

Making the “Gattling Gun Condenser”

This condenser is designed for the Nixon-Stone offset head style still. I wanted it to be removable for cleaning so I made it slip fit into the Nixon-Stone still head. Effective length of cooling pipe is $12 \times 350\text{mm} = 4200\text{mm}$.

Materials:

1 X 350mm of 50mm copper pipe (water jacket)

12 X 350mm of 6mm copper pipe (condenser core)

2 X 35mm of 6mm pipe (water outlets, could use tubing nipples)

2 X 1.5 mm up to 2.5mm, 60mm X 60mm copper plates (for the end circles, I used a single plate and cut both circles out of it.)

Easy Flow Silver Brazing Rods (I used 45% silver)

Easy Flow Flux

MAPP Gas torch and Gas

* No special tools needed, just Sand Paper, Assorted Files, Drill bits and Hack Saw. I made a small wooden bench for the drilling stage (helped to clamp the circles onto it for drilling! I used an angle grinder to cut and make the circle end caps – lots of work and a slow job but a labor of love!

Clean all joints well with sand paper before you flux. You need them very, very clean.

Method:

1. Cut 2 X 50 mm circles to house and locate the tubes and act as the water jacket ends. You could use end caps but I prefer the slip in condenser style so I made the jacket ends recessed into the jacket. This requires patience to get it right. I traced over the 50mm tube onto the copper plate, cut the rough shape of the circle (leaving plenty to take off later as I got it more round. A long time and a lot of care with the angle grinder and you can get a beautiful round shape that will sit in the 50mm pipe when tapped with a rubber hammer. You need it to be a snug fit! The other circular end needs to be slightly smaller to slide down through the 50mm pipe. I made it 49.5 mm diameter to be able to slide through the 50mm tubing when the condenser core was finished.

Taking care with the fit at this stage makes a lot of things easier later.

2. Drill out both circular caps to the pattern you can see in the pictures. 12 X 6mm holes are perfect for 2” condenser.

3. Braze the 6mm pipes into the first circle end.

4. Slide the other circular end over the pipes and position it so that when installed in the condenser jacket the circle ends would both be recessed by about 1-2mm.

5. Braze the other circular end to the 6mm pipes.

6. Trim of any excess length from the 6mm pipes with a grinder or hack saw.

7. Drill two holes for the water connectors. I put 1 hole about 50mm from the end so when I slide the condenser into the 50mm connector the water connector is not in the way. The other one (top one) is drilled as close to the end as you want. (about 5-10mm). Important you do this now before brazing in the core as you may damage the core when drilling these holes if it is already installed!

8. Flux both ends well and slide the condenser core into the 50mm pipe.

9. Braze both circular ends to the 50mm pipe.

10. Braze the water connectors to the 50mm pipe.

There you have it!

Running it.

Slip in the condenser into the head. (You will need to have a head that has a joiner for 2" pipe.) It should be a tight fit. Use whatever you can to seal it. I use a dough mix, is easy to clean and does the job well. Because the head slips in around 2" to 2.5" even if not sealed I found very little escapes because it condenses inside the slip fitting anyway and runs down to the collector.

Connect the water source to the bottom cooling connector. The water will exit the top. You will find the condenser does not heat up from the half way point and runs much cooler than expected.

After a couple of runs I noticed that it seems only the bottom half is being used, judging by the inspection I made of the cooling core tubes with a torch.

This seems to run really efficiently, I have noticed that no vapor escapes the top. My cooling water no longer needs to be cooled after return to the reservoir. I use a closed system with a pond pump to preserve water and control the water flow better. My reservoir is a large plastic garbage can. The return water goes through a mini shower fitting to turn it into a fine spray before re-entering the reservoir. This helps cool down the return water by exposing it to more air before entering the reservoir.

Photos of the various Stages of making it.



The Workbench, you can see the still column in the foreground.



You will need MAPP gas torch to get the required heat for the silver brazing rods



Don't forget the flux!



The Circular Water Jacket End, Drilled with 12 X 6mm holes.
You will need 2 of these. One slightly smaller to slide inside the water jacket pipe.



The 6mm pipes, brazed in place. I used the 50mm Water Jacket as a stand to help hold the pipes while the brazing was done.





The completed inner core fluxed and ready to be inserted. (Resting on the reflux valve/condenser connecting section and the column pipe.)



Flux those ends well. Only 1 go at soldering it into the jacket!



Sliding the core inside the jacket



Position the cooling line connectors and solder them in



Completed condenser with water connectors brazed in, waiting for cleaning.





Slipping the condenser into the top of the still head for a test fit



You will notice I have used a 2" connector on the condenser receiver so the head slips in with a tight fit.



Fitted into place. Perfect! Finished, apart from the cleaning of course...!



Ahh... Time to sit down, have a couple of drinks and behold the thing of beauty we have created!