



## AMA Competition Regulations Rules Change Proposal Form

**The current issue of the Competition Regulations must be referenced.**

Proposal Number: OFF24-06

Received Date: 2/10/2023

Revised Date:

Version Number:

**Proposal Type:** Basic

**Applicable Competition Regulations this proposal relates to:**

Outdoor Free Flight

**Give Brief Summary of the Proposed Change:**

For the E-36, A-Electric, and B-Electric events, it is proposed to change the motor runs and flight maximums to be the same as the current AMA Category III gas power events. The first three flights would reduce the current 10 second motor run to 7 seconds with 2-minute maxes. The next two flights would require 5 second motor runs with 2-minute maxes. Starting with the 6th flight, the motor runs would be 4 seconds with 2 ½ minute maxes.

**State exact wording proposed for the Competition Regulations. List paragraph number where applicable. Example: Change "quote present rule book wording" to "exact wording required".**

**FREE FLIGHT ELECTRIC POWER EVENTS 159, 160, 161, 165, 166 - Paragraph 3.**

**Change: 3. *Motor Run/Flight Maximum.***

The maximum recorded duration of each flight shall be two (2) minutes, including qualified fly-off flights.

**To: 3. *Motor Runs and Flight Maximums for Events 160, 161, 165.***

Maximum motor runs and flight durations are shown in the table in paragraph 3.2.

Change the table in paragraph 3.2 from:

Motor Run	A Electric	B Electric	E-36
Flights 1,2,&3	10 seconds	10 seconds	10 seconds
Flight 4 and all following	5 seconds	5 seconds	5 seconds

To:

Flights	Max. Motor Run (sec.)	Max. Flight Time (sec.)
1, 2, 3	7	120
4 & 5	5	120
6 & up	4	150

**Change Paragraph 4.1:**

From: If the three (3) official flights ..... for each fly-off flight. Fly-off motor run times are as shown in the table above. Overruns after the ....

To: If the three (3) official flights..... for each fly-off flight. Fly-off motor run times and flight maximums are shown in the table above. Overruns after the .....

**State logic behind proposed change, including alleged shortcoming of the present rule(s).**

The performance of electric powered free flight models has increased dramatically in recent years due to improvements in motors and batteries. The current rules allow 10 second motor runs and 2-minute maxes for the first three flights. This makes it quite easy to “max out”. All fly-off flights use 5 second motor runs and 2-minute maxes. This is harder to accomplish, but a well-trimmed model with a modern motor and battery should have little trouble making max flights.

E-36/F1S models are relatively easy to build and are capable of high performance. In fact, the current records in A and B-Electric were set using E-36 models. This discourages the development and flying of A- and B-Electric models that were created to be capable of higher performance. The current and previous records (prior to 2022) were set with long strings of 2-minute maxes. The current A-Electric record is 23 maxes and the B-Electric record is 41 maxes! The previous E-36 record was 26 maxes.

These records were primarily the result of flyer endurance and fast retrievals instead of superior model performance and thermal picking skills. Electric motor and battery technology have improved to the point where the models are competitive with AMA gas models. For these reasons, we feel that the motor runs and flight maximums should be the same as the Category III AMA gas power events.

For additional details, refer to page 36 in the May/June 2022 issue of the NFFS Digest and the two attachments.

**If this proposal is for a new event, include all event test data/information here. Please provide information on what testing of this new event has taken place to include number of participants and number of contests.**

### State effect, if any, on current AMA records:

Delete records in all age groups for A-Electric, B-Electric, and E-36.

**Note: The Contest Board Chairman may, in coordination with the submitter of the proposal, at any time prior to submitting a proposal to the contest board for Final Vote, edit proposal wording to increase clarity and to avoid ambiguity, provided the proposal intent is not changed.**

### Submitter Information:

AMA Number: L3646

Harry Grogan  
11 Robin Lane  
Weaverville, North Carolina. 28787  
[harrygrogan2011@charter.net](mailto:harrygrogan2011@charter.net)  
828-658-9354

### Additional Rationale

**Four second motor runs** – Based on altimeter data in 2017, an average E-36 will climb 50 ft/sec and glide about 2 ft/sec in typical conditions. A and B Electric models have greater performance potential due to their larger size and power. E-36 climb height (H) and total flight time (T) can be estimated by:

$H = 50 \text{ fps} \times 5 \text{ seconds} = 250 \text{ ft.}$  ,  $T = 250 \text{ ft.} / 2 \text{ fps} + 5 \text{ sec.} = 130 \text{ seconds (a max)}$

$H = 50 \text{ fps} \times 4 \text{ seconds} = 200 \text{ ft.}$  ,  $T = 200 \text{ ft.} / 2 \text{ fps} + 4 \text{ sec.} = 104 \text{ seconds (not a max)}$

This shows that making 2-minute maxes with a 5 second motor run should not be hard to do. In fact it is not, because the records are long strings of 2-minute maxes.

Decreasing motor runs to 4 seconds reduces the climb by 50 feet and the flight time to 104 seconds – not a max. When coupled with a 150 second max requirement, the odds of making a max without thermal help are greatly reduced. This should tend to eliminate models that were not launched into good air or had superior performance.

**Fixed 2 ½ minute max for flyoff flights** – The wind is always greater at heights above ground level. For example, if the drift is 10 mph at a few hundred feet off the ground (which is not unusual), this is .166 mi./min. This does not sound like much, but with a one minute longer fly-off max, a circling model will travel 880 feet. This is about three football fields. That extra distance can potentially put a model into the crops or woods.

**Electronic timers** – There are at least five timers available in the U.S. that control motor run and DT. Most support RDT as well. Their ability to choose 7, 5 and 4 second motor runs as well as 2 ½ minute maxes is the following.

Texas Timers eMax II – will support all of these times now

Starlink-Flitestar – will offer a new plug-in chip for existing timers

Black Magic – can be programmed to do all of these times

Hubin (Retro RC) - can be programmed to do all of these times

BMK - can be programmed to do all of these times

Only one AMA electric rule changed for 2022–2023: the 5-second motor run on the first flyoff flight. Let's analyze the three proposals that failed the Free Flight Contest Board's vote in 2021.

One was to limit the battery capacity of E-36s to 325 mAh, which is an indirect way to limit performance. Imposing a maximum capacity would eliminate large batteries that are necessary to power large motors. The proposal would have encouraged a visual confirmation of the battery's capacity on its label before every flight.

The other proposals increased the flyoff maxes from the second flyoff flight (the fifth flight) by 30- and 60-second increments. They were written by Harry Grogan and Jack Murphy respectively. The object was to eliminate long strings of 2-minute flyoff flights. However, incrementing the flyoff maxes would also increase the chance of models landing off the field, especially on windy days. Contests could become retrieval ordeals in those circumstances. Evidently the AMA Free Flight Contest Board was reluctant to consider battery specific limitations without a clear-cut effect. It also rejected increasing fly-off maxes, perhaps because of the small field problem. Nevertheless, electric flying still faces three major issues.

**1. Performance.** The performance of electric models has increased dramatically in recent years due to improvements in motors and batteries. At inception, E-36s began with NiCad batteries and in-runner motors that strained to max with 15-second motor runs. The current performance of E-36 models is driven by power to weight ratios of at least .85 watts/gram (160-watt motors on models weighing 140 grams). That is approximately 2/3rds of the power to weight ratio of current F1C models (1.25 watts/gram for 1.25 HP on models weighing 750 grams). A and B-electric models probably have power to weight

ratios that are somewhere between these two ranges. E-36 models' high power to weight has two consequences. First, the 10-second motor runs on the first three flights allow easy-to-make 2-minute maxes. Contests really begin with the fourth flight which is the first flyoff flight using a 5-second motor run. To make the first three flights meaningful, we suggest the run be reduced to 7 seconds.

**2. It is difficult to attain closure at contests with a 5-second motor run.** For example, the E-36 winner at the last Nationals, Taron Malkhasyan, chose to stop flying after a string of 28 maxes. This performance set a new record, breaking the old one by 8 maxes! To prevent long strings of 2-minute maxes in the future, it is suggested to drop the motor run to 4 seconds beginning with the 6th flight (the 3rd flyoff flight) as well as increasing the max to 2-½ minutes.

**3. Crowding Out.** E-36s models can be flown in four events: E-36, F1S (the mirror FAI event), A Electric (fixed surfaces) and B Electric (moving surfaces). They dominate the A and B Electric records with a very large num-

#### **Suggested motor runs/maxes for E-36, A and B-Electric**

	<u>Motor Run</u>	<u>Flight Maximum</u>
Flights 1-3	7 seconds	120 seconds
Flights 4-5	5 seconds	120 seconds
Flights 6+	4 seconds	150 seconds

ber of consecutive maxes: 23 in A and 41 in B. The current rules allow A and B models to be large and powerful; i.e., basically unlimited, that out-glide E-36s with their much smaller wing spans. But as long as their flight maxes are fixed at 2 minutes, they will be dominated by small and easy-to-build E-36s. The "large" electric events need breathing room to evolve. Raising their max to 2:30 will diminish E-36s' effectiveness. It will incentivize the development of larger locked and auto surface models.

There are many good model kits that can be converted to electric power. CB Model Designs produces a large locked surface kit that is perfect for A Electric. For higher performance, B Electric bunters with VIT/AR should outperform their locked surfaces siblings. It can be argued that the performance of AMA electric models has reached the same level as the gas events, and may continue to improve due to advances in technology. Therefore, it makes sense to use the same motor runs and maxes as the Category III gas events.

If these rules are adopted in the next 2-year cycle, AMA electric contests will be more challenging with no long, open-ended fly-offs. AMA electric fliers will then diversify into larger electric models and more than one model type will be needed to win contests. ✧

—Aram Schlosberg and Harry Grogan

## NFFS

### ARTWORK CONTEST

NFFS is looking for new artwork to be emblazoned on t-shirts, hats, hoodies, etc... Please submit artwork that highlights our hobby...send submissions to <membership@freeflight.org> by 9/1/22.

Multiple submissions may be chosen. For any submission chosen, the artist will receive a one-year NFFS membership AND the first article of merchandise with their artwork!

—NFFS Board