the dispensing line and the material it is made of.

TABLE 2 Pressure Drop in Pounds per Foot

ID Material	3/16" vinyl	3/16" poly	1/4" vinyl	1/4" poly
Restriction factor	3	2.2	0.85	0.5

As a general rule you want to wind up with 0.5 psi at the picnic faucet. To do this, multiply the length of your dispensing line by its restriction factor from Table 2 and set your regulator 1 or 2 psi above the resulting number. The pressure will drop as the beer travels up the keg's dip tube, through the length of line and into your glass. For fine tuning, you can raise and lower the level of the faucet and glass to make minor pressure changes. By raising the glass you lower the dispensing pressure slightly, by lowering the glass you raise the pressure slightly. Proper dispensing also depends on the temperature of your beer and dispensing line. You may need to adjust your pressure to perfect your pour. For more information see Dave Miller's chapter, "Setting Up Your Home Draft System" in *Just Brew It!* (Brewers Publications, 1992).

Storage

When you are done serving you can turn off the CO_2 tank and remove the gas quick-disconnect and beer line. Now store your beer in a cool location until next time. In the winter it may be enough to simply put a plastic bag over the top of the keg to protect it from dust and store it outdoors or in the garage. If that isn't possible, keep it at room temperature and dispense it into a frozen mug. Once you start kegging you may want to pick up a used refrigerator. Many keggers store their kegged beer in a spare refrigerator to keep it at serving temperature. Others like to keep the refrigerator even colder for lagering. Some even keep the beer they're currently serving standing next to the fridge, with the beer line running through one wall of the fridge, into a cold plate stored inside with the lagering tanks, and then out the other side to a beer tap mounted on the opposite wall of the fridge. (Caution: if you do this be absolutely certain there are no cooling coils inside the wall of the fridge where you make the holes, and seal the holes with silicone caulk so the insulation does not get wet from condensation, ruining the efficiency of the refrigerator.) Even if you don't have the luxury of a brewing refrigerator (although the freezer compartment makes a great place to store your hops!), you can still enjoy your own draft beer. A cold plate or jockeybox (coiled copper tubing packed with ice in a picnic cooler) will do the job nicely. See ***zymurgy*** Fall 1991 (Vol. 14, No. 3) for a great article by Teri Fahrendorf on building and using a jockeybox.

There's a lot of information here and you'll probably discover your own tricks and techniques for working with kegs. I could discuss many more things like counterpressure bottle filling and transporting kegs for parties, but there's enough here to get you started. In addition to what you've learned here, find a local club of homebrewers and ask them for ideas. If you have any lingering doubts, they'll put them to rest immediately. Homebrewers who begin kegging their beer rarely look back. There's just something about fresh draft beer.

Further Reading

Other articles that discuss draft systems:

"Closed System Pressurized Fermentation" by Teri Fahrendorf, ***zymurgy*** Special Issue 1992 (Vol. 15, No. 4).

"Counterpressure Bottling" by Dan Fink, ***zymurgy*** Special Issue 1992 (Vol. 15, No. 4).

"A Great System for Draft Beers" by Byron

Burch, *Beer and Brewing Vol. 10*, pp. 177-189, Brewers Publications, 1990.

"Kegging Basics and A Buyer's Guide to Kegging Equipment" by Dan Fink, ***zymurgy*** Special Issue 1992 (Vol. 15, No. 4).

"Kraeusening and Cold-Hopping Soda Kegs" by Cy Martin, ***zymurgy*** Winter 1989 (Vol. 12, No. 5).

"Racking from Carboys to Soda Kegs" by Cy Martin, ***zymurgy*** Winter 1989 (Vol. 12, No. 5).

"Setting Up Your Home Draft System" by Dave Miller, *Just Brew It! Beer and Brewing Vol. 12*, pp. 201-214, Brewers Publications, 1992.

"A Simple Keg System" by Malt Disney, ***zymurgy*** Winter 1986 (Vol. 9, No. 5).

"Soda Keg Draft Systems — Better than Bottles?" by Jackie Rager, ***zymurgy*** Winter 1989 (Vol. 12, No. 5).

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