Section 1X – R/C Electric Special Events

General Rules

This information was extracted from the 2006 SAM RC rules by R. Macklin (SAM 8).

1E. Electric Limited Motor Run (ELMR)
and
2E. Electric Texaco (ETEX)

A. Model Requirements
Any Antique or Old Timer design as recognized in the "SAM Approved Designs List ~ Gas Models" may be flown in this event.
Unless stated otherwise, the model shall conform to all current SAM Radio Control Old Timer Rules.
Models must have a minimum wing loading of 8-oz. /sq. ft. of planform wing area.

B. Batteries
Manufacturers marked NiCad rechargeable pack having any number of cells. Unmarked cells may be tested at the Contest Directors option.
LMR (Limited motor Run) and Texaco models shall be allowed one (1) ounce of motor battery weight for every three (3) ounces of all-up airframe weight (gross model weight less power battery). All weights are rounded to the nearest whole ounce.

2008 Battery Rules for LMR and Electric Texaco

The battery shall consist of seven NiCad or NiMh cells or two LiPoly cells with a manufacturer's capacity of no more than 100 mah per ¼ lb of model All Up Weight (AUW; weight ready to fly with battery).

Alternate batteries with different numbers of cells are permitted provide the capacity, in milli-amp hours, is less than;

700 divided by the number of NiCad/NiMh cells
Or
200 divided by the number of LiPoly cells

Per ¼ pound of model AUW

NiCad/NiMh Examples

Eleven NiCad or NiMh cells of 500 mah marked capacity = 32 oz model (minimum A.U.W.)

Seven NiCad or NiMh cells of 800 mah marked capacity = 32 oz model (minimum A.U.W.)

Seven NiCad or NiMh cells of 1500 mah marked capacity = 60 oz model (minimum A.U.W.)

LiPoly Examples

Two LiPo cells of 800 mah marked capacity = 32 oz model (minimum A.U.W.)

Three LiPo cells of 800 mah marked capacity = 48 oz model (minimum A.U.W.)

Two LiPo cells of 1300 mah marked capacity = 52 oz model (minimum A.U.W.)

A table of battery options for various model weights is available for viewing or download, click here. Or use Steve Roselle's Excel calculation spreadsheet.

The manufacturer's label, with the capacity specified, must either be clearly visible when installed in the model or the battery shall be removed from the model and presented for inspection by the CD prior to flight.

C. Motors

Any permanent magnet D.C. electric motor may be used. This includes brushless motors.

Motors may drive the propeller directly or indirectly via a (gear or belt) speed reduction drive.

Ferrite or non-ferrite magnet motors (i.e. Cobalt) may be used.

D. Power Control

Power flow from batteries to motor may be controlled by any method.

Power shut off by radio command must be demonstrated to the timer.

E. Propellers

Folding props may be used as long as they are restrained from folding in flight. Rationale : Since some landing gear designs support folding props while other do not, this rule maintains fairness, while allowing the use of folders which can be configured to fold only upon hitting a solid object, thus saving a motor shaft or gearbox from more serious damage.

Prop hubs that are partially cut through are not allowed.

F. General Flight Rules

Models must comply with all R/C LER rules, such as ROG, landing on field etc. unless otherwise noted.

Flight time is started at the moment the motor is switched on, or model is released for flight, and ended when the model touches the ground, or some stationary object on the ground.

1E. only – Electric Limited Motor Run (ELMR) Flight Rules:
Standard motor run shall be a single continuous run time of 90 seconds for all motor types.

Maximum flight time shall be 10 minutes. This may be increased at the CD's discretion, depending on field and weather conditions.
Score the sum of the best 2 of 3 flights.

2E. only – Electric Texaco (ETEX) Flight Rules:

There are no maximum motor run times. The motor may be stopped and started one or more times until the battery pack is exhausted.
Two flights allowed. Best single flight scores.

Maximum flight time is unlimited unless the CD places limits the day of the contest due to contest conditions or possible high number of frequency conflicts.

3E. Spirit of SAM (Electric Powered – Rubber Model Designs)

A. Model Requirements

Any electric powered replica of a pre-1943 rubber model as recognized in the "SAM Approved Designs List ~ Rubber Models, HL Glider and Towline Glider”may be flown in this event.

Unless stated otherwise, the model shall conform to current SAM R/C Old Timer Rules.

Scaling is permitted. There are no wing loading or weight requirements. All models shall have landing gear. Landing gear shall be added to models designed without landing gear. A two-wheel gear may replace a one-wheel gear. Dropping gear is not permitted.

B. Batteries

NiCad batteries only, not to exceed 45 grams (1.6 oz) as removed for weighing. The battery pack must be removable for weighing by the CD.

C. Motors

Any electric motor(s) may be used.

The motor(s) may drive the propeller(s) by any mechanical means. Propellers may fold.

D. Power Control

Power flow from the batteries to motor(s) may be controlled by any means

Power shut off by radio command must be demonstrated to the timer.

E. General Flight Rules

Models must comply with all R/C LER rules, such as ROG, landing on field, etc. unless otherwise noted.

Flight time starts when the motor is switched on and the model is released for flight. Flight time ends when the model touches the ground or some object on the ground.

F. Flight Rules

There are no maximum motor run times. The motor may be started, controlled and stopped one or more times at the pilot's discretion.
Model must ROG (Rise Off Ground) unassisted.
No maximum flight time

Three flights are allowed. Two flights are required to achieve a score. The SECOND longest flight counts.

Events for Electric Powered – Rubber model designs
Electric Limited motor Run (ELMR)

4E. R/C Electric – Wakefield (EW)

Any electric powered replica of a pre-1943 rubber model, described as a Wakefield, in the: "SAM Approved Designs List ~ Rubber Models, HL Glider and Towline Glider".

No Scaling allowed.

Motors are limited to the Graupner Speed 300 or 280 Ferrite models.
Five (5) minute 'Max", maximum flight time.

5E. R/C Electric – Rubber Unlimited (ERU)

Any electric powered replica of a pre-1943 rubber model as recognized in the: "SAM Approved Designs List ~ Rubber Models, HL Glider and Towline Glider".

Landing gear is required on "Stick" type models.
Scaling is allowed.

Motors are limited to the Graupner Speed 400 4.8, 6, or 7 volt, and the Speed 300 and 280 ferrite models.

Seven (7) minute "Max" maximum flight time.

A. General rules for both Rubber Wakefield and Unlimited classes:
B.

No modifications allowed to the motors other than timing advance.
No restrictions on props or gear boxes.

Props may fold.

Models must ROG unless field or weather conditions dictate otherwise.

Battery power is limited to 7 or less Ni-cads.

Motor run is limited to a single continuous run time of 60 seconds.

Score the sum of best 2 of 3 flights.

2008 Battery Rule for Wakefield and Unlimited Rubber events.
The battery shall consist of seven NiCad or NiMh or two LiPoly cells of any capacity.

Battery Info Supplement (by Bob Macklin)

The 2008 battery rules are based on 2 LiPo cells or 7 NiCd or NiMh cells. These configuration are batteries that produce 7.2V under load at a full charge.

These rules allow 100mah capacity for each 1/4lb of ALL UP FLYING WEIGHT.

You can determine the capacity limit as follows.

For NiCd and NiMh:

7 cells times 100mah equal 700.
For 16oz airplane this is 2800. 2800 divided by 16 equals 175.
This is 175 per oz.

So multiply the all up flying weight in OUNCES by 175.
Ie, for a 16oz airplane 16 * 175 = 2800. 2800 / 7 (cells) = 400.

But if you were to use 8 cells it would be 2800 / 8 (cells) = 350.

This means a 16oz airplane could use 8 350mah NiCd or NiMh cells.

For LiPo;

2 cells times 100mah = 200.
For a 16oz airplane this is 800. 800 divided by 16 = 50.
This is 50 per oz.

So multiply the all up flying weight in OUNCES by 50.
Ie, for a 16oz airplane 16 * 50 = 800. 800 / 2 (cells) = 400.

But if you were to use 3 cells it would be 800 /3 (cells) = 267.

This means a 16oz airplane could use 3 267mah LiPo cells.

The above formulas allow you to select a battery voltage appropriate for the rated voltage of the motor. It is permissible to run the motors for higher than the rated voltage for short periods of time.

SAM 8 S-400 Event Rules.

The SAM 8 S-400 event was started several years ago as an electric version if the SAM 1/2A Texaco event. It used the basic SAM electric rules but the power was limited to a S-400 BRUSHED motor.

In 2008 the SAM Electric Group adopted the European S-400 rules. The European S-400 rules specify an UNGEARED 6 VOLT S-400 motor. Because of motor performance they had to change the battery rule and the LMR time. They eliminated the battery capacity since it does not make sense in a LMR event. They also extended the LMR time to 3 minutes.

The US SAM Electric Group first flew this event at Eloy, Az. In 2008. Because the airplanes were getting too high on a 3 minute run they changed the LMR time to 2 minutes. Also are the urging of an outspoken SAM member the wing loading rule was eliminated. But in 2009 the wing loading rule was changed to 16oz minimum weight.

At a meeting of the SAM 8 Electric Committee on 3/24/2009 it was decided to modify the SAM 8 S-400 rules.

The airplane is the same. Any SAM OT or Antique just like the 1/2A Texaco rules.

Any S-400 BRUSHED motor. Gearboxes are permitted. Airplanes without gearboxes will use the SAM Electric Group rules.

The motor run time for a geared motor will be 90 seconds. The motor run time for an ungeared motor will be 120 seconds.

The battery capacity rule has been eliminated for the LMR event. Any battery you want is permitted.

If we decied to try a Texaco style event then the battery will be limited to a 2 cell 400mah LiPo or an 8 cell 350mah NiCd or NiMh pack.

We will not use the 1/2A Texaco weight rule but we will use the 16oz minimum weight rule.