Build your own

Fog Chiller

by Chuck Rice

I purchased two F-70 fog machines this year. Like all fog machines, they put out hot fog. Because it is hot, the fog does not hug the ground, so if you want ground hugging fog, you have to chill it.

There are a number of ways to do this, but I chose to make a heat exchanger box. This picture at the left is the first one I built, I did not have a very good camera at the time, so I have gone back and retaken some of the pictures which you will see below. At this time, I do not have pictures of the chiller in the process of being built, but there is a diagram that shows some of the construction details.
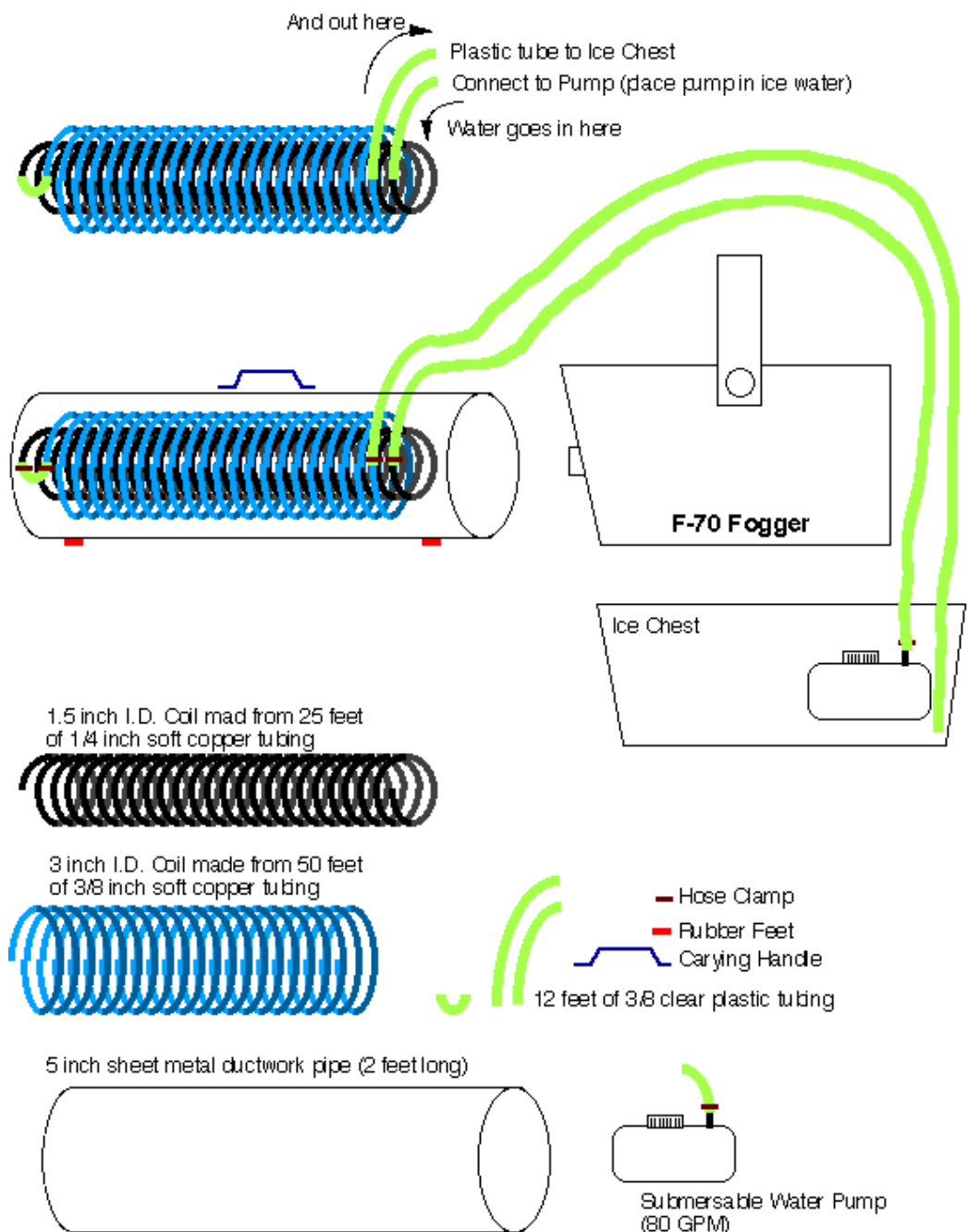
The design uses 2 hand made soft copper coils that get placed inside a a stovepipe. The coils are connected via plastic tubing to a fountain pump that is placed in an ice chest full of water and ice. The cold water is pumped thru the tubes and returns to the ice chest where the ice chills it again.

To build the inner coil, I took 25 feet of 1/4 inch soft copper tubing and bent it around a inch and a half scrap piece of PVC pipe. The soft copper bends well enough that it is easy to coil it around the pipe (well you hands might cramp a bit :)).

For the outer coil, I did the same using 50 feet of 3/8 inch copper and a 3 inch scrap piece of PVC.

Once the coils were made, I pulled the scrap PVC out of them and spread the apart a bit like a spring till they were the same length as the stove pipe.

Then I connected the inner and outer coil with a short piece of plastic tubing and pipe clamps and attached longer plastic tubing to the

And out here
Plastic tube to Ice Chest
Connect to Pump (place pump in ice water)
Water goes in here

F-70 Fogger

Ice Chest

1.5 inch I.D. Coil mad from 25 feet of 1/4 inch soft copper tubing

3 inch I.D. Coil made from 50 feet of 3/8 inch soft copper tubing

Hose Clamp
Rubber Feet
Carrying Handle
12 feet of 3/8 clear plastic tubing

5 inch sheet metal ductwork pipe (2 feet long)

Submersable Water Pump (80 GPM)

other ends to go to the pump and ice chest.

Here is what the stove pipe looks like I added a handle to make it easy to carry.

This is what the end of the chiller looks like. You can see the 1.5 inch inner coil and the 3 inch outer coil and the short plastic tube connecting them.

If you look closely, you can see how the coils are suspended inside the stove pipe. I used red plastic wire ties to connect the inner coil to the outer coil, and a second set of ties to connect the outer coil to the stove pipe.

Here you can see how the ties connect to the stove pipe. I drilled two small holes for each tie and then just looped the tie through one loop of the coil and through the holes. Start by leaving the loop loose, and attach the coil at three points around the stove pipe, then tighten the loops a bit at a time till the coil is in the middle. Do this at both ends and add a few in the middle. You may have to get your kid to do the inner one. My hand was too big!

The handle is just bolted on top. You can also see a couple of coil support holes here.

This is the other end of the chiller. The red caps came on the copper I bought. You remove them and that is where the plastic tubing is attached. I drilled some larger holes for the tubing to exit that you can just barely see on the top of the stove pipe.

You can also see another view of the wire ties that suspend the coils.

This is the list of parts that I used. All items can be purchased at the local hardware store.

25'	1/4" copper refrigerator tubing
50'	3/8" copper refrigerator tubing
12'	3/8" Clear plastic tubing
2'	1.5" Pipe (used as a form, then discarded)

2'	3" ABS plastic pipe (used as a form, then discarded)
2'	6" Sheet metal ductwork pipe
4	Pipe clamps for the 3/8" Clear plastic tubing
1	small submersible pump (80 gal/hour)
1	Package of plastic wire ties
1	Handle and screws
4	Stick-on Rubber Feet
1	Ice chest

Please note:

I can make no warranties on the methods and procedures presented here. I have built this device, but your tools and skills are unknown to me. Proceed at your own risk.

I also do not endorse any of the products here except the FerretTronics chip. They are just the products I chose to use for this project. You may find that they work better or worse for you. Experiment for yourself. That is half the fun!

On the other hand, if there is a step or procedure here that you do not understand, let me know using the Comments button and I will see what I can do to explain it better. -Chuck-