

21 Profile Proto Event

Purpose

The purpose of the event is to encourage folks to fly speed with an easy to build aircraft that uses the popular .21 cubic engine. All AMA speed regulations for the size class of model shall be applicable except for the additions and modifications listed below.

Design of the 21 Profile Proto Speed Model.

- Proto speed models need not be of a scale aircraft; however, the design must resemble that of a full-scale airplane.
- Model design must comply with the AMA Control Line General Section Paragraph 10 for profile fuselage design and the requirements of the 21 Profile Proto Specifications.
- Model design may have a conventional or “butterfly” tail assembly.
- Model design must have a clear cockpit canopy sized in proportion to the model. Flush cockpits are not permitted unless the model design is that of a full-scale airplane.
- No flying-wing designs will be permitted unless they are scale models of full-scale aircraft.

21 Profile Proto Specifications

- The model shall have a minimum wing span of 24 inches (16 inches for a biplane)
- The model shall have a minimum wing area of 125 square inches.
- The stabilizer must have a minimum area 25% of the wing.
- The distance from the trailing edge of the wing to the leading edge of the stabilizer must be a minimum of 5.00 inches.
- The wing and stabilizer must be symmetrical in span with no asymmetry. A deviation of 1/4 inch maximum is permitted using the engine mounting plane as the center of the aircraft.
- The model must have fixed landing gear, with minimum of two (2) main wheels permanently attached. The main wheels must have an equal minimum diameter of 1.50 inches and laterally separated from each other by a distance between centerlines of 6.0 inches.
- The Maximum Fuselage Width shall be $\frac{3}{4}$ inch.
- The weight limit of the aircraft is 30 oz. maximum.
- The engine shall have a maximum size in displacement of .2135 cubic inches. An open exhaust or minipipe type exhaust system are only permitted. A minipipe cannot be longer than six inches from the centerline of the engine bore to the end of pipe. The mini pipe shall have a constant inside diameter.
- Any fuel system is acceptable and the use of a shutoff is encouraged.
- Only two bladed propellers are acceptable.
- Only two wire type control systems are acceptable. The minimum wing tip separation of the lines shall be .20".
- The control system, consisting of lead outs (if used), bell crank, push rod and control horn will be totally exposed and external to normal airplane contours. The leadout wires (or flight wires if no leadouts are used) cannot be recessed into the wing, the pushrod cannot be mounted inside the fuselage, nor will the bellcrank be allowed to be mounted or hidden inside the wing or fuselage.

The entire control system as defined above must be visible when the model is viewed in plan view from top and/or bottom with the controls in neutral.

- Models must have the engine piston and cylinder parallel with the wing and the top of the cylinder facing the outside of the circle and a fully exposed tank or tank enclosure for bladder type tanks must mounted on the same side of the fuselage as the engine. The tank may not form a fairing behind the cylinder head, but a fairing behind the tank is permitted.

Lines and pull test

Wire size shall be (2) .018" x 60'-0". The model and control system shall be subjected to a 36g pull test.

Fuel

Fuel shall be of standard composition containing 10% nitromethane, 20% lubricants, and 70% methanol. The fuel will be supplied by contest management.

Launching

Proto models shall take off from the ground or runway under their own power. Assisting (pushing) the aircraft in any way will disqualify the attempt.

Timing

The model will be timed from the instant it is released for takeoff for 14 laps (1 mile).

- The use of a transit trace configured for 14 lap proto launches is acceptable for timing.
- For manual timing, the timers shall be located on the opposite side of the circle from the launch point (180 degrees from launch point). The timing mark is an imaginary straight line going from the timers and passing through the pylon to the point where the model is launched. Sighting reference for counting laps and terminating the clocking is as the model passes behind the pylon.

Flying

For manual timing, the flier may select his launching location. For transit trace timing, the sensor(s) will be located at an agreed to location and all flights will be from this location unless the wind changes significantly and the contestants agree to move the location.

The flight will be timed from the instant the model is released for takeoff. The contestant will be allowed a maximum of 1½ laps in which to get the model airborne before he is required to fly from the pylon as specified under "Competition Flying from a Pylon." However, any attempt to whip the model more than what is necessary to get it airborne during the first lap and one half shall constitute a foul, disqualifying the flight. Any such whipping to get the model safely airborne must cease immediately when the model becomes airborne and is in a normal attitude.

Scoring

The best official flight by each competitor in an event, in terms of miles per hour (mph), shall be used for competition and record scoring. To separate the competitors in the case of a tie, the average of the competitor's two (2) best flights will be taken. In the case of the two (2) best flights still producing a tie, the average of the three (3) best flights will be taken to determine the winner.