

Mini Kegerator

Jojer Graphics
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Description: These instructions combined with the purchase information is all you need to build your own mini kegerator suitable for housing one or two 5 gallon mini keg(s), carbon dioxide bottle, and all tubing.

Prototype System:	
	<p>Price list- Here's a breakdown of what the last kegerator cost me to build. Prices are always subject to change, and your own modifications might change it slightly too, but yours should be fairly close.</p> <ul style="list-style-type: none">• Frigidaire Compact Fridge - \$179• Set of 4 Wheels- \$4.99• Cabinet Latch- \$2.98• Single Faucet tower - \$70.00• Low Profile Inline Coupler - \$54.95• Gas Line w/ clamps - \$4.95• CO2 Regulator - \$57.95 <p>-----</p> <p>Grand Total - \$375.00</p> <p>You may be able to shave a few bucks by finding a cheaper fridge, or shopping around for the keg supplies, but if you follow these instructions at least you'll have a nice quality kegerator that will keep people asking where you found it.</p> <p>The only thing you'll need to add to the price list above is the Keg, and CO2 bottle- which you can rent, or buy for about \$25ea from your local brew store.</p>

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Hardware Store Supplies:		Specialized Supplies:	
<ul style="list-style-type: none"> (4) Casters suitable for floor type <i>The wheels you choose need to be suitable for the terrain you intend to roll on. If you're going to stay online inside a set of 1-1/2" plastic double wheel casters, should be fine- if you're going to roll outside on the deck or patio, go with a rubber 2-1/2 - 3" wheel.</i> 		<ul style="list-style-type: none"> Compact Refrigerator (3.9 cuft or greater) Frigidaire Model FRC44GB (http://www.lowes.com/lowes/lkn?action=productDetail&productId=61493-47224-FRC445GB&Ipage=none) Haier Model HSA04WNCBB (http://www.haieramerica.com/en/product/HSA04WNCBB) Haier Model HSA04WNCWW (http://www.haieramerica.com/en/product/HSA04WNCWW) Magic Chef Model MCBR445B2 (http://www.amazon.com/Magic-Chef-4-4-Refrigerator-MCBR445B2/dp/B001THAV2A) Magic Chef Model MCBR360S (http://www.amazon.com/Magic-Chef-3-6-Refrigerator-MCBR360S/dp/B001TESJU4) Kegerator Conversion Kit - (See below) 5 lb CO2 tank (http://www.beveragefactory.com/draftbeer/tanks/co2/C5.shtml) Home-brew Mini Keg (optional) (http://stores.ebay.com/Rye-Homebrew-and-Collectibles) ** <p>** Valid source at the time of writing- search ebay for "5 gallon keg" or "Cornelius Keg" for other alternatives.</p>	
<ul style="list-style-type: none"> (1) Can "Great Stuff" insulation foam 			
<ul style="list-style-type: none"> (1) Tube kitchen and bath caulk (white, or brown) (1) Cabinet latch (lock optional) 			
<ul style="list-style-type: none"> (1) 24" x 36" Sheet of suitable flat material for inside of door. Plexiglass, formica, vinyl flooring, or thin metal should be sufficient * <i>*This may not be required depending on the type of compact fridge you get.</i> Zip ties & zip tie stick on mounting blocks (6) 1" x #10 Sheet Metal screws Baseball bat, or short length of 2-3" pipe* <i>*This may not be required depending on the type of compact fridge you get.</i> 		<ul style="list-style-type: none"> Parts to make adaptable to both styles of keg fittings (2) Male gas line couplers (http://www.beveragefactory.com/896EP } (1) Female gas line coupler (http://www.beveragefactory.com/854-1p } (2) Male beer line couplers (http://www.beveragefactory.com/62700 } (1) Female beer line coupler (http://www.beveragefactory.com/60600 } 	
			

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Building Steps

Because no two kegerator builds are identical, I've included many different options in this guide. The pictures are from a Magic Chef fridge that required quite a bit of modification, and the easiest I've ever found, the Frigidaire FRC445GB 4.4 cuft compact fridge.

It's best that you read through the entire guide before you start, so you are prepared for the amount of work required. The few extra dollars you spend on the right fridge can save you quite a bit of work, and add some good utility in the long run. Here are the basic steps we'll cover.

1. Order your conversion kit.- The type of keg will determine the kegerator materials you'll buy. You'll want to get these on order, so by the time your fridge modifications are done, they'll have arrive for installation.



Choose the Faucet style- Most compact fridges use a tower style faucet, but depending on where the fridge is going to be stored a door mount may also be appropriate. Again, this is going to be important when purchasing the kegerator supplies.



2. Pick out your fridge- If you already have a fridge, this part is done, but if you're starting from scratch you can save a lot of time and effort by buying the right fridge from the beginning. Unless your size constraints prohibit it, the Frigidaire FRC445GB is by far my favorite.

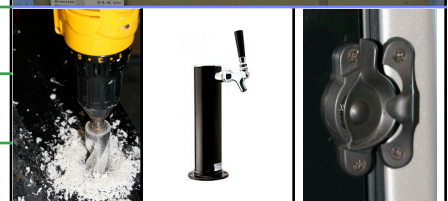


3. Modify the fridge door (if necessary) - Some fridges need the door organizers removed to make room for the keg & CO2 bottle inside.

4. Mount the door latch - Keeps the fridge from frosting up on the cooling sheet.

5. Modify the freezer section & cooling coils

6. Drill the hole, and mount the faucet or faucet tower.



7. Install the wheels - Wheels are not required, but sure makes the kegerator much more portable (you can't always host the party, sometimes you have to bring it with you).

8. Assemble and route the beer line and gas line.

9. Kick back and have a beer- you've earned it.



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1. Kegerator Conversion Kit items:





BeverageFactory.com has made the process of buying kegerator supplies very easy with "conversion kits." However, these kits don't cover all the possible options. So, to get started first you need to answer the following questions:

1) Am I going to use standard SANKEY style or Home-brew Pin-lock/ball-lock style kegs



2) Do I want to mount the tap to the top (tower mount)- or to the door (door mount)

Once you make those decisions, use the parts list below to purchase one of each of the required parts

<p><u>SANKEY Style Keg</u></p> <ul style="list-style-type: none"> • Low Profile inline coupler (http://www.beveragefactory.com/40030 } 		<p><u>HomeBrew Style Keg</u></p> <ul style="list-style-type: none"> • Ball Lock keg Tap Set (http://www.beveragefactory.com/blcp-cs } • Pin Lock keg Tap Set (http://www.beveragefactory.com/plcp-cs } 	
<p><u>Tower Style Faucet</u></p> 	<p><u>Tower Mount Tap</u></p> <ul style="list-style-type: none"> • 1 Faucet Beer Tower (comes with beer line) (http://www.beveragefactory.com/d4743t } 	<p><u>Door mount (Horizontal) Faucet</u></p> 	
	<p><u>Door Mount tap</u></p> <ul style="list-style-type: none"> • Chrome Faucet with Brass Lever (http://www.beveragefactory.com/4933KSC } • 3" Long Shank with Nipple Assembly (http://www.beveragefactory.com/SHANK3 } • 5' of beer line with wing nuts (http://www.beveragefactory.com/BLAW5316 } 		
<ul style="list-style-type: none"> • 5 Ft. 5/16 Inch I.D Air Assembly & 2 Snap Clamps (http://www.beveragefactory.com/ALA516-5) • Double Gauge CO2 Regulator (http://www.beveragefactory.com/642) 			

2. Choosing a suitable refrigerator:

Compact refrigerators are not hard to find, but finding a suitable one that will fit all the components is more difficult than it may seem. I have provided links to ones that I have found that will work.

There are a couple of things that you need to consider when choosing a compact refrigerator candidate:

- Internal dimensions suitable for holding your keg (or kegs) style- Mini (5 gallon cornelious) kegs need about 8 inches of depth, and 23 inches height (21" for keg, 2" for the tap). Most fridges hide the compressor and electronics in a hump in the bottom of the back, which reduces the inside dimensions, so be sure you consider the minimum depth. Also don't forget to consider the amount of space the can holders and shelves in the door will stick into the fridge IF YOU INTEND TO USE THEM. These plans provide instructions for removing this extra space hog. Most compact fridges are not big enough for a standard pony keg- but there are reasonably priced commercially available kegerators for these kegs. Check your local home improvement or appliance store for these.
- Freezer configuration- Most compact refrigerators have a small freezer section at the top of the enclosure which cuts down on the overall internal useable height. On some models, this divider is nothing more than a insulated shelf which can be easily removed, but on others this divider is actually a cooling plate with refrigerant flowing through it. This doesn't prohibit it from being used, but requires careful modification. I'll walk you through these modifications if you choose this style.
- Location of cooling coils- Think about where your faucet is going to be located. Most fridges have cooling coils hidden inside the back, which is the best place- however if they choose to locate them in the top it may prevent you from putting the faucet tower on the top

Magic Chef MCBR 445B2



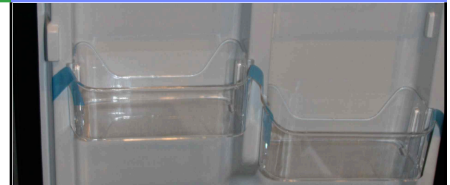
Haier Model
HSA04WNCBB



3. Door Modification

Most fridges are too small inside to hold everything you need with all the extra storage dividers molded into the door. Fortunately all these dividers can be easily removed, but before you do, do some measurements just to be sure. For mini kegs, you need 8-1/4" of space with the door closed. If you already have your keg, stick it in the fridge and close the door to see if it'll fit. If you don't have the keg already, cut a box so that it's 8-1/4" and use that as a template.

The Frigidaire FRC445GB is just big enough inside that you don't have to do any permanent modifications to the organizers, just simply remove the plastic shelves from the side the keg will sit on (or both if you're doing a dual keg fridge).

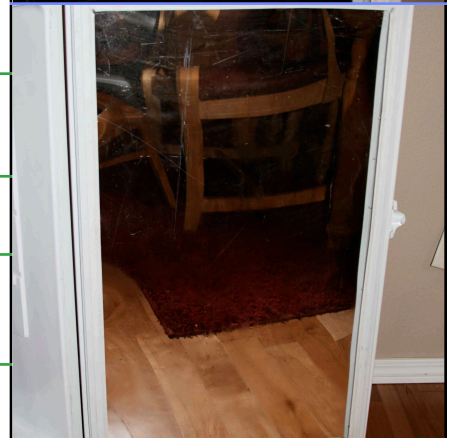


If you are going to remove the organizers, continue below

1. Remove the seal around the inside of the door by removing the approximately 14 pan head screws around the edge. You will have to roll open the rubber to see the screws.



2. Remove the plastic organizer from inside the door. There shouldn't be anything holding this in place once the seal has been removed unless the seal was hiding screws that you can now remove.



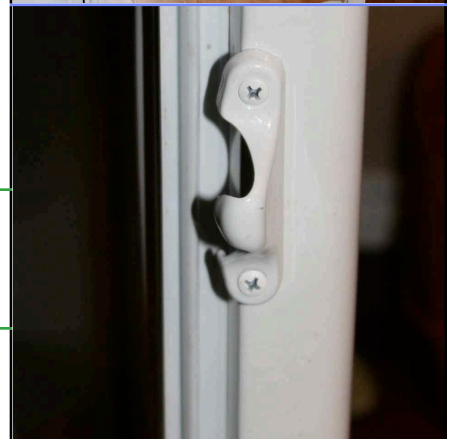
3. Using the organizer as a template, trace the outer dimensions of the plastic onto the flat sheet (A).

4. Cut the sheet to the size traced above.

5. Tape the flat sheet in place where the organizer had been previously installed.

6. Re-install the screws and rubber seal removed in Step 1. Ensure you have a nice tight fit with no bubbles or gaps.

For my prototype I used a plastic mirror for the flat sheet, in the second one, I used a piece of scrap vinyl. What you use is not important as long as it is rigid enough to keep the seal in place.



7. Open and close the door to make sure the door will still seal tightly without any binding.

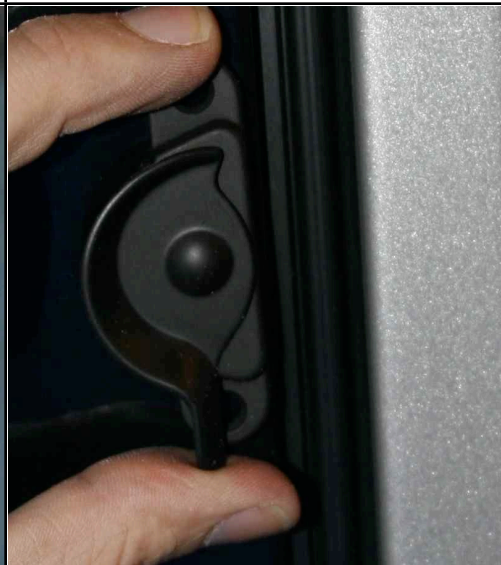
4. Door Latch

Compact refrigerators typically are not “frost-free”, which means that if you allow moist air to get inside your fridge it will condense on the cooling sheet forming frost. If you allow this to occur you’ll have to unplug your kegerator routinely to enable it to defrost. Since you don’t generally need to access the inside of your kegerator between kegs, we’re going to seal it tight enough to prevent any moist air from entering. If you’re worried about kids getting into the fridge there are other types of latches you can use that lock. The Fridgidaire model I use already has a child safety key lock, so this style of latch was sufficient.

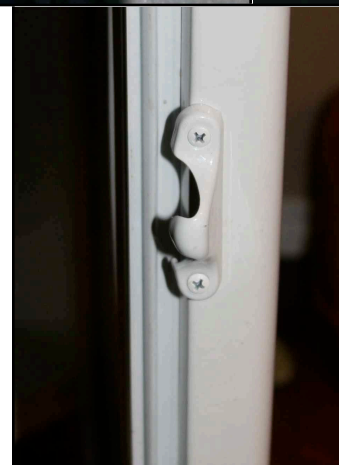
1. Mount the catch portion of your cabinet latch on the edge of the fridge door first. Mount the catch as close as you can to the edge of the door, but make sure you get a nice tight bite.

2. Place the latch portion of your cabinet latch on the side of the fridge. While holding it in place, and holding the fridge door shut, mark the screw holes.

3. Using tape, secure the catch to the door, and immediately secure it in place using sheet metal screws.



When mounting the latch, it’s going to seem that the gap is too big, so the tendency is to mount it too close, but remember- you’re going to want it to seal tight. By mounting the latch part first, you can walk the the catch back if necessary. It’s best to pre-drill your holes to make the cleanest hole possible. If you have to walk the hole back after test mounting, make sure you leave at least 1/8” between the old and new hole to prevent hole growth into both holes. If this isn’t possible- you can always move up or down just a little- there is plenty of slop in this style of latch.



5. Cooling Sheet Modification

If your fridge has a cooling sheet dividing the fridge and freezer sections interfering with the required internal height we're going to have to modify it, by carefully bending it.

NOTE: The Frigidiare FRC445GB doesn't have any exposed cooling coils- All you need to do for this fridge is remove the freezer door, and shelf. This is as simple as removing two screws, and pull it out.






1. First remove all the plastic fixtures in the vicinity to expose just the cooling plate.

2. Borrow a baseball bat from one of your (or neighborhood) kids, or use a short length of 2-3" pipe to create the bending brake. It is very important that you carefully bend this plate around a round object to ensure that you don't kink any of the cooling coils. Any kink can cause high pressure, breaking the compressor, and any break in the lines can cause the freon to leak out ruining the fridge.

3. Using a C-clamp firmly clamp the plate to the pipe (or bat) in the front of the fridge. If you can get another clamp in the back, this will help as well.

4. Very carefully and slowly, bend the plate down 90 degrees starting approximately 3" off center, so that the finished bend will place the plate in the center of the fridge leaving sufficient room for the keg. When bending, you'll want to grab the plate as far from the clamp as you can, and slowly work toward the clamp as the bend forms. Don't expect the bend to ever actually meet the bend radius of the pipe, once you've obtained a sufficient bend to fit the keg in, the rest is cosmetic. Whatever you do- don't force the bend with pliers or anything super rigid or you will create a kink or break, and I don't think these are covered under the warranty.



7. Faucet Mounting	
<p>Here you have to choose which path to take, most mini kegerators have the faucet on the top, since they are so short. If your kegerator is going to be on a shelf up off the ground, and you'd rather place the tap through the front that is an option too.</p>	
Tower Mount-	
<p>Carefully mark where you want the tower to mount on the top of the fridge, then mark in the center of this, for the beer line hole. Ensure the place you've chosen isn't too close to any edge of the fridge, as this may put you too close to structural components which may be too hard to drill though for the mounting screws, and could interfere with your beer line routing.</p>	
<p>If you're unsure if there is anything structural where you are mounting, you may want to take the back off, and get a peak before drilling. If you are unable to access it, 1.5" should be suitable for just about every style.</p>	
<ul style="list-style-type: none">• With a suitable drill bit, drill a 1" hole from the top down into the fridge. The top is most likely thin aluminum, followed by foam insulation, and then plastic fridge internals. Measure from the inside to see how deep the fridge is- then drill about 1" toward the inside• Once the hole is drilled, feed the beer line through the hole into the fridge. Seal any extra room with "Great Stuff" foam insulation to make sure you don't have a pocket of warm air on the beer line. Then screw the tower to the top of the fridge with the screws provided. Make sure it's nice and tight, so it can take the force of pulling on the tap handle. You can also epoxy the tower to the top, but I haven't needed to before.	
Door Mount-	
<ul style="list-style-type: none">• The door mount isn't really any harder than the tower mount, There is nothing bad inside the door that you have to worry about drilling into, so it's all up to aesthetics when choosing where to drill. Take time to measure, and make it nice and neatly centered.• If you want, you can also screw on a drip tray (as pictured)- The drip tray is available from the same source as all your keg parts.• Make sure you get the faucet screwed on very tight to ensure the tap isn't going to loosen up over time. Most faucets come with a plastic spacer to help with this. If your didn't, a short length of PVC pipe slightly bigger the shaft of the faucet will work fine.	

8. Assemble and route the Beer and Gas lines.

For this part of the assembly, it's best if you have all the parts required, and actually assemble everything to make sure it all fits. You can always cut the lines shorter later, but you can never go back if you make them too short.



1. Start with the CO2 bottle- Connect the regulator the bottle, and the Gas line to the regulator. Set the bottle in the very back of the fridge where it's going to be stored. Attach the gas lines to the inside walls of the fridge with zip ties and zip tie mounts. Leave enough slack in the lines that you can take the CO2 bottle all the way out of the fridge without having to first remove the regulator or cut the zip ties.

2. Next with the beer line coming from the tower, or faucet from the previous step. Using caulking on the inside, seal the hole where the line entered the fridge.



3. Next using zip ties and stick-on mounts, secure the beer line to the side of the fridge out of the way

4. With the keg sitting on the ground outside the fridge connect the beer line and gas line to the keg tap appropriate for your keg style.

SANKEY Style- The SANKEY style keg coupler uses an integrated beer & gas line assembly.



Ball lock / Pin lock (home brew) style- this type of keg coupler has two connections on the top of each keg



Connecting to this style keg requires one of the taps shown below. For space considerations, the inline is the preferred coupler.



Inline coupler



Lever-style Coupler






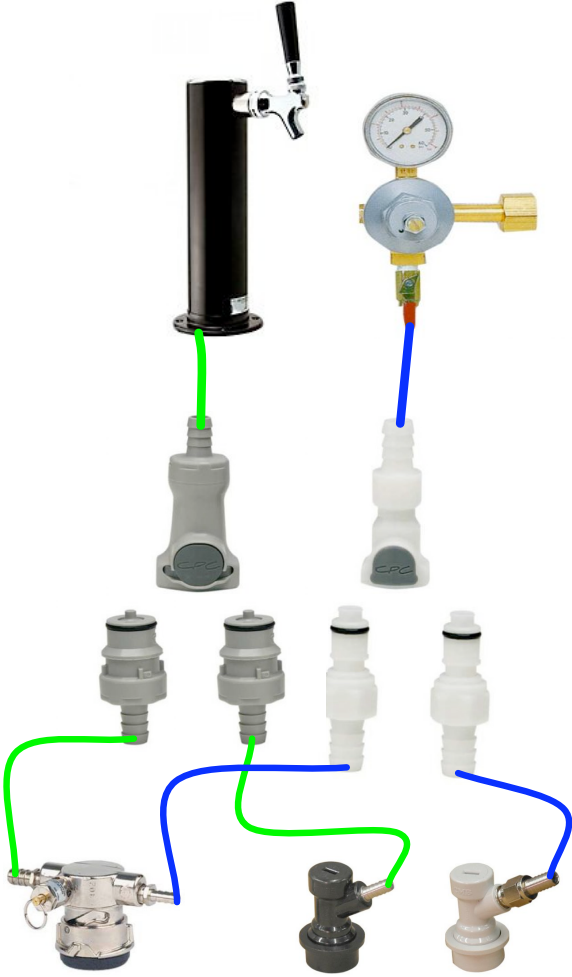



Ball- lock



Pin-lock

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Multi Style Adapter:		
	<p>When you're all done, this is basically how the line should be routed. The GREEN line is usually clear tubing, and the BLUE line is typically BLUE or RED gas line.</p>	
<p>If you have both a SANKEY style keg, and a homebrew keg, you can make a quick release adapter set to facilitate using either without major alterations. This also makes it easy if you want to always have a keg on standby in case your home brew skunks, you run out of the store bought- or you just are planning ahead to always have a spare on hand.</p>		
<p>Beer line Female Disconnect (1)</p> <p>The female connector goes on the faucet side of the beer line</p>		
<p>Beer line Male Disconnect</p> <p>The male connector goes on a short length of tubing on each coupler</p>		
<p>Gas line Female Disconnect (1)</p> <p>The female connector goes on the CO2 bottle side of the gas line.</p>		
<p>Gas line Male Disconnect</p>		

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Other options:		
<p>Dual Keg- If the fridge is big enough to accommodate two kegs, you can switch to a dual tap system, to do this you'll need the following:</p> <ul style="list-style-type: none"> • 2 Faucet Beer Tower (comes with beer line) http://www.beveragefactory.com/D4743DT } • Two Way Air distributor (allows isolation of gas to either keg) http://www.beveragefactory.com/751-017 } <p>In the Frigidaire fridge, you will have to remove the thermostat / lightbulb assembly, and put it back on backwards (light bulb facing forward) without the lens- and then both kegs will fit.</p>		
<p>Drip tray- Either the tower mount or door mount can have a drip tray added.</p> <ul style="list-style-type: none"> • Surface Mount http://www.beveragefactory.com/DP-920 } • Wall mount http://www.beveragefactory.com/DP-117 } 		
<p>Butcher Block - I've seen a couple very nice homemade kegerators that had a thick piece of butcher block on the top of the fridge. It made the kegerator into a serving table too.</p>		
<p>I actually found a pre-cut piece of wood at Lowes, that works perfect for this. It's a "ClosetMaid Maple Drawer Frame Top Item #: 222120, Model #: 6281" It's the perfect width for the fridge top, and about 2" short of the top depth, but with a half round cut out of it, it works great.</p> <p>Glossy Bar top- Another nice finish I've seen is just a simple wood top with a glossy thick epoxy coat. Most home improvement stores can help you find an un-finished table top suitable to cut down to the right size. Once you've got it the right size all you have to do is put a nice thick coat of two-part clear epoxy on the wood. This type of epoxy is also available through most home improvement stores.</p>		

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Setup, and serving:	
<p>Temperature Control- The optimal temperature for most beers is 38degrees. If it's too cold, you can actually freeze the beer lines, which can lead to foamy beer, and if it's too warm it can also foam, or just not be refreshing enough. The best way to test the temperature is to place a glass of water in the fridge for a hour of so, and then measure the temperature of the water. Even though the keg is slightly insulated, the inside temp should be the same. When you get the fridge to the right temp, pour ONE glass of beer, and test the temp. Give that beer to a friend (it may be pretty foamy), and then pour yourself a second glass and check the temp of this one. Because of the way the tower is designed, if the tower gets too warm, the first glass of beer will cool down the tower, which makes it foamy, and a little warmer than desired, but the second glass should be better. If this becomes a real problem, you may need to install a fan in the fridge to blow to cool air into the tower. I haven't had problems with this, but I keep the kegerator inside where it's cool.</p>	
<p>Pressure Control- There seems to be many different opinions on the pressure required. Some people use a calculation based on the height of the tower + base pressure, others just say 10-12#, some say 14-16#, and most people use trial and error. For this particular kegerator style, and a good amber beer I've found 12# is my magic number. If you're getting foamy beer, you actually may need to raise pressure (weird but true), or lower pressure.. I could copy all the resources I've found into this guide, but the best advice I can give is, set it to 10-12#, and give it a try. If your beer is foamy, check the following things, and if that doesn't help, the google "foamy beer" and you'll find every expert's advice you need.</p>	
<ul style="list-style-type: none">• CO2 pressure about 12#• Beer Temp 36-38 degrees• No kinks in the beer lines• All connections tight (no air leaking in or out)• Pour 2 glasses to see if the tower heat is an issue	<ul style="list-style-type: none">• Beer has settled since last transport• Open tap fully & quickly when dispensing (no throttling the valve- it causes foam)• Beer lines and keg are clean
Final Thoughts:	
<p>I built my first kegerator out of necessity, that is- the commercial ones were too big to fit where I needed it to fit. Then I got so many comments from people about the quality and compact size, they wanted to know where to get one themselves. I have now built quite a few of these, and continue to learn new tricks with each build. Numerous people have contacted me wanting instructions for how to build their own, so I decided to take the time to write it out, and take pictures during my last few builds.-- and now I've made the instructions available to you.</p>	
<p>There are plenty of websites where you can find FREE kegerator instructions, but none I found were this thorough and included links to all the parts you need. Please print as many copies of this booklet as you need for your own use, but respect the copyright- don't post this document online, or pirate copies for your friends.</p>	
<p>Hope you have as much fun with your kegerator as I've had with mine.. of course.... drink responsibly..</p> <p>Enjoy, Jeremy Smith</p>	<p>I also have a similar booklet of instructions for building a flight/racing simulator chair. If you're interested email me (jeremy@jojer.com), check ebay, or flightsimchair.com</p>