



AMA[®]
ACADEMY OF MODEL AERONAUTICS
Control Line
Combat
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RULES GOVERNING MODEL AVIATION COMPETITION IN THE UNITED STATES

Amendment Listing

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CL Combat								
Class/Engine Size (cubic inch)	Max. Model Weight	Minimum Line Length	Required Minimum Diameter of Each Line					Pull Test
			Single Strand			Multi-Strand		
			1 Line	2 Lines	3 Lines	2 Lines	3 Lines	
.0000-.1525	4 lbs.	59'6"-60'6"	-----	-----	-----	.015"	-----	25 lbs
.1526-.3600	4 lbs.	59'6"-60'6"	-----	-----	-----	.018"	-----	35 lbs

FOR EVENT 328.

1. Applicability.

All pertinent AMA regulations and the General Control Line rules shall apply, except as specified below. (see sections titled Sanctioned Competitions, Records, Selection of Champions, and General)

2. Combat Definition.

The Combat event shall consist of elimination matches arranged in preliminary rounds, semifinal rounds, and the final round; the purpose being to determine first, second, third, etc. place winners. Each match shall be a competition between two (2) aircraft flown in the same circle during the same five-minute time period. The aircraft shall be equipped with a streamer attached using a string leader. Each pilot or contestant shall maneuver his aircraft to cut his opponent's streamer, points being given for each cut, or to cut the string leader itself, called a kill.

3. Equipment.

Propulsion shall be provided by a propeller equipped piston engine(s) with total swept volume of not more than .3600 cubic inches. The aircraft shall be capable of attacking and evading maneuvers, and shall not have any artificial aids to assist cutting the string or streamer. Such artificial aids include, for example, wing fences or tip plates which protrude forward of the leading edge, sharp or rough devices mounted on or near the wing leading edge, etc. One (1) aircraft, one (1) set of lines and one (1) handle are permitted per match; see the chart for line specifications.

All lines used to control flights shall be steel music wire or metal of equivalent strength, or braided cables made from braided gel-spun ultrahigh molecular weight polyethylene (GSUMP) of the same nominal diameter specified in the pull test table. Spectra lines that have been formed into a single solid strand (called Fusion or similar names) are not allowed because they are much more likely to break when the lines are stressed suddenly.

Gel spun braided lines (Spectra(tm)) must be terminated as per the knot diagrams shown in the Control Line General section paragraph 5.3.5.1.

No mechanical or electrical starters shall be permitted. The builder-of-the-model rule shall not apply to the Combat events.

3.1.

Combat models are exempt from any muffler requirements and noise level standards or limits contained in the General or CL General sections of this rule book or in any other document.

3.2.

The airplane shall have a restraining cable (minimum .027 stranded wire) that fits snugly around the cylinder barrel/crankcase or may go through a hole(s) drilled through the engine webs and attaches to the bell crank mounting bolt.

3.3.

The aircraft or engine shall be equipped with a device to stop the engine in the event of a line break or other incident which allows the aircraft to leave the flying circle. The device must remain functional for the entire flight period and must be repaired or replaced if it becomes nonfunctional during the match. The aircraft will not require a shutoff device if used in an event flown to a speed limit of 75 miles per hour or slower. During a speed limit event, the aircraft will be timed to measure the speed at the beginning of the match. During the timing, the aircraft must maintain level flight at or above 15 feet. The pilots are allowed to walk inside the pilots' circle. If a pilot steps outside the circle, he is to be warned and then timed again. The second offense will result in a forfeit of the match. The pilot will be allowed to land the aircraft if it exceeds the speed limit.

Adjustments may then be made to slow the aircraft down. There will be no air-time points awarded to the offending pilot while his aircraft exceeds the speed limit. The signal to fly combat will not be given if either of the aircraft exceeds the speed limit. The signal to stop combat will be given at any point the starting judge feels that either aircraft has exceeded the speed limit. The starting judge is the only person responsible for this timing.

3.4.

Refer to the control line general rules for control line materials and line construction.

4. Streamers.

Streamers shall be supplied by the contest management. Streamers shall be made of crepe paper sheets or other suitable material such as plastic, be of uniform length using two distinct colors, and shall be cut two (2) inches wide and up to ten feet long. The streamer material should then be doubled and the folded lengthwise for two inches before being double tied with the string leader. The string leader shall be 16- to 20-pound test, shall be marked 84 inches from the knot, and shall extend beyond the ink mark 18 inches.

4.1.

The contestants in a match shall have different color streamers of the same length. In the event different length streamers are supplied, the match will be stopped and re flown. Streamers which deteriorate in the air or as a result of mishandling will not be cause for a rematch.

4.2.

The contestant shall tie the string leader to his aircraft within three (3) inches of the aircraft's center line, and with the ink mark completely behind all parts of the aircraft.

4.3. Streamer Handling Errors.

Streamer handling errors shall be defined as any of the following:

- a.** The string leader becoming detached from the aircraft except as a result of a midair collision.
- b.** The streamer not completely unfurling.
- c.** Launching with the streamer tangled with the aircraft, the lines, or itself or the streamer becoming so tangled during the launch.
- d.** Launching without the streamer tied to the aircraft.
- e.** Tearing off all or any part of the streamer by the pit crew either accidentally or deliberately.

When a streamer handling error is determined, airtime scoring will stop only for the associated aircraft, and no cuts or kills will be scored for either model until the problem is corrected. The pit crew of the associated aircraft must be informed of the streamer handling error. Both pilots must be informed and must fly level at or above a 15-foot altitude unless landing. To correct a streamer handling error, the pilot must land the aircraft (if airborne) and have the streamer corrected or replaced. If the streamer has been damaged or weakened (in the opinion of the timer) by the streamer handling error or by any attempted correction it must be

replaced by a new full-length streamer. Timers should have streamers available for this purpose. It is permissible to land a powered aircraft to correct a streamer handling error, however, for the safety of the pit crews the pilot must be inside the pilot's circle.

5. Contest Site.

Each combat circle shall be laid out using two (2) concentric circles to provide a three (3) foot radius pilot's circle and a 70- to 75-foot radius safety circle. Spectators shall be a safe distance from the combat circle(s), that distance depending on the flying site and the judgment of the Contest Director.

6. Contest Matching.

6.1. Primary Matching System.

Matching should be based on a lottery or other fair method. Enough byes should be given to form 4, 8, 16, 32, etc., matches in the first round on a pyramid match form. It is desirable to separate team or club members as much as possible during the first round so that they will not meet until late in the contest. Everyone should have an equal chance for a bye, and byes should be as equally distributed between the halves, quarters, etc., of the pyramid as possible. Knockout elimination shall be used with the winner of each match advancing to the next round to meet a new opponent. A flyoff should be used to establish third (fifth if applicable).

6.2. Alternate Matching System.

If time permits, a second chance for first match losers should be used. This shall be accomplished as follows:

- a.** In the first round the competitors shall be matched two (2) at a time with the winners advancing to the second round. Matching may be based on order of entry, lottery, or other fair methods.
- b.** The odd competitor, if any, shall be matched with one of the first-match losers. The winner will advance to the second round, the resulting loser will be eliminated if it is his or her second loss; otherwise, he or she will get a second chance.
- c.** The first-match losers will be matched with one (1) bye if necessary, and the winners advanced to the second round.
- d.** Members of the same team or club should be separated during the first round if possible.
- e.** Byes, matching, etc., in the second or subsequent rounds should be handled exactly as in the first and subsequent rounds of the primary

system, except a second bye should not be given to the same person if one was necessary in the first round.

6.3. Late Entries.

At the discretion of the Contest Director, late entries may be allowed if the first round is not completed.

- a. In the primary system, late entries may replace first-round byes.
- b. In the alternate system, late entries may simply enter if the losers matches have not started. Otherwise, they may be treated as losers, but should not get a bye into the second round.

7. Contest Procedure.

The contestants shall be called in their posted flying order to take their places on the flying circle. A rigid time schedule is necessary. It is the contestant's responsibility that his equipment pass the safety check prior to each match. Failure to pass the line measurements, pull test, or the safety inspection by match time is not sufficient reason to delay the match. Contestants not ready at the match starting time shall forfeit the match.

7.1. Safety Check.

Prior to each fight during the pull test the diameter and length of the lines must be checked; see the chart for sizes and pull test. The officials shall also visually inspect the equipment combination especially noting the condition of the control mechanism, the lines, the handle, and the engine attachment and the engine shutoff device. Unsafe equipment, as determined by the officials, shall not be allowed to compete.

7.2. Engine Shut off.

The competitor shall be solely responsible for the function of the fuel shutoff device. In the event a shutoff does not shut the engine off within the three 3 second limit, the competitor will be disqualified from the combat event in question. If it can be show that the shutoff device was damaged by mid-air collision, then the competitor will not be disqualified.

7.3. Additional Safety Checks.

Aircraft which crash for any reason will be checked for fly ability. Aircraft will not be allowed to compete unless flyable or repaired so that they are flyable. The aircraft may be subjected to a pull test to verify safety if deemed necessary by the starting judge.

8. Match Procedure.

The contestant and his pit crew will be on the flying circle on or before the posted or announced match starting time. The circle will be available not less than two (2) minutes prior to match time.

8.1. Match Period.

The starting judge will sound a loud signal on the match starting time. Either the pilot or his pit crew may then start the engine. The aircraft may be launched immediately after starting. The match will end when any of the following occur:

- a. A kill has been scored.
- b. A contestant forfeits or is disqualified.
- c. The five-minute (5) match time is up.
- d. A midair collision renders one (1) or both airplanes un-flyable.
- e. The crash (crashes) immediately following a midair collision caused by the midair collision renders one (1) or both aircraft un-flyable.
- f. One (1) or both lines are cut or break as a result of a midair collision. Except for the above, line breaks or crashes do not end the match. The starting judge will sound a loud prolonged signal at the end of the match.

8.2. Pilot Conduct.

The pilot shall be in the pilot's circle whenever his aircraft is airborne, except for up to one (1) lap of his aircraft to get into the pilot's circle after launching, and up to one (1) lap of his aircraft outside the pilot's circle to get down after the engine quits.

8.2.1.

After launching, the airplane must climb out smoothly in a counterclockwise direction until the pilot is in the pilot's circle.

8.2.2.

If only one (1) aircraft is flying, that aircraft must fly level, counterclockwise, and at least 15 feet high until the second aircraft is launched and the second pilot is in the pilot's circle. This shall also apply when the second pilot has left the pilot's circle to land his aircraft, in accordance with 8.2. Exception: In the event of tangled lines when one airplane has crashed or landed, the pilot of the airborne aircraft must maneuver in a manner (such as loops and figure 8s) that allows the other pilot to untangle his lines from the

airborne pilot's lines. Both pilots must cooperate in efforts to safely and expeditiously untangle the lines.

8.2.3.

Combat may not begin until both aircraft are airborne, both pilots are in the pilot's circle, and the starting judge (or an additional center judge) sounds a signal for combat to begin. On the initial launch this signal will be given when the judge is satisfied that both aircraft have completed at least two (2) level laps counterclockwise, are flying level counterclockwise, and are separated by approximately 180 degrees. On subsequent launches, the signal may occur anytime both aircraft are flying level counterclockwise and are separated by approximately 180 degrees. Combat shall cease when either pilot leaves the pilot's circle to land his aircraft after the engine quits.

8.2.4.

Other than the above, there shall be no restriction on low, clockwise, or counterclockwise flying.

8.2.5.

The pilot must not trip, hold, or place his or her free hand on the opponent so as to know his or her position or movements. Normal contact such as mild bumping or brushing against is permitted.

8.3. Pit Crew.

The pilot may have a pit crew of at most, two (2) other people. The pilot is responsible for the conduct of the pit crew.

8.3.1.

The pit crew may start or change engines, refuel, change plugs or propellers, etc., and make repairs as necessary during a match. Lines cut or broken during a match may not be repaired.

8.3.2.

All pitting must be done outside the 75-foot circle and the pit crew must remain outside the 75-foot circle except for launching, which will be done on or just outside the 75-foot circle, and retrieving downed aircraft. To retrieve a downed aircraft the pit crew must enter and exit the 75-foot circle by the shortest path on the radius to the 75-foot circle.

8.3.3.

Neither the pilot nor his or her pit crew may argue with the officials or otherwise interfere with the conduct of the contest.

9. Judging Procedure.

A minimum of three (3) judges are required in addition to helpers, pull test crew, etc.

9.1.

A starting judge shall be equipped with two (2) stopwatches and a device to signal the end of the match. The starting judge shall time the overall match, watch the pilots for rules infractions, and time the interval between a crash due to a midair collision and the determination of fly ability.

9.2.

Two (2) additional judges are required; each equipped with non-automatic reset stopwatches. One (1) judge shall be assigned to each contestant in each match to time their pilot's air time and count the cuts he makes. If manpower permits, it is desirable to use two (2) backup judges, stationed at a different point on the circle, as a check on the cuts and air times.

9.3.

In the event of a crash due to a midair collision, the starting judge shall start his extra watch when the first airplane hits the ground. The starting judge shall then inspect the airplane(s) to determine fly ability. If the airplanes are still flyable, the extra watch is reset and the match continues.

9.3.1.

If, in the judge's opinion, minor repairs will allow the airplane to be flyable, he may allow the match to continue. For example, such minor repairs as pinning a stabilizer to the fuselage. If the match is allowed to continue, the extra watch is reset. After being repaired, the airplane must be flyable, as determined by the judges, before the engine may be started and the airplane launched.

9.3.2.

If either airplane is un-flyable, the starting judge and the judge timing the airplane still in the air stop their watches simultaneously. The match is then stopped and the time on the extra watch is subtracted from the air time watch of the last airplane up. If the airplane in the air after the initial crash lands or crashes the extra watch and the air time watch are both stopped at the landing (crash). The starting judge's extra watch is used in this way to determine the airtime acquired after the crash and before fly ability could be determined.

9.4.

If an airplane crashes due to reasons other than midair collisions, the match will not be stopped. However, the aircraft will not be allowed to compete unless flyable or repaired so that it is flyable.

9.5.

If one (1) or both lines are cut or break as a result of a midair collision, the airplane is un-flyable, and the match is stopped. If the lines are cut or break as a result of a line tangle, the match will not be stopped, but the contestant will not be disqualified. If both lines break, resulting in a flyaway, for reasons other than midair collisions or line tangles, the contestant is disqualified. Flyaway aircraft air time shall stop at the time of the flyaway. The starting judge shall use his extra watch and the procedure in 9.3. if necessary, so that his deliberating time does not count as airtime for the remaining aircraft.

9.6.

When the five-minute match period is over, all running watches will be simultaneously stopped.

10. Scoring.

One hundred (100) points will be awarded for each cut and one (1) point for each completed second scored by the judges. A kill takes precedence over point scores.

10.1.

The winner will be the one who first scores a kill, or otherwise the one who scores the most points during the match.

10.2.

If the judges cannot determine the order of occurrence of a midair collision and a kill, the kill takes precedence.

10.3.

If the judges cannot determine the order of a double kill, the points accumulated by the contestants before the double kill will be used to determine the winner.

10.4.

In case of a tie, a rematch shall be declared.

11. Disqualification and Forfeiture.

A contestant may forfeit the match, or be disqualified from the event (or contest) for violation of the Combat event rules. It is generally impossible to list all of the specific penalties for each possible situation or variation of rules violation.

Contest Directors are expected to use discretion and good sense to maintain a fair, orderly contest. As a guide, rule violations which in the CD's opinion are not deliberate, do not compromise safety, and do not place the opponent at a disadvantage, may be ignored or may result in a warning depending on the circumstances and the official's judgment. The contestant should be informed even when no warning is given. Rule violations which compromise safety must, as a minimum, result in a warning.

11.1. Forfeiture.

Rule violations which are accidental, are not deliberate or flagrant, but which place the opponent at a disadvantage (Contest Director's opinion) shall result in forfeiture of the match. Violations which are deliberate, flagrant, or after continued warning must, as a minimum, result in forfeiture of the match. Rule violations which compromise safety may also, depending on the Contest Director's judgment, result in forfeiture of the match. Also, the match will be forfeited for any of the following specific rule violations.

- a.** Failure to arrive or be ready at the assigned flying time; see 7.
- b.** Failure to maintain level flight when required; see 8.2.2. and 4.3.
- c.** Tripping, holding, etc.; see 8.2.5.
- d.** Failure to remain in the pilot's circle: see 8.2. Minor deviations or minor mutual wandering during the heat of combat is to be expected, but deliberate running out of the circle to attack or evade the opponent, or remaining outside the circle, should result in forfeiture of the match. Both pilots should not be so penalized in the same match.
- e.** Tying the streamer short: see 4.2. If this is determined before the airplane is initially launched, it should be handled as a streamer handling error, see 4.3.
- f.** Not getting into the pilot's circle within one aircraft lap after launching or not landing the aircraft within one (1) aircraft lap after leaving the pilot's circle after the engine quits; see 8.2.
- g.** Maneuvering when expressly forbidden, see 8.2.1., 8.2.2., and 4.3. Attacking before the signal for combat to begin, see 8.2.3. Attacking after combat has ceased, see 8.2.3.

- h.** Omission of the AMA number. (If allowed to fly, the contestant may not be subsequently penalized.)
- i.** Arguing with the officials. Warning should be given first. Any additional discussion should then result in forfeiting the match. Further dispute should result in disqualification. See 8.3.3.
- j.** Disorderly or unsportsmanlike conduct. This should not be used when a specific rule has been violated. Forfeiture is the minimum penalty for such conduct.
- k.** Jerking back on the handle or stepping back to maintain control during a line tangle. The judges should use care to be sure that the jerking or stepping back is clear, and that one person stepped back as opposed to both parties mutually separating.
- l.** Aircraft or parts of the aircraft breaking loose during flight except as a result of a line tangle or midair collision. See CL General par. 7.
- m.** Failure of the engine shutoff device to function immediately in the event of a flyaway.

11.2. Disqualification.

Rule violations which are deliberate, flagrant, habitual, or after continued warning may result in disqualification of the contestant. Rule violations which compromise safety may also result in disqualification. Repeated or continuing actions by the individual may result in disqualification from any remaining combat events or expulsion from the contest.

Disqualification may be immediate, or warning may be given first, depending on the Contest Director's judgment. Disqualification from the remaining Combat events or expulsion from the contest must be done by the CD, depending on his judgment. Specifically, disqualification will result for any of the following rule violations.

- a.** Releasing the control handle during flight or before the model has stopped while landing (crashing) whether deliberately or accidentally unless the model has been restrained by a safety thong. See section CL General 4.
- b.** Intentionally disabling the shutoff device.
- c.** Any of the specific rules violations listed in 11.1 and especially C, I, and J depending on the judgment of the Contest Director.

12. Definitions.

a. Unsportsmanlike conduct is basically subjective. An example would be refusing to assist untangling the lines. Abusive treatment of opponents or officials or unnecessary roughness are other examples.

b. A midair collision is defined only as contact between the aircraft, or between the lines and an aircraft.

c. A line tangle is one or more twists, either set of lines about the other.

d. An un-flyable airplane is one which does not have a strong and workable control mechanism and/or does not have a secure engine attachment and/or does not have a functional engine shutoff device. A cut or broken line shall be considered un-flyable. A half wing shall be allowed if the above conditions are met.

e. A kill consists of cutting or breaking the string between the knot where it is attached to the aircraft and the knot where it is attached to the crepe paper streamer, or breaking it from its attachment to the aircraft, with the airplane, propeller, or lines. Removal of part of the aircraft to which the string is attached, as a result of a midair collision, without severing the string itself, does not constitute a kill.

f. A cut consists of one (1) or more pieces of crepe paper falling from a single attack, i.e., one (1) pass through the streamer. The paper may be removed by the airplane, propeller, or lines.

g. Forfeiture. A contestant who forfeits or is penalized with a forfeiture will lose only that match and will be allowed to compete in any remaining Combat matches and events. Places, second chances for the alternate matching scheme, fly-offs for third, and so on are handled exactly as for ordinary losses.

h. Disqualification. A disqualified contestant will not be allowed to compete in any remaining matches of the event, and also loses any places earned. If the disqualification occurred during the semifinal round, the last contestant defeated by the disqualified contestant will compete in the flyoff for third place (fifth if applicable). If the disqualification occurs during the finals, the other places will be moved up as appropriate. See also section 1.17.

13. Protests and Appeals.

For Control Line Combat, a jury system shall be used in place of the appeal steps above a Contest Director (CD). (Event Director (ED) in the case of the Nationals.) The following guidelines will be used:

a. Verbal discussion and written protests and responses must first occur between the contestant (protester) and the CD (at the Nationals the Event Director).

b. Point scoring may not be protested.

c. At the request of a protester, a jury will be assembled. A ten dollar (\$10.00) fee is required to be paid in advance. In the event of the decision favorable to the protester the \$10.00 will be refunded. In the event of a decision unfavorable to the protester the \$10.00 will be given to the contest sponsoring agency.

d. The jury will consist of five (5) persons chosen before the contest. The jury will be selected from any official of the meet not targeted for front line action and/or a random selection of contestants involving all groups (teams). No one can be forced to serve on a jury.

e. From the five-member jury, the Contest Director will select three jurors for any one protest. The makeup of the three-member jury will stop the appearance of bias, or other factors as may be decided by the Contest Director.

f. Jurors will use the written protests and gather as a team other information as may be necessary in order to reach a decision.

g. The decision will be determined by a two thirds (2/3) majority vote of the three-member jury. The decision shall be one of the following: for the protester, against the protester, or a rematch.

h. The decision reached by the three-member jury is final and is not subject to AMA reversal.

CONTROL LINE SLOW COMBAT FOR EVENT 329.

1. General.

Applicability, equipment, purpose, rules, procedures, and judging are the same as CL Combat, except as specified below.

2. Aircraft Specifications.

The aircraft shall have a profile fuselage. The fuselage shall conform to the Control Line General Profile definition except upright or inverted engine installations are not allowed. The aircraft must fly counterclockwise in level flight.

a. The fuselage length shall be at least 24 inches between the thrust washer face and the foremost part of the movable elevator surface in the projected view.

b. There shall be a five- (5) inch minimum between the thrust washer face and the most forward part of the wing in the projected view. Shaft extensions, thick, non-stock drive washers, etc., shall not count towards these minimum distances.

c. No pressure fuel systems, inboard fuel tanks, pumps, etc. shall be allowed. The tank vents may be positioned to take advantage of the airstream. The engine crankshaft axis shall pass between the fuel tank and the center of the fight circle (all parts of the tank shall be to the right of the engine crankshaft axis line when

the airplane is upright, viewed from the rear). The fuel tank must not be enclosed. Notching into the wing is permissible if safety is not compromised.

d. The wing area shall be at least 300 square inches.

3. Procedure.

A kill does not end the match. Either or both competitors may score a kill in the same match. Not more than one (1) kill may be scored by one (1) competitor in a match. Once both strings have been cut, at a signal from the judge, both fliers must fly level and counterclockwise. *The fliers shall fly level and counterclockwise in such a manner as to avoid midair collisions, near misses, etc.*

4. Scoring.

A kill counts 100 points.

CONTROL LINE 1/2A COMBAT FOR EVENT 330

Control Line 1/2A Combat					
Engine Sizes (cubic inch)	Max Model Weight	Required Line Length	Events	Required Minimum Diameter of Two Lines	Pull Test
				Multi-Strand	
				2 Lines	
0.00-.0514	2 lbs	34'9"-35'3"	Low Performance 1/2A Combat	.012"	15 lbs
		41'9"-42'3"	Event 330		

1. General.

Applicability, equipment, purpose, rules, procedures, and judging are the same as CL Combat except as specified below.

2. Streamers.

Streamer length is 60". Width for regular event 330 is 3/4". For low performance, 1/2".

The string leader shall be four (4) to eight (8) pound test cotton, shall be marked with ink 48 inches from the knot, and shall extend beyond the ink mark 12 inches.

3. Contest Site.

Each Combat circle shall be laid out using three (3) concentric circles to provide a three (3) foot radius pilot's circle and a 40- to 50-foot radius safety zone.

4. Equipment.

Section 3.2. of the Control Line Combat rules concerning an engine restraining cable shall not apply in this event. Section 3.3. of the Control Line Combat rules concerning devices to stop the engine in a flyaway shall not apply to this event.

5. Low Performance:

1/2A combat requires a plain bearing engine with a suction fuel system and a speed limit of 60 MPH. This event shall be flown on 35' lines. All other 1/2A Combat will be flown on 42' lines.

6.

Engine starters are permitted in 1/2A combat.