When I began this project, I intended to use screen around the stand pipe, but the sponges work so much better. First I bought a "Muck tub" from a local farm and ranch store. I then used a hole saw to cut a hole in the center of the bottom that would fit a 1" bulkhead fitting.

http://pentairaes.com/bulkhead-fittings-economy.html?gclid=CjwKCAjwuvjNBRBPEiwApYq0zlpHknJKITBcz5qb4vqXM2qD5uSxrbl_HZiOCMpzkcj_xmx-7yi5SRoC2VAQAvD_BwE

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(Take a look at the picture on page three and then refer back here.) I used silicone to seal it in place with the threaded end down. Next came a threaded adapter, a short piece of 1" pipe and a 1" x1" X 1/2" tee. The ½" branch of the tee is fitted with a tubing fitting for clear plastic tubing and this is the water entry. (The reason for the clear tubing is so you can see how fast your input is running. I use an air valve to control the input to fast individual drops. You will have to test yours for flow . I try to turn over the 8 gal tub twice per day.)

So now we are down to the tricky part. Into the bottom of the tee is glued a 1" x ½" reducer. BUT, before you glue it in you need to grind or drill out the stop in the bottom of the reducer so the ½" pipe can be pushed though the reducer and up through the tee, then the bulkhead and to about 2" into the bucket. Put some abs glue around the joint next to the reducer and then push the tubing in another ½" to get a bond. Now water entering the ½" tube flows right through the 1" tee and out the bottom. For my needs I then added an elbow and a john guest fitting so I can use ¼ tubing for the return to the sump.

Now when you turn the bucket over you will have a 1" bulk head with a ½" pipe sticking up out of it by about 2 ½". In my design, I originally intended to use a screen over the overflow, so when you look at the pictures on page4 &5 you will see a 2" inverted adapter over the ½" pipe where it exits the bulkhead. It was off of the bottom so water could enter, but held the screen. I discarded this idea and you will only have to put a ½" x ¾" adapter on the end of the ½" pipe. Now you can put different lengths of ¾" pipe into the adapter to adjust to different water levels. The reason for stepping up to the ¾" pipe was that it fits tightly into the sponge filters.

The bubble ring is silicone in with an air tube attached. Here is what I used and you can adjust its diameter.

https://www.zenhydro.com/ecoplus-water-wind-micro-bubble-air-diffuser-ring-8-in-12-cs-17362.html?gclid=CjwKCAjwuvjNBRBPEiwApYq0zlZdSvv_qaJtDGzjlOnA-rOSB5FlfZQ0jcQuJKNB-0-IPImtZacRFBoCk54QAvD_BwE

I heat my tub with two heating pads taped to the outside and wrapped with insulation. They plug into a temperature controller. The turn-over is so slow the water in the tub will cool so it has to be heated. I chose not to put any obstructions into the tub so the fry are not hitting or running into it.

The picture on page 8 shows the clear plastic tubing coming up through the handle of the tube. Into the clear tubing is a piece of airline tubing and I can see the drops going into the intake.

So 3 or 4 days prior to hatching I fill the tub and start circulating the water with the sponge in place. I put rotifer and green water into it when it comes to temperature and actually culture them there for a few days. Then I just keep adding them as necessary once the eggs hatch.

I don't vacuum the larval tub for several weeks after hatch. Yes it can get a little dirty, but you don't have to disturb the larva with water changes and cleaning as the ammonia is taken care of by the main system.

You can change the foam filter as often as you want, but they plug slowly and then the water will raise slightly and continue to drain. When you pull one, it has enough water soaked into it that the water level drops below the top of the overflow so nothing gets out. Put a clean one in its place or just turn it over and use both ends.

Let me know if you have further questions and I would enjoy seeing how your tub turns out.

Craig Anderson