# Academy of Model Aeronautics

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**RULES CHANGE PROPOSAL FORM INSTRUCTIONS**

**This document is designed for you to print out and write in your proposal. If you want to type your proposal, PLEASE go back to the website and select ON-LINE PROPOSAL FORM. Please complete this form, scan into your computer and e-mail it to: ruleschanges@modelaircraft.org. A copy will be forwarded to the appropriate Contest Board Chairman. The current issue of Competition Regulations must be referenced.**

**PROPOSAL NO. OFF19-01**_____ **RECEIVED DATE 04/21/17**_____
(To be inserted by Headquarters) (To be inserted by Headquarters)

**REVISE DATE**_____ **VERSION NUMBER** _____
**(To be inserted by Headquarters)** **(To be inserted by Headquarters)**

**PROPOSAL TYPE (Check One):** ☒ **Basic** ☐ **Urgent** ☐ **Safety/Emergency** ☐ **Interpretation**

☐ **Cross (Indicate Original Proposal Number)** _____

**SELECT APPLICABLE COMPETITION REGULATIONS**

| | | | |
|---|---|---|---|
| ☐ **General Section** | ☒ **Outdoor Free Flight** | ☐ **Indoor Free Flight** | ☐ **CL General** |
| ☐ **CL Speed** | ☐ **CL Racing** | ☐ **CL Navy Carrier** | ☐ **CL Aerobatics** |
| ☐ **CL Combat** | ☐ **CL Special Events** | ☐ **RC Aerobatics** | ☐ **RC Scale Aerobatics** |
| ☐ **RC Pylon Racing** | ☐ **RC Helicopter** | ☐ **RC Soaring** | ☐ **RC Fixed-wing Scale** |
| ☐ **CL Scale** | ☐ **RC Combat** | ☐ **RC Special Events** | |

**Brief summary of the proposed change.**

The performance of E36 models is posed to increase dramatically due to a recent significant increase in motor power. To address excess performance it is proposed to measure the motor's wattage, and if it exceeds 70 Watts the motor run will be truncated according to a table.

**Exact wording proposed for the rule book. (List paragraph numbers where applicable. Example: Change "quote present rule book wording" to "exact wording required".**

(*Page 38, inserted under the table in paragraph 3.2. The last column on E36 motor runs is eliminated.*)

**E36 motor runs**

The standard motor run in the first three flights will be determined by the motor's wattage. The wattage of a motor with a specific prop is measured statically, 5 seconds after reaching full power, using a freshly charged battery.

| | Motor runs (seconds) |
|---|---|
| Up to 70 W | 10 |
| 70.01 – 80 W | 9 |
| 80.01 – 90 W | 8 |
| 90.01 – 100 W | 7 |
| 100.01 – 120 W | 6 |
| Above 120 W | 5 |

The motor's standard run time will be posted on the model's pylon or fuselage. The wattmeter will be equipped with JTS connectors, with a female connector on the battery side. The CD can request a static wattage test to verify the motor's run.

The standard motor run will be halved in the subsequent flights. For example, if the motor run is 9 seconds in the first three flights, it would be 4.5 seconds on the following flights.

**Logic behind proposed change, including alleged shortcomings of the present rules. State intent for future reference.**
Recently the Chinese have developed a new generation of powerful quadcopter motors that can also be used in E36s. Consequently, fliers using such motor have been able to gain extraordinary heights in 10 second motor runs. (See Tapio Linkosalo's article in the 2017 Symposium, reaching heights exceeding 150 meters, or 490 feet.)

The underlying issue is the availability of more powerful motors and the need to keep flights in sight and on the field. Since this is an electrical issue, a Wattage static test quantifies it directly. Measuring Wattage is straight forward and has been used in F1Q for models without energy limiters. A Wattmeter can cost under $25.

The motor runs were calculated assuming a hypothetical weight of 150 grams and energy budget of 4.5 Watts-second or Joules per gram. [The underlying formula is: motor run = min (10, 4.5 (J/g) /(Watts * 150 (gr)))]. This is a generous energy budget, as F1Q currently have a 4 Joules per gram budget, with a good chance of having it reduced due to high performance.

The wattage test sidesteps the model's weight, so there is an incentive to build a light model. It also avoids using energy limiters like in F1Q. Motor runs should be settable in 0.5 seconds increments (accounting for flyoffs of odd-second motor runs.)

**New event test data/information (new events only), please provide what testing of this new event has taken place to include number of participants and number of contests.**

https://hobbyking.com/en_us/dys-mr2205-2750kv-250-size-quad-motor-ccw.html

**Effect, if any, on current AMA records.**
All records for this event will need to be reset.

**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.**

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