

THE *BUTTON* AND *BADGE* DETHERMALIZERS

Your timer is a precision instrument made from a plastic called Delrin with a stainless steel shaft. It is unaffected by moisture or shock and needs no maintenance: Try not to subject your timer to temperatures in excess of 60°C.

Do not oil it or let paint or glue seep into its crevices.

BUTTON INSTALLATION (T-Nut retainer)

The *Button* timer is fitted with a T-Nut pulley arm retainer that prevents loss of the pulley arm should it come loose from the tapered hub. Wind the T-Nut retainer counter-clockwise off shaft. Use finger and thumb to pinch pulley arm straight off hub (*see Figure 1*). Install timer. Replace pulley arm. Wind T-Nut until shaft is flush with the top of T-Nut.

Mount your *Button* timer in ¼ inch diameter hole in the plane's nose, pulley on the left side for right-handed launch, right side for lefties. Use the 2 screws to secure. An unobstructed straight line between the pulley arm and the pull off lever is desirable. Press DT pulley onto the hub. Install T-Nut.

BUTTON INSTALLATION (Flared cylinder retainer)

The new *Button* timers come with a flared plastic cylinder retainer pressed on the top of the pulley shaft. This functions to prevent the loss of the pulley arm should it come free from the tapered hub. Remove the pulley arm to lift the retainer free from the shaft. Return the retainer to the top of the shaft after the timer and pulley arm have been installed in the model. Use a pin to place a tiny drop of super glue into the flared top of the retainer.

To remove the pulley arm AFTER it has been installed, use a knife or razor blade to cut away the flare top of the retainer and scrape the shaft clean.

BADGE INSTALLATION

The *Badge* has a fixed pulley and is mounted in a 3/8" hole with two tapping screws.

RIGGING BUTTON

Fix a piece of heavy-duty thread or light monofilament with a 1-½ inch loop to the white elastic (this elastic will outlast a rubber band and provides the long, steady pull that optimizes stability and duration of timer movement). A better alternative is the rubber strip used in ¼" diameter bungee cord. Cut the outer sheathing of the bungee cord with a razor blade to release the rubber. Tie a length together to form a loop. You will have to experiment to establish the correct size loop.

BADGE

Fix a piece of heavy duty thread or light monofilament with a 1-½" loop to the elastic.

Adjust length of DT line for adequate tension on stab using the enclosed adjustment pin or scraped toothpick to wedge elastic in the pull-off lever (*Figure 3*). Note that the elastic is continuous from the pulley loop to the elastic grip. When a spring is used to drive the timer an additional spring or elastic is needed to lift the stab.

The set-up is correct if the *Button Lite* clocks 10 to 15 seconds to pop off when the pulley is cranked 90 degrees from the DT line; 20 to 30 seconds for the *Button Classic*. The *Badge Lite* should have enough tension on the DT line to clock 30 seconds to pop off on a 90 degree test; 60 seconds for the *Badge Classic*. With the pulley loop free from timer, pull enough tension on stab pull off lever to lift it smartly to approximately 45 degrees and lock the elastic or spring thread in grip.

INDEXED INTERVALS.

Timers that have gone unused may run a little longer on the first cycle. Stabilize the timer by gently rotating pulley arm two full rotations (calibrate timer using the 90 degrees to-pop-off test described above).

With a stopwatch and the desired intervals in mind, crank, release and time the pulley arm to "pop off" until the desired intervals are identified with an alignment mark on the plane.

The timer's fluidic heart, though relatively insensitive to temperature variations, does quicken as temperature increases. This, combined with the elastic's tendency to wimp out over time, creates a need to stabilize and calibrate before each competitive flying session.

For best results, do not run the timer with less than 1 ounce of tension on the elastic at the pulley. If more time is needed, double-wind the timer by passing pulley arm through the loop after the initial wind.

When selecting a timer it is helpful to know the average flight time and how much tension is needed to hold the pop up DT flying surface in position. This force is what drives the timer. Let's say a two-ounce pull is needed to hold down the pop up stab. The *Badge Classic*, as noted in the chart, turns one revolution in approximately forty-five minutes, given a one -ounce DT line. Two ounces will cut the time in half (about twenty-two minutes). Average flights of five minutes or more will now be easy to dial.

Approx Minutes 1 rev 1oz (1)	Average Flight in minutes	Timer Name	Weight in grams	Suggested Applications (2)
20	5 - 15	<i>Badge Classic</i>	1.2g	Large power models
7	1 - 7	<i>Badge Lite</i>	1.2 g	F1B, F1H F1G, Small power models
7	2 - 5	Button Classic	0.7g	Small rubber models, Coupe, P-30
3	15sec -3	Button Lite	0.7g	HLG and Catapult Very small rubber models i.e. P-nut scale

1) Times depicted in column are based on a single revolution of the timer pulley. Timers can be double wound for extra time. One ounce is the recommended minimum DT line tension for driving tuners.

(2) Lines between timers and suggested application are by no means fixed. Timers can be flown with little or no inconvenience in adjacent categories.

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