

## Re: 555 timer problem

---

*Source:* <http://sci.tech--archive.net/Archive/sci.electronics.basics/2006-10/msg00177.html>

---

- *From:* "randomname" <[randomname12345@xxxxxxxxxx](mailto:randomname12345@xxxxxxxxxx)>
  - *Date:* 2 Oct 2006 01:57:37 -0700
- 

Yeah that looks like it (or its many cousins) could work.

Since you seem to be playing with 555's and battery power, I figured this was more of a project to satisfy curiosity or for self satisfaction (low budget toy).

Well, I'd like the unit to cost as little as possible, because I'll probably be making a bunch and giving them as gifts (very expensive gifts). I might try to sell a few on eBay... considering the ones on the webpage sold for \$400 each, preordered (for 6-8 weeks in the future, which is about now). So a pump under \$50 would be great.

And chemical metering pumps do tend to be expensive. They are made for chemical, pharmaceutical, industrial applications and those people have lots of money - and it ain't exactly a common item. They want absolute accuracy, a pump that will run for a long time before repairing, and usually in a harsh environment - that costs.

I've looked on about 20 of these chemical/pharmaceutical/misc "fluidic specialists" websites and found lots of suitable pumps.. but only one site had a listed price (I've 'applied' to all the others, with as best specifications as I could.)

Perhaps you could help me with this. Take a look and read their descriptions:

[http://www.hargravesfluidics.com/air\\_pumps.php](http://www.hargravesfluidics.com/air_pumps.php) (look for the CTS models)

and

[http://www.hargravesfluidics.com/liquid\\_pumps.php](http://www.hargravesfluidics.com/liquid_pumps.php)

The store for the CTS pumps is here:

[http://www.hargravesfluidics.com/store\\_cts.php](http://www.hargravesfluidics.com/store_cts.php)

and for the liquid is here:

[http://www.hargravesfluidics.com/store\\_ltc.php](http://www.hargravesfluidics.com/store_ltc.php)

## Re: 555 timer problem

The LTC pumps cost double, and need at least 12volts. So I've ruled them out.

However, the CTS pumps look like they could work. Especially the "low flow" pumps at the bottom. I've measured the flow row of my fountain when it drips at an optimal rate, and it turns out to be about ..08mL/minute. I measured it by weighing a cup, filling it for a minute with the perfectly dripping stream, then weighing it again. I'm assuming my tap water/highliter liquid solution is approximately 1g/ml.

Anyway, the problem is the CTS line of pumps doesn't explicitly say it is meant for water. I'm wondering it will work anyway. I sure hope so, because I'd love to order one right now and get this thing working and very stable. I'd love to get rid of this valve and replace it with just controlling the PWM. Which leads into my next question, PWM should work the same with these pumps, right? It won't adversely effect performance, will it?

And yet another question.. will the pulsation of one of these pumps affect the unit? I mean, do you think it will vibrate enough to shake the whole fountain and cause some disruption of the drops? I noticed they work with a weight off the shaft of the motor which seems like it will cause some wobble. I'm assuming that since it's so small it won't do much.

On a side note, I found it astonishing how well these pumps react to pressure! They can pump water really high for being so small. My little impeller pump here has such a huge drop-off when the height of the fountain is raised. But I guess thats the principal behind "positive displacement," theres no way for the water to go but out the pump.

I haven't been following the whole thread, so I haven't kept up with your quest. I was off for a week with the wife too . . . Is this, are you building a water clock?

I hope you check out the video.. it shouldn't take longer than 5 minutes to load.

You mentioned something about viscosity and drop size? I was a kid and watching TV in the 50's sometime. There was a show called "You Asked for It." Someone wanted to know what the largest drop size was, and they sure produced a prodigious drop. They showed people climbing up a ladder and dumping buckets into this large (6-8 foot diameter) ring with about a three foot height. The "drop" formed at the bottom of the ring and went into a huge tub.

## Re: 555 timer problem

Well this thing, if my memory is right, was just a ring with a very fine mesh screen at the bottom and a layer of cloth resting on the screen. They had to start it off carefully by wetting the cloth until they had a few inches of water in it then just dumped buckets in it until it drop 'd through the screen. You could see the drop forming long before it dropped and it looked like it held a few hundred gallons. The ring was formed with a "bell" opening where they were pouring water, and it looked like the drop formed below with some margin – like there was a rim or something that prevented the drop from going out to the edge of the ring.

That was a long time ago. I was a kid. It was a black and white TV and on an antenna – so perhaps there are gaps in my memory.

They didn't say, or I don't remember, if they had any way to increase the surface tension of the water – I think not. I think the whole idea/experiment was predicated on the same idea as used by aerators on faucets.

I'd love to learn how to make bigger drops using this method. I'm content with the current drop size, though. I might upgrade it by putting a piece of McDonalds straw (aka soda-pipe) at the end, since its much wider.

As per the pump made from the aquarium pump... I'll look into this but I'd prefer a plug-and-play solution at this point. I'm hoping one of the several pump places I've contacted will be friendly enough to be like "we've got just the right pumpt for you... and it's a very common one. It'll be \$30." We'll see, and I'll definitely keep you all posted.

Again, thanks so much for keeping up with this!

–sam

.