

Iron Rocket Competition

Objective: To fly three consecutive flights on one day with with one rocket that has the lowest elapsed cumulative time from all three flights. If a rocket has a mechanical failure during the duration of the contest it becomes disqualified.

We are offering starter kits for purchase at \$10.00 per kit. The only thing needed to build a rocket from the kit would be a streamer, glue, and building tools. You do not need to use a kit to compete in this contest.

Rules:

1. Rockets must be made from a single tube with an inside diameter size of BT-50 or equivalent for the entire length of the rocket. This will be checked during registration by verifying that a spent Estes D12 engine can slide in at the nosecone end. The single body tube must be made of paper. No plastic, wood or composite body tubes allowed. No “tubes within a tube” may be added for strength. No body couplers may be used to extend the length of the original body tube, or in any other manner to strengthen the body tube. There is no minimum or maximum body tube length required, but the rocket must be stable in flight, or it will be disqualified.

2. The rocket must have at least 3 fins and no more than 6 fins placed any where on the body tube of the rocket. Fins must be free standing. There can be no gussets, bracing or rings attaching the fins at any point to each other or the body tube. The only attachment point to the body tube is the root edge of the fin. Through-the-wall fins are **not** allowed. The fins may not touch each other in any way. A fin must be made from a single sheet of **balsa wood** that is equal to or less than 3/16 of an inch in thickness. A fin cannot be sandwiched in any direction from two or more sheets of balsa. It cannot be “glassed” or “skinned” with any fibrous cloth, paper or other material of any kind in any way. Wood filler, sealer, glue or epoxy may be used underneath the paint to fill in the grain of the wood if so desired.

3. The single piece **balsa wood** nose cone on the rocket must extend forward of the front edge of the body tube at least one inch. The nose cone diameter cannot exceed the body tube diameter. The nosecone cannot be “glassed” or “skinned” either, just like the fins. Wood filler, sealer, glue or epoxy may be used underneath the paint to fill in the grain of the wood if so desired. A single dowel, up to 1/4 of an inch in diameter, can be glued into the center of the nosecone to assist in screw eye retention.

4. No payload sections are permitted. Adding nose weight in the form of washers under the screw eye, or hollowing the nose cone and gluing/epoxying in lead shot, as examples of adding ballast, would be permitted.

5. A single streamer will be the recovery device for this contest. The streamer must cover completely throughout the duration of the contest a rectangular template at check-in that will be 2 inches wide by 15 inches long. The streamer may be made from any flexible material that will fit inside the BT-50 body tube. The streamer must be deployed at time of contact with the ground or the flight will be disqualified. (No back-sliders allowed.) "Reefing", taping, or in any other way, keeping the streamer from fully deploying are grounds for disqualification.

6. The motor mount must be for 18 millimeter Estes motors and can be no longer than 4 inches inside the body tube, which will be checked at registration. Motors used, and flown in this order, for a total of three rounds, will be A8-3, B6-4, and C6-5, all manufactured by Estes. Motors will be initialed during the check-in and contest registration procedure to verify compliance and held in bins at the contest table. Notice: you may not get the motors you check in to the contest with, as all the motors of like kind that are approved for the contest will simply be put into a bin from which you will pull out at random prior to your flight. (Motors will be available at the time of check in for \$3.00 cash each/\$9.00 cash for all three.)

7. Rockets must have only one launch lug at least one inch long attached directly to the body tube for use with a 1/8 inch diameter launch rod at the launch site. Stand offs or multiple launch lugs are grounds for disqualification.

8. Rockets cannot weigh more than 2.4 ounces (68 grams) with no engine or recovery wadding inside them. Rockets will be weighed at check-in, and the top three finishers will be required to re-weigh before claiming their prize. A variance of more than 1% are grounds for disqualification.

9. All rockets must be painted and the paint must be dry at the time of initial check in.

10. If the rocket has a mechanical failure during flight or recovery, it is disqualified. Mechanical failures include separation of any part of the rocket from a part it was originally attached to. Examples of separation are, but not limited to, nose cones, streamers, shroud lines, broken shock cords, or fins that break off partially or completely. Paint that gets chipped off from impact with a hard surface does not count as a disqualifying event. Likewise, minor dents, dings, scrapes and scratches will not disqualify a rocket. Also, misfires from an engine not igniting will not be cause for disqualification.

11. There will be no back-up rockets allowed. A lost or broken rocket is a disqualification.

12. Rockets cannot be altered in any way between rounds.

13. For timing purposes, a flight will be considered from the moment that the rocket moves on the launch pad until the first contact of any part of the rocket with the ground during recovery.

14. Two impartial time keepers will be used on every flight. The average of the two times will be recorded as the official time for that flight. If one time keeper has a failure, then the other time keeper's reading becomes the official time. If both time keepers fail to get good times then the competitor will be forced to re-fly the flight.

15. Flight times will be posted for all contestants between rounds.

16. A rocket must be returned back to the check-in desk to be weighed and to verify there are no mechanical failures to be eligible for one of the top three prizes. To be considered for an award the rocket must fly all three rounds. All contestants must have their times recorded by the contest officials in the current round before any other contestants can fly in the next round.

Final notes: This is an “old school” style of competition in that there is no “new fangled” plastic or building methods allowed. While an older Estes Alpha with a compliant streamer attached instead of a parachute could compete, it probably wouldn't be competitive. There are intentional “loop holes” in the rules to get the juices flowing for being creative with the weight of the rocket, as well as drag inducing principles to lower the altitudes normally achieved when sticking a C6-5 into an Alpha. Good luck to all!