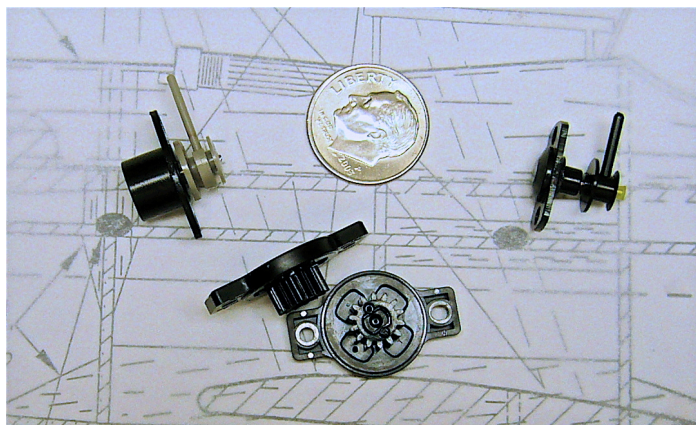


WHAT SPRINGS TO MIND FOR MY BUTTON DT

By George White

I've long been a fan of the button timers to control the DT on my models (much to the disdain of "real" free-flighters) Those who disdain their use have a very valid point in that with a burning fuse, you have reasonable certainty as to the DT activation time (also assuming that you remember to light the thing).

In my stubbornness and continued use of the button timers, I must admit that I've had more than my share of "interesting" experiences with the things. For the sake of this article, I consider there to be three basic types of button timers. The one depicted below on the left is called a BL7, and the one on the right is called a BC7. Both of these are available from FAI Model Supply. The bottom timer is available in several levels of augmentation from several sources, but it is basically a timer built for damping the movement of lids etc. on things like records players, etc. To use them, an arm must be attached in some way, most often by simply drilling a hole in the capstan and inserting a wire arm.



When I first started using them about 12 years ago, I relied on the elastic that FAI supplies with each timer. That elastic is basically the same as that used in women's skivvies, and will get weaker with each use. The older boys tell me that sometimes women's skivvies become slack — something of course I wouldn't know!! I don't believe it is a reliable driver for the buttons.

Another thing I learned (the hard way) early on was that the pull loop must be a soft, smooth loop of string so it will slip off the pivot arm. I've found the best string for not only the loop, but for the pull down line to the stab as well, to be what is known as "backing," a very light, soft braided line used by fly fishermen.

I've come to use a piece of .009 music wire, 18" long, to make my springs. I've been fortunate to have a spring winder made several years ago by a fellow by the name of Kavork Fags. It's seen below at the top of the photo. With that you can make a spring in less than 2 minutes. An earlier issue of this exciting newsletter also described how you can make a spring winder

with some very simple tools. You can find that article on our website in the "Articles Index."

What I've given insufficient thought to in the past is the difference in pull strength, even using the same wire, based upon the size of the mandrel upon which the spring is turned. After my friend Bob Junk sent me a small supply of .008 music wire, I finally decided to do a bit of semi-scientific testing.

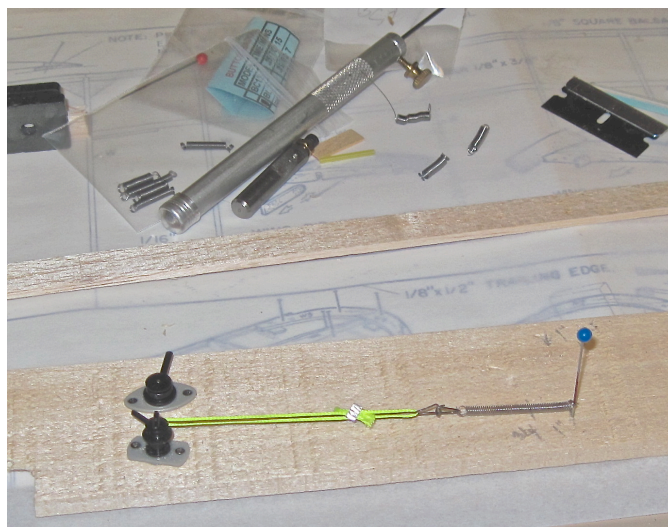
In the photo below you can see where I mounted BL7 (top) and a BC7 (bottom) button timers to a board and did some tests. All the tests were done at 72°F, so the times below are probably longer than if done in 90°F heat of summer. However, I suspect that they are more or less proportionally correct. All springs were made using 18" lengths of wire.

BL7 Timer

Wire size	Mandrel	Spring Stretch	Timer Rotation	Time
.009	5/64"	1"	½ turn	1:50
.008	5/64"	1"	½ turn	5:00
.008	1/16"	1"	½ turn	3:30
.008	1/16"	1.5"	½ turn	2 min

BC7 Timer

Wire size	Mandrel	Spring Stretch	Timer Rotation	Time
.009	5/64"	3/4"	full turn	2:15
.009	1/16"	1"	½ turn	:30
.008	5/64"	1"	½ turn	1:30
.008	1/16"	1"	full turn	1:30
.008	1/16"	1"	½ turn	:50



One thing I learned from this is that the smaller the mandrel used to make a spring, the more pull that spring will have. Those who are not drop-outs from engineering school like me, and who have a modicum of understanding of strength of materials are not likely to find that surprising.

Another thing which became very evident is that small changes in the spring stretch can make a significant difference in the timer run. Perhaps the above information can provide you with a starting point for your particular model, and you can adjust the stretch distances from there.