

How to Make an Inexpensive Rotary DT Timer

DT timers come in many shapes, sizes, and price-points. A multi-function FAI timer can cost over \$100 but a bit of aluminum tubing and some cotton clothes line will run you about \$1.

The steps on following pages show how to make Rotary DT Timers for about \$3 in about 5 minutes.

One from Column A, One from Column B

The A-type is easy to make and results in a 0.4 gm timer. The B-type takes a bit more work and weighs about 0.55 gm. The small timer is suitable for models up to P-30 and standard CLG sizes. The dampers used are at <http://store.easylift.com/frt-e2-400-g1/>.

The large versions weigh about 0.10 gm more and have been successfully used on larger rubber models, TLGs, and even E-36 models with no issue. The larger dampers are at <http://store.easylift.com/frt-g2-101-g1/>.

The main difference between the A-type and B-type, the "spool" on the B-type, adds an extra bit of assurance that the DT line won't slip off accidentally. The spool adds an extra 0.15 gm of weight and a slightly larger profile. In practice, I have never had a line slip off an A-type and now build A-type almost exclusively.

Bits and Pieces

Besides the dampers, you will need the following items, usually available at your local hobby shop:

- For small timers, Dubro 0.134" ID R/C Antenna housing (PN 511) or similar
- For large timers, Plastruct 3/16" OD tubing - <https://plastruct.com/shop/tubing-fittings/90605-tbfs-6/> or similar

Note that these sizes are based on the dampers I have on hand. It is possible that others may have slightly different dimensions, that is why it is important to measure the Drive Pin (step A4) and get the right size tubing.

- Styrene plastic sheet such as <https://plastruct.com/shop/plain-and-patterned-sheet/91002-ssa-102/> or plastic from an old gift or credit card. Norm Furatami suggested using a 1/4" paper punch to make the disks or you can just cut them out with scissors. In either case, drill the hole in the middle first.
- Medium or Thick CA. DO NOT USE Thin CA!!! It will do what Thin CA does best, seep into every possible gap, including the base of the damper, and lock it up. Ask me how I know.

The Rarer Bits

The average modeler will have most of the tools needed with the possible exception of a few items:

- If you don't already have a miniature drill bit set and pin vise, and don't want to spend the \$15 or so for a decent one, you can get away with a 1/32" drill bit and substitute 0.032" music wire for the timer arm.
- If you are making a B-type timer and you don't have a Dremel or similar rotary tool, an electric drill will do in a pinch. You will still need a cutoff-wheel mandrel (see steps B2-B3) but these can be had for a few bucks, just make sure to get the basic one not the EZ Lock version, it won't work for this application.
- A small jeweler's file is best for grinding down the gear core in step B3 but a regular file or even 150 grit sandpaper on a sanding block will work.

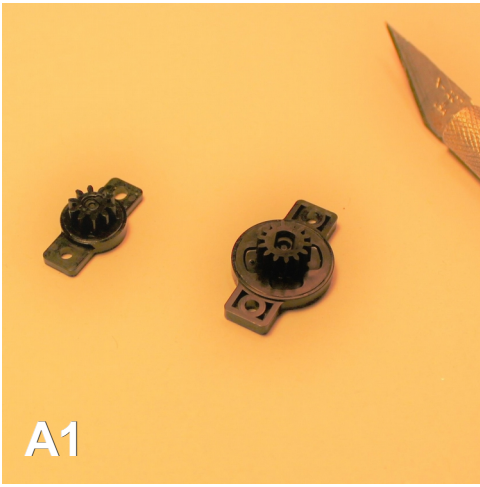
Notes

- In step A12, the pin head should be flush with the tubing surface to prevent the DT line from catching.
- The finished timer can be glued on to your model with a drop of Medium CA as shown in A18. With a total cost of \$3 per timer I find it reasonable to glue a timer in place and not worry about making it transferable between models. Snip off the mounting tabs with wire cutters to make a more compact unit. Alternatively, you can use small wood screws to attach the timer for a more traditional mount, such as in B9.
- Use a spring to drive the timer. A rubber band or elastic thread can be used but a small 1" - 1.5" spring, made from 0.009" music wire will be more reliable, durable, and result in more consistent timer operation.

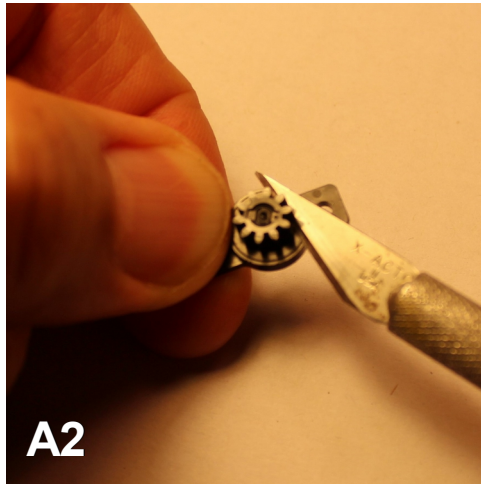
Time's Up

This type of timer is not new or original, many people have been making and using similar ones for years with slightly varying designs. I have made dozens over the last few years and have not had any failures attributable to the basic design but there is plenty of room for experimentation. If you happen to come up with any improvements or you have any question please let me know, I'm always happy to hear from fellow modelers.

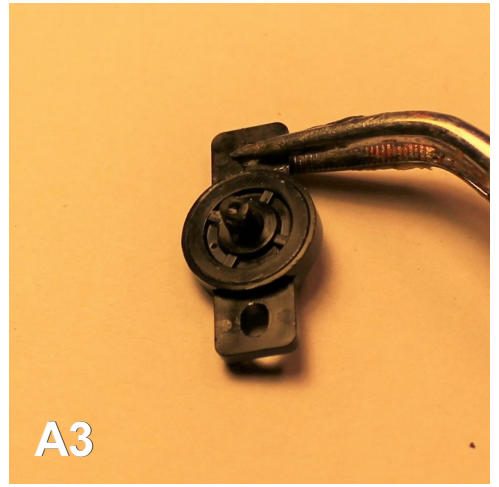
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San Carlos, CA
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A1
Small and Large Dampers. Sequence for Large Damper similar

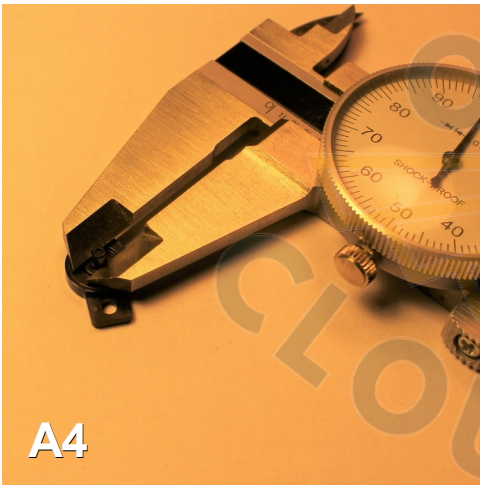


A2
Gently pry Gear off Drive Pin with knife edge using gentle rocking motion on all sides



A3
Note Drive Pin is round on two sides and flat on two sides

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A4
Measure **Max** Drive Pin Thickness across curved portion. Note, will be larger on large dampers

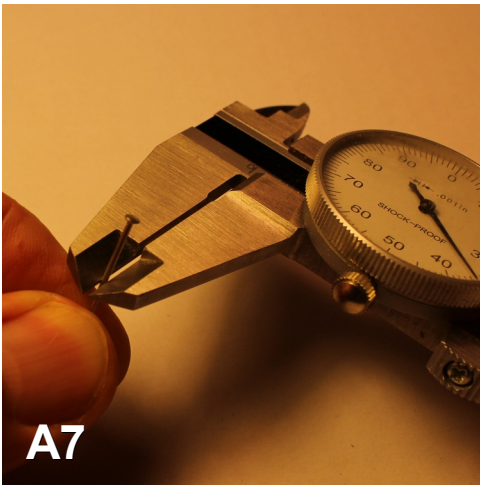


A5
Drill out Tube using Bit just slightly smaller than Drive Pin thickness

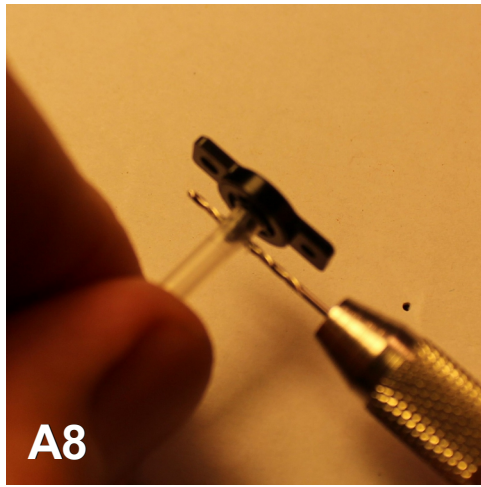


A6
Force Tube over Drive Pin. Should be tight fit

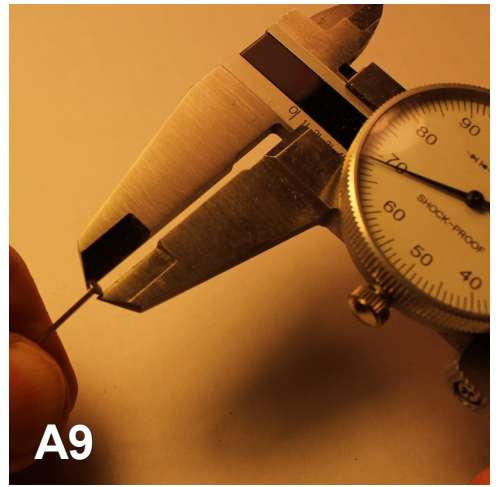
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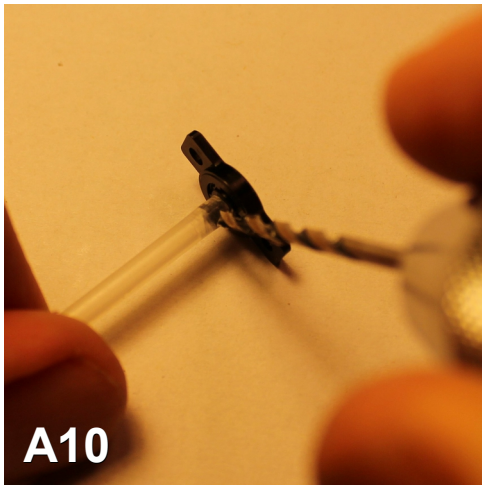
A7
Measure diameter of common Metal head Pin. Don't use Glass Bead Pin



A8
Drill through Tube and Drive Pin with slightly undersized Bit

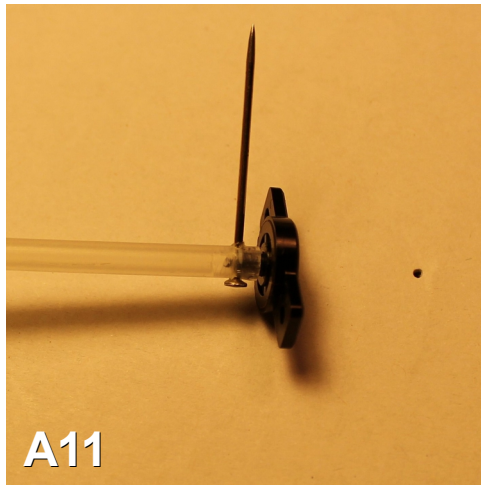


A9
Measure Pin head diameter



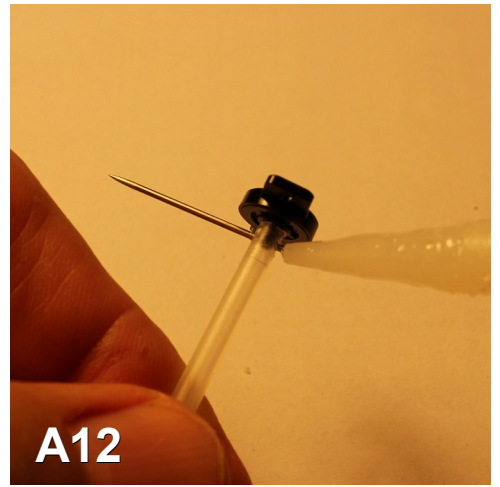
A10

Counter-sink through **one** side of Tube, avoiding Drive Pin, to fit Pin Head



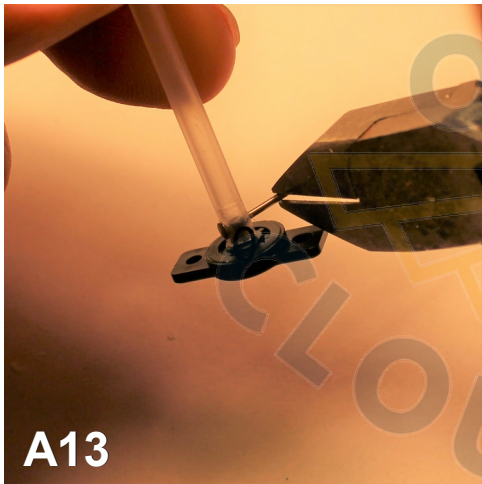
A11

Insert Pin. Note that Pin head will fit **into** counter-sunk hole



A12

Apply small drop of Medium CA under Pin head and insert quickly



A13

Trim excess Pin shaft, leaving 3/16"- 1/4" stub



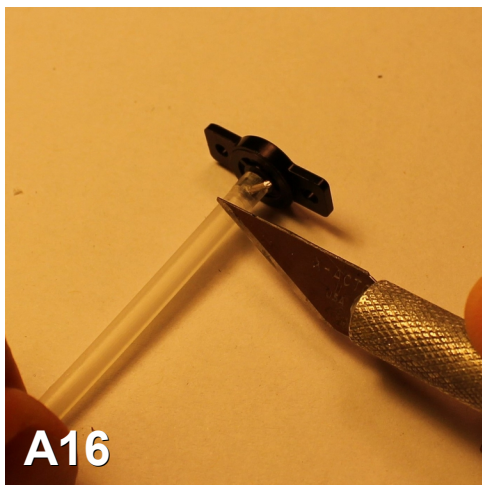
A14

Almost there!



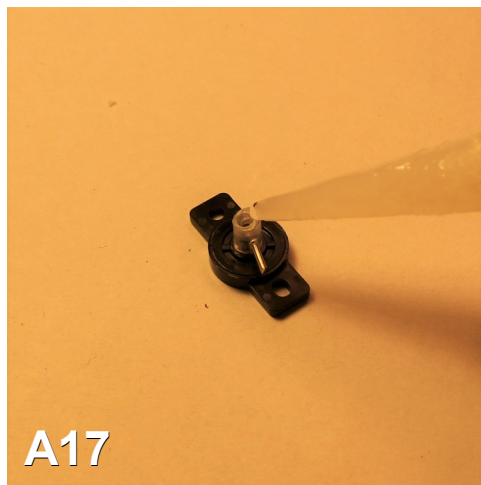
A15

Deburr stub end using File to prevent line from catching



A16

Cut Tube to length, 1/4"-3/8"



A17

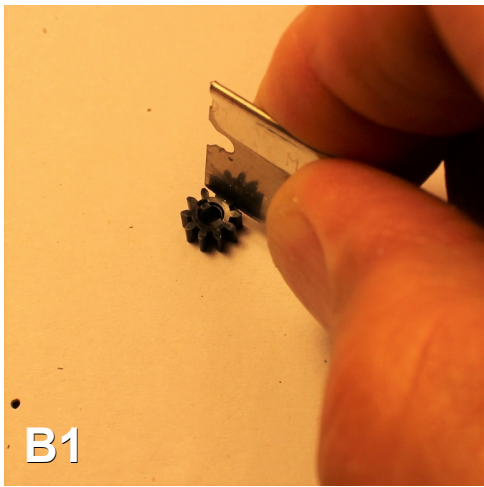
Put 1 small drop of Medium CA into tube to lock in place



A18

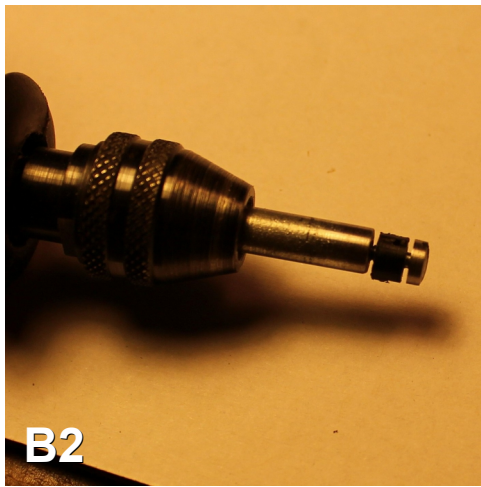
Tabs can be cut off and timer glued on using Medium CA

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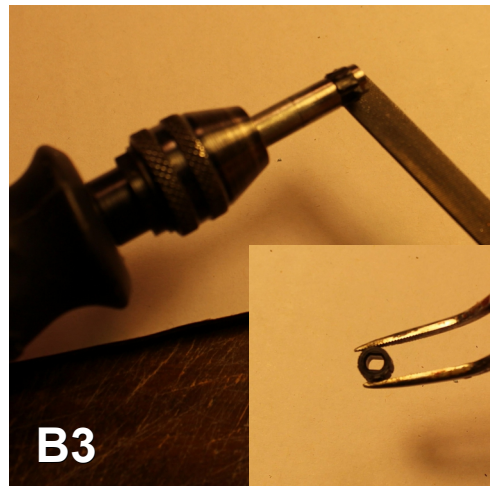
B1

Slice off Gear teeth leaving Core intact



B2

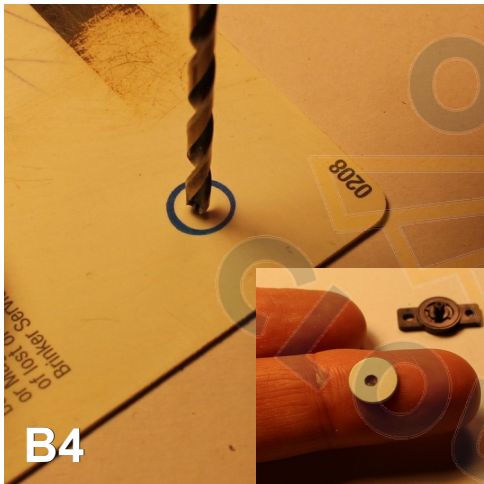
Center Core on Dremel Cutoff Wheel Mandrel



B3

Grind down core using file. Should end up about 3/16" diameter

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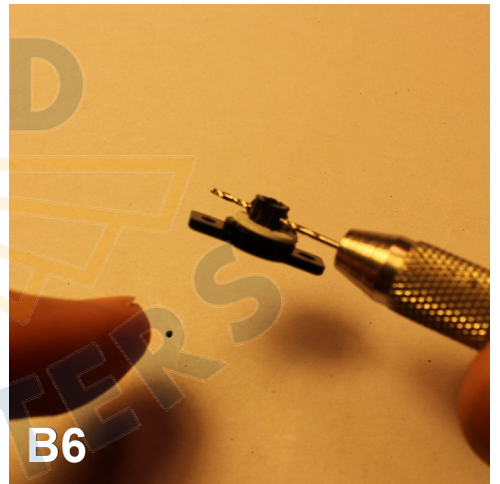
B4

Make 2 disks from thin plastics sheet. Drill hole to fit Drive Pin



B5

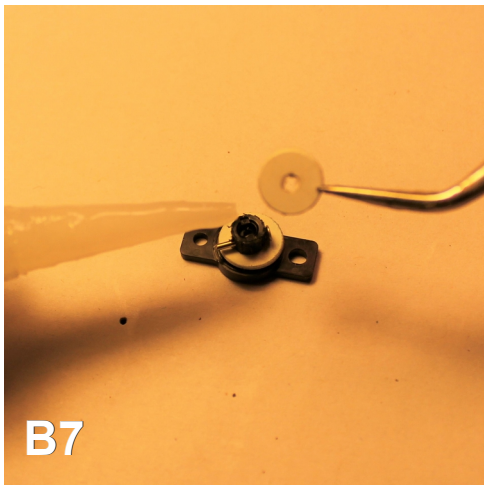
Insert 1 disc, then Core. Apply small drop of Med CA at base and spread around entire perimeter between core and disc



B6

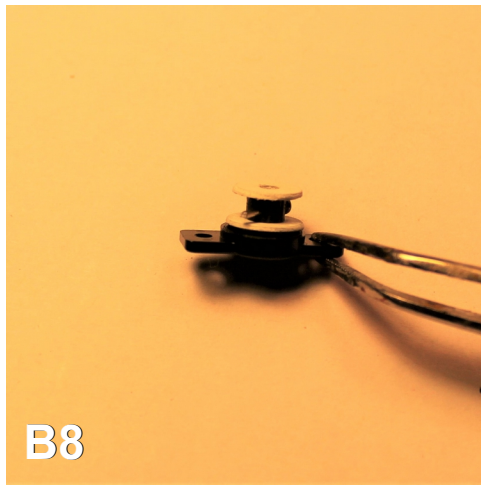
Drill hole and insert Pin through Core similar to A8-A15

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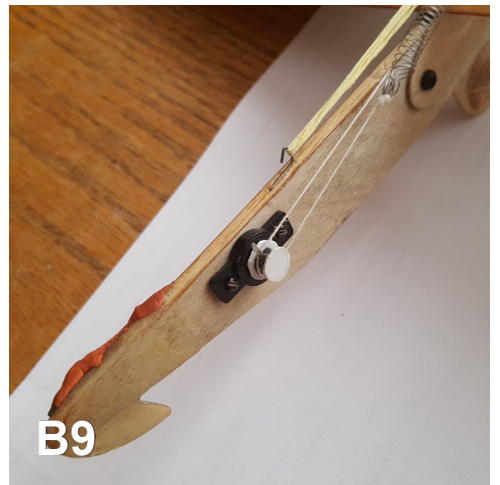
B7

Glue 2nd disk on top of Core using small drop of Med CA



B8

Admire your work!



B9

Attach with small Wood screws or just glue on using Med CA