



Mounting FTSS Chiller Coils in the Ss Brewtech Half-Barrel Chronical

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Want to take your already-awesome Ss Brewtech FTSS temperature control to the next level? The following set of instructions will walk you through how to modify the Ss Brewtech Half-Barrel Chronical (this may work for the 14 gallon version as well) fermenter so that the provided FTSS chiller coils can be mounted directly in the conical. This modification allows the chiller coils to be completely submerged (more surface area!) in wort and for the original Chronical lid (with tri-clamp) to be used during fermentation. Let's get started!

What you will need:

- Power Drill
- Small drill bit for metal (e.g. 1/4")
- 17mm step drill bit (or a step bit that has both 5/8" and 11/16" steps)
- Measuring tape
- Felt-tip Marker
- Emery cloth sand paper
- Shop vac (to clean out the metal debris)
- Table vice
- Scrap piece of wood
- Old towel, or something soft to lay the fermenter on
- X-ACTO Knife / Box Cutter

For this project, we are going to drill 4 new holes in the back of the Ss Brewtech Half-Barrel Chronical so that the FTSS chiller coils can be mounted vertically in the fermenter. Getting a clean and straight drill is very important to ensure a smooth round hole and prevent leaks after the coils are mounted. Additionally, to prevent the coils from touching when mounted, we will need to slightly bend the straight pieces on each coil to allow for better fit inside the conical.

Step 1: Prepping the Chronical

I highly recommend taking all tri-clamps, seals, racking arms, etc off the bottom of the fermenter before getting started. During drilling, metal debris will fall into the inside of the fermenter and could end up getting lodged inside of fittings and seals. This will make clean up much easier later as well!

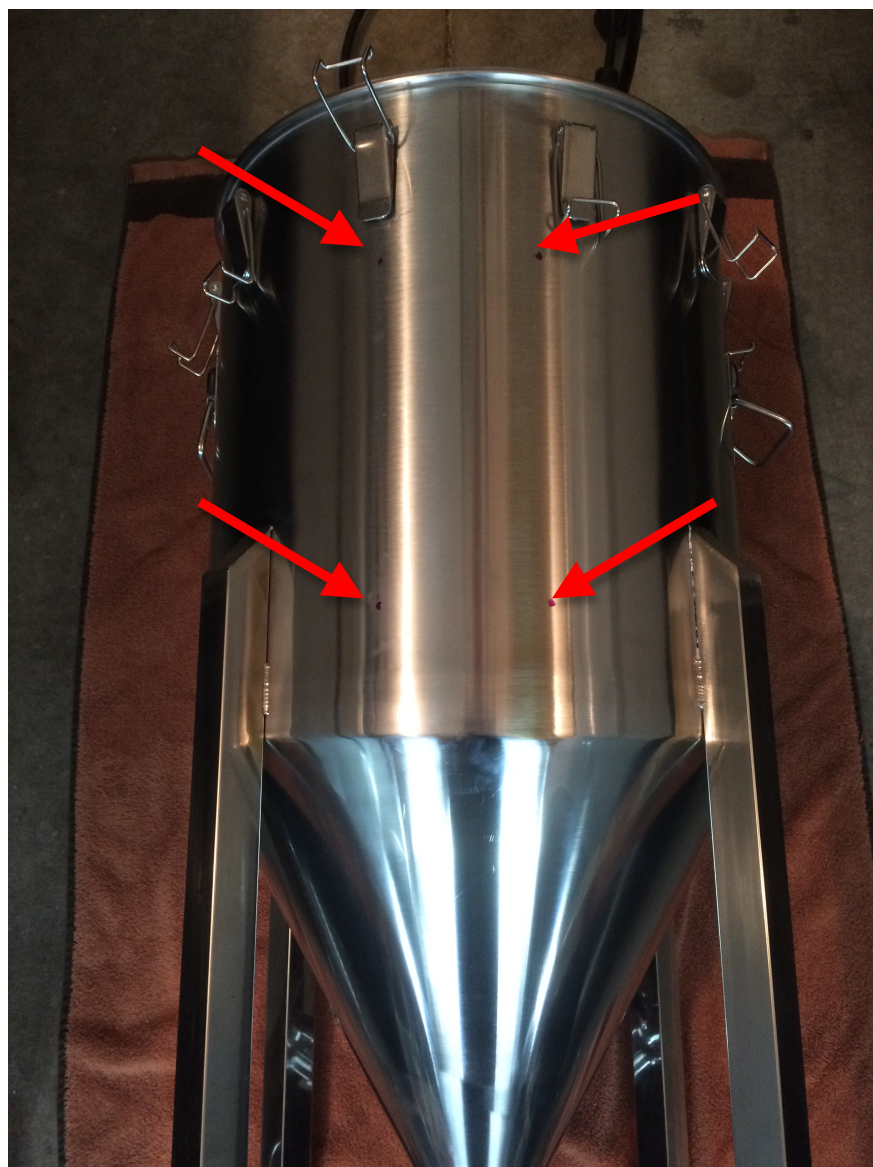
Step 2: Determining Coil Placement

There is some flexibility here, so do what you think is best for your setup. I will provide some rough estimates for where I mounted my coils, but feel free to adjust to your needs. I decided to mount my coils on the back of the fermenter so the tubing going to my glycol chiller would be hidden out of sight.

I chose to drill the on-center holes for the top of my coils approximately 5 inches below the top of the fermenter rim, which will be roughly around the 50L/13g etched volume markings. Depending on your coil span, this will leave about 3 inches between the bottom of the coils and where the fermenter begins to taper. Additionally the coils are mounted in vertical alignment with the etched volume markings, approximately 2 inches out on each side of the etched vertical line. Note, from the outside view, this will not appear to be centered with the Chronical legs, but it looks very nice and symmetrical on the inside. Since I won't be looking at the back of the fermenter very often, I felt like the inside alignment was more important.

Step 3: Marking the Holes

Once you figure out what placement works best for you, figure out the external equivalent to the placement and make marks where you plan to drill on the outside of the Chronical with a marker (I used a Sharpie which writes on metal well). The way I went about this was to start by measuring two inches out from the top of the etched volume line on the rim, and make two small marks on the rim. This allowed me to see where the vertical lines for each coil should be when measuring placement on the outside of the conical. I used a T-square to get a straight vertical alignment, but anything can work or you could just eyeball it. From there I measured 5 inches down and made two marks on each side of the volume line. Then I placed a coil next to the conical for precise measurement for the bottom hole. Remember to make the mark on-center, but if things don't go exactly as planned, the coils are a bit flexible so you should be able to work them into place. Below is a photo of the 4 markings in red I made prior to drilling.



Use these instructions at your own risk. I take no responsibility for any damages to equipment or personal injury. Measure twice, drill once. Have fun and be safe! – Denny Deaton (denny@dennydeaton.com)

Step 4: Drilling the Holes

Now the fun begins! Before drilling with a step bit, you will want to pre-drill some start holes. Use a small bit such as a 1/4" drill bit for metal to pre-drill 4 holes in the conical. You can get better leverage, and a straight drill if you drill from the outside. I laid the conical down on an old towel in my garage and drilled top down. Once you have the pre-drilled holes completed, its time to start drilling the larger holes. The exact measurement of the holes punched by Ss Brewtech in the FTSS lid is 17mm. 17mm step bits are hard to come by, so if you cannot find one, you can use a step with both 5/8" and 11/16" step. This a little trickier, but with care can work just the same. The size you want is in between 5/8" and 11/16" step, so you will want to slowly drill and size check as you go, and be very careful not to go all the way to the 11/16" step. You can do this by drilling a good 5/8" hole and then moving the drill slowly in circular motions from both the inside and outside to expand the hole slightly. Be careful to do this in a smooth motion and not to angle the drill to far or it could catch on the metal and bend your conical wall. This will also help knock any large burrs off the inside hole edge. Once your holes are drilled out to the right diameter, and you have confirmed that the coils fit correctly, sand the edges of the holes both inside and out with emery cloth sanding paper, being very careful not to scratch your shiny conical. Below is a photo of the finished holes drilled, from the inside angle.



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Step 5: Bending the Coils

Given the full depth of the coils in the kettle, and the angle created by a flush fitting mount, the coils would touch each other if mounted in the drilled holes as is. If this doesn't both you, you can skip this step, but for cleaning purposes, I chose to bend my coils slightly so they don't touch and mount flat. It's very easy to do, and I think it adds less stress to the fittings, and also will make it easier to clean the dirty coils after fermentation.

To do this, secure a straight part of the coil and fitting nut in a vice next to a piece of wood (see photo below for an example). Do this one straight piece at a time, and go very slowly with steady pressure as not to buckle or pinch your coil tubing. I would recommend forming the bend about an inch from where the fitting is welded to the coil pipe (see photo for a better idea). Take routine measurements in the conical next to the other coil to determine how much bending is required. See the photo in Step 7 for what it should look like.



Step 6: Mounting the Coils

Now it's time to mount the coils! Using the original o-rings and fitting hardware, install the coils in the conical and tighten from the outside with a wrench. At this point, the outside should look similar to the photo below.



Step 7: Checking for Leaks

Now it's time to check our work and see how well we did. Using a shop vac, first vacuum out the conical to make sure all metal debris is removed. Reattach the racking arm, fittings and seals and then fill it up with water!



Topped up and no leaks!



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Step 8: Modifying the Jacket (optional)

The next step covers how to modify the Ss Brewtech neoprene jacket (if you have one) to add eyelets for the chiller coil barbs. Install the neoprene jacket as you normally would onto your Chronical. Note, due to the four new barbs sticking out of the back, it's going to be a little more snug than usual. Once you get the jacket fully on the conical, take an X-ACTO Knife or Box Cutter and make an incision at the center of each barb. Work the incision a little larger until you are able to snugly work the barb through the hole. Be careful not to go to far, you only need a small hole, as the neoprene will stretch around the barb fairly easily. (See finished product below).



When removing the jacket, pull the neoprene out from around the barbs carefully. As you can see from the photo to the right, the holes in the neoprene do not rip and it hold up nicely!

That's it! Happy brewing and best of luck if you chose to modify your conical. I am very happy I took the plunge!

