

# **Control Line Competition Rules**

## **G.8 CL NAVY CARRIER**

8.1 Applicability. All pertinent M.A.A.C. regulations (see section titled Sanctioned Competition, Records, Selection of National Champions, and General) and the General Control Rules shall be applicable, except as specified below.

8.2 Carrier Deck. A carrier deck or suitable area shall be provided for the event. It shall be 44' long at the centre line and 8' wide, and the deck centre line shall be curved to the perimeter of a 60' radius arc, the centre of which shall be plainly marked, preferably by an unanchored 18" square block of 3 / 4" wood or 1 / 4" plate steel painted white.

A sloped protective ramp 4' long extending from the ground up to and flush with the edge of the deck shall be provided at the stern of the carrier deck. The edge of the deck shall be adequately marked. The arresting area of the deck shall be 10' long, and have 10 arresting cables with a minimum dia. of 1 / 8" (.125"), and a maximum dia. of 1 / 4" (.250"), with a minimum breaking strength of 200 lbs. suspended from 1 / 4" (.250") to 1 / 2" (.500") above the deck, spaced two feet apart starting two feet from the stern of the deck. Sandbags weighing approximately 5 lbs. each shall be attached to each end of the 18' long arresting cables. Screw eyes or other suitable guides shall be used on the outer edges of the deck to hold up the cable and also allow the cable to move through when an arrested landing is being made. The free roll area shall be 24' long and smooth enough to make a free rolling takeoff. If carrier is laid out on the ground, crepe paper streamers shall be stretched across two feet in front of the bow and one foot in back of the stern of the carrier, approximately 6" from the ground.

8.3 Aircraft Requirements. Model must have a fixed or retractable landing gear. If a retractable gear is used, it must be lowered for landing. Model must be equipped with an arresting hook which when extended may not be longer than one – third the length of the fuselage. Model wingspan shall be 44" maximum. It is permissible to change the position of any control surface during flight. The model shall be rigged for counter – clockwise flight. Models (entries) shall be placed and compete in three groups as follows:

3.1 Class I – Models having an engine displacement up to and including .4009 cu. in. Class I models may not be entered in Class II competition.

3.2 Class II – Models having an engine displacement of .4010 cu. in. to a maximum of .6500 cu. in. Class II will also include jet – type as outlined in the CL Jet Speed section. Jet models shall be entered in Class II only.

3.3 Profile Class. All planes shall be of the profile fuselage type. Engine(s) must not be cowled in. Minimum wing area shall be 300 sq. in. Models shall have a fixed landing gear consisting of at least a two – wheel main gear with at least 4" separating the wheels. If a clear canopy is not used, the cockpit or canopy area must be defined with a contrasting colour or colour outline. The paint scheme (colour) must be similar to some traditional military type with national markings of the U.S. or of another nation appropriate for the plane being modeled. It is encouraged that the planes outlines follow some type of Navy aircraft.

3.3.1 The engines in the Profile Navy Carrier Event shall have a maximum total displacement of .3600 cu. in. and be of the front intake type. No pressure fuel systems will be permitted; however, the vents in the tank may be pointed forward in the airstream.

3.4 In the case of multi – engine models, the sum of the displacement (engines) will govern the class into which they are placed. Exhaust extensions may not extend beyond a point three inches aft of the centre line of the engine cylinder. Engines used must be of the reciprocating internal combustion type or jet type. Neither rocket power nor auxiliary takeoff booster devices are permitted in any case.

#### 8.4 Control Line Requirements.

4.1 Line specifications and pull test as per chart. Three control lines are required for the Profile Class.

4.2 The required minimum line sizes are determined by the number of lines which bear the load of the model in flight. A load – bearing line is one which is tight during the pull test as determined by visual inspection, line – plucking or other means. Non – load – bearing lines (lines which are not tight during the pull test) may be of any diameter.

4.3 All lines shall emerge from the model within the fore – aft range covered by the wing root chord. All lines other than the elevation control line(s) shall emerge either between or within one inch of the elevation control line(s).

8.5 Official Flight. Flight is official when the contestant signals for a timed low speed run. If the flight is terminated after this signal, the score shall be bonus points (if applicable) plus points for all phases of flight completed prior to termination.

8.6 Attempts. Three attempts will be allowed for two official flights. Any of the following shall constitute an attempt:

6.1 Failure to have the model on the deck within two minutes after being called to fly.

6.2 Failure to become airborne within three minutes from the time the contestant signals he is ready or begins to start the engine. In the case of multi – engine models, an extra two minutes starting time will be allowed for each additional engine.

6.3 Any endeavour to make a takeoff is an attempt.

6.4 Whipping or shortening the effective length of the control line(s) during high-speed flight.

6.5 Exceeding an altitude of 20 feet for more than 1 / 2 lap during high-speed flight.

6.6 Flight terminated for any reason prior to the signal for low speed flight.

8.7 Flight Termination. Any of the following shall result in the immediate termination of the flight:

7.1 Touching of the ground or any obstruction by any part of the model.

7.2 Touching of the protective ramp (or crepe paper streamers if applicable) by any part of the model.

7.3 Touching the deck with any part of the model except during initial takeoff and during landing approaches following the signal for landing.

8.8 Bonus Points.

8.1 A Scale model of a carrier aircraft of any nation, provided it displays the national markings of the using nation, will receive 100 bonus points. A carrier aircraft is any man-carrying aircraft, which has successfully flown, and which meets at least one of the following requirements:

- (a) Aircraft made actual carrier-type takeoff and arrested landing on an Gr simulated carrier deck, or
- (b) Aircraft is designated as a carrier aircraft by an acceptable source (in cases where actual carrier-type takeoff and arrested landing are not documented).

8.8.1 Scale three-view drawings of the full – scale aircraft and proof that the aircraft meets the above requirements must be submitted to be eligible for scale bonus points. (See Proof of Scale rules in the Unified Scale Judging section for acceptable sources of plans and documentation.)

8.2 Class I and Class II.

2.1 Class I and Class II models will receive 100 bonus points if the linear dimensions of the major components of the model are to the same scale, within a plus minus of 5% tolerance. Models, which appear to comply with this tolerance upon rudimentary inspection, need not be further checked except in case of dispute. “Major components” are considered to be the fuselage (excluding surface markings) and airbrakes, the side view profiles of the vertical stabilizer and rudder, and the top view profiles of the wing and horizontal tail surfaces and all moveable surfaces which are attached to or form a part of these surfaces (flaps, ailerons, elevators, etc.). Although complex motions of moveable surfaces need not be duplicated (such as Fowler flaps), the general direction of movement must be the same as on the full – scale aircraft being modeled. Unless proven otherwise, ailerons shall be assumed to move simultaneously in opposite direction. Although landing gear

needs not to be scale, it must emerge from the model in the same location as the prototype.

2.2 If the engine or accessories protrude from the scale contours of the model, there may be openings in the skin sufficient to accommodate the protruding part with 1 / 2" maximum clearance at all points around the protruding part.

The model dihedral as viewed from the front must be similar within 2 or 3 degrees (by official's visual judgment) to the actual airplane as shown in the three – view drawing. Namely, it must have some positive or negative angle, as shown on the 3 – view drawing.

8.3 Profile Class To receive bonus points in any class:

(a) The colour of the model must be similar to any military type aircraft paint scheme.

If a clear canopy is not used the cockpit or canopy area must be defined with a contrasting colour or colour outline denoting the scale area.

3.2 Five points shall be awarded for each engine above one used to power the model, providing such engines contribute to the performance of the model from takeoff through at least the high – speed phase of the flight (at completion of high – speed timing, count number of engines running, subtract one, and multiply times 5).

8.9 Takeoff. Model must successfully take off from free roll portion of the deck. At the time of release, the nose of the model must be no more than 42 inches from the last arresting line.

#### 8.10 High-Speed Flight

10.1 The first seven laps after takeoff constitutes the high-speed phase of the event. Timing will start the instant the model is released for takeoff, and shall end when the model completes its seventh lap over the stern of the carrier.

10.2 High-Speed Points. All high speeds will be calculated to the nearest 1 / 10<sup>th</sup> MPH. High speed points shall be scored the same as speed in MPH and to the nearest 1 / 10.

#### 8.11 Low-Speed Flight

11.1 When the contestant has decelerated the speed of his model to his satisfaction, he will signal the judges to start timing his low speed run by using a prearranged signal that is acceptable to the judges. The model will then be timed for seven laps, using the stern of the carrier flight deck as the starting point. The start of the low speed run must be signaled for within three minutes of the completion of the high-speed run. Time for seven laps shall be used to calculate the average speed.

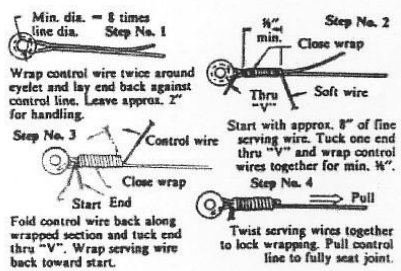
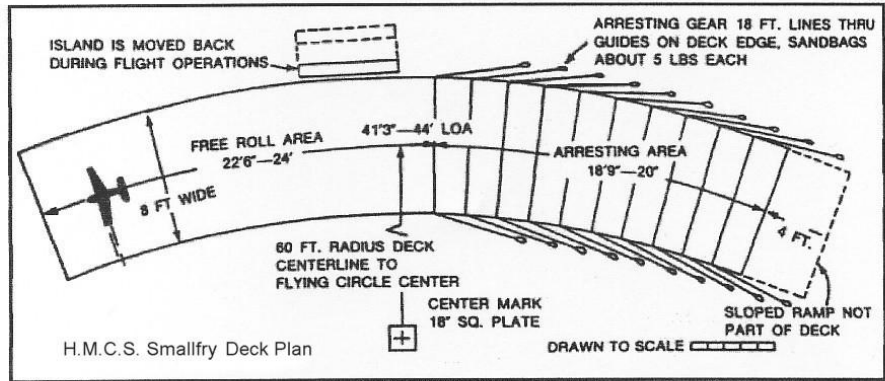


Figure 2. Two-Line Construction

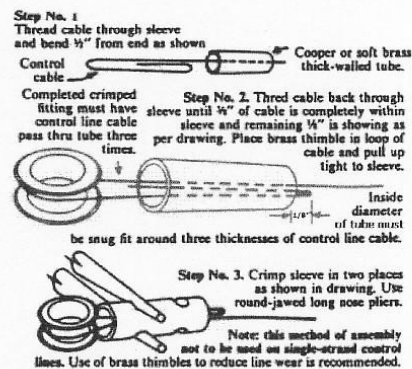


Figure 3. Alternate Construction Multi-Strand Lines Only

11.2 Low Speed Points. Low speed points will be scored as ten (10) times the ratio of high speed to low speed (10 x high speed divided by low speed). Score will be calculated to the nearest 1 / 10 point. Note: High Speed divided by Low Speed is the same as low speed flight time divided by high-speed flight time.

2.1 Models powered by two or more engines must keep all engines running through low – speed phase of flight to garner full points for speed differential. Failure to do so will score only half of low speed points.

2.2 No low speed points will be awarded if any of the following infractions occur:

- (a.) The model does not maintain forward counter – clockwise motion with respect to the ground.
- (b.) The flight radius of the model is lengthened by the contestant walking a circle greater than three feet in diameter. The contestant may step out of the three – foot circle to regain control of the model when lines go slack, but he is expected to return to the three – foot radius circle when control is established.
- (c.) The model exceeds a 60 – degree nose high attitude except for momentary, inadvertent deviations. When the 60 – degree limit is exceeded, the contestant will be notified immediately and must correct model attitude immediately. Failure to do so will result in loss of low speed score.

## 8.12 Landing

All landings on the carrier deck shall be made at low speed only. The landing must be completed within 8 minutes of takeoff. After lining up with the deck upon completion of the low speed run, the pilot shall signal the judges that he is ready to land. The signal of the pilot's intent to land shall be given as the model crosses the deck beginning his lap prior to landing. If other than a hand signal is used, the pilot shall describe his signal to the official immediately prior to each of his flights (i.e., before he starts his engine).

12.1 Landing Points. Landing (dead stick included) shall be scored as follows:

- (a) Normal 3 – point arrested landing, 100 points.
- (b) Arrested landing with plane in other than normal 3 – point attitude, 50 points.
- (c) Arrested landing with plane coming to rest on its back or one wheel off the deck, 25 points.
- (d) All other landings, 0 (zero) points.

12.2 From the above score, 5 points will be deducted for each unsuccessful landing approach made after signaling. Each lap flown after signaling shall be considered a landing approach even if the contestant does not attempt a landing. Landing score will, in no instance, be less than zero.

## 8.13 Flying for Record

A score shall be accepted for record purposes provided:

- (a.) A full – sized carrier deck as specified in the “Carrier Deck” paragraph has been used, and
- (b.) All other requirements of Control Line Carrier have been met, and
- (c.) At least two timers, equipped with stopwatches having a 1 / 10<sup>th</sup> second or finer graduations, have timed flights in unison from the same judge's position. Records shall be recognized where no more than 0.2 second variation on the high speed and 0.4 second variation on the low speed timing exist between the watches used. The average of the two watches shall be used to calculate speed and
- (d.) Only those flights made outdoors shall be recognized for record purposes.
- (e.) Navy Carrier records may be set only during the course of normal competition flying at M.A.A.C. SANCTIONED CONTEST.

CL NAVY CARRIER								
			Required Min. Diameter of each Line					
Class/ Max. Engine Size Cu. in.	Max. Model Weight	Required Line Length	Single Strand			Multi Strand		PULL TEST
			1 Line	2 Line	3 Line	2 Line	3 Line	
Class I .0000 to .4028	4 lb.	60'0" to 60'6"	.026"	.020"	.015"	.020"	.015"	25G
Class II .4029 to .6500	4 lb	60'0" to 60'6"	.033	.024	.018	.024	.018	25G
Profile .0000 to .3600	4 lb.	60'0" to 60'6"	--	--	.015	--	.015	25G