# Table of Contents

**Official**

**Professional Race Pilots Association**

**Specifications and Rules**

**For**

**The Sport Biplane Class**

**March 1, 2003**

## 1. Definition of a Sport Biplane.

A Sport Biplane shall have two wings, the lower of the two having approximately 50% of the required wing area. The top wing shall be cabane or pylon mounted, sufficiently above the fuselage to identify it as a top wing. The aircraft shall have a horizontal stabilizer and rudder, both of which shall be mounted on the empennage aft of the trailing edge of the rearmost wing. The horizontal stabilizer must be of fixed incidence. The aircraft must be of single occupancy design. In determining eligibility for competition in the Sport Biplane class, due consideration will be given to the aircraft's adherence to a classic Sport Biplane configuration and appearance.

## 2. Engines

1. The engine must be four cycle with the propeller driven at crankshaft speed without gearing.

2. Any Lycoming engine or Superior Airparts engine, not to exceed 360 inches displacement , is allowed.

3. Either of the two engines mentioned in paragraph 2.2., or any combination of Lycoming or Superior Airparts components may be intermixed for use in assembling an engine not to exceed the dimensions of a stock Lycoming O-360 engine. Engine Components Incorporated cylinders are an authorized replacement part. If cylinders with angle valve combustion chambers are used, the engine will conform to stock specification, especially as regards compression ratio.

4. The fuel system will be limited to:

   A. Bendix Fuel Injection

   B. PS5C Pressure Carburetor

   C. Float type carburetor

   D. Ellison throttle body injection

   E. Airflow Performance (with positive fuel shutoff valve)

5. The oil sump/intake manifold may be modified or replaced.

6. Any stock or modified camshaft may be used.

7. No part of the engine may be changed in weight or dimension except for:

   A. Intake and exhaust ports may be polished or enlarged

   B. Shot peening of any part to increase service life is acceptable.

   C. Any rework or repair procedure is to be done in accordance with the appropriate Lycoming Service

Manual.

D. Minor alterations such as oil hole modification, piston ring type and size, knurling, dry lubing, and the use of different clearances is allowed.

8. Blower devices or superchargers are not allowed.

9. Any ignition system may be used, provided it does not cause radio interference: between other aircraft or between aircraft and the ground, excluding aircraft in which the ignition system is installed and the provided radio is not mandatory.

10. Engine retention cables are required. Minimum cable diameter shall be 3/16 inch.

## 3. Aircraft

All aircraft must be certified in either the "Standard", "Experimental","Racing","Exhibition", or"Aerobatic" category. If applicable, all flight test restrictions, as required by the F.A.A. must be satisfied prior to the initial technical inspection. All documentation, including current Airworthiness Certificate, Operating Limitations, and Weight and Balance are required. Registration, engine and aircraft logbooks must be made available to F.A.A. and PRPA officials upon request.

## 4. Propellers

1. Propellers must be fixed pitch in flight.

## 5. Wings

1. Wings must total a minimum of 75 square feet in area (to include the area displaced by the fuselage, flap area, fillets and stall strips).

2. Dimensionally, the span of the lower wing must be approximately 90% that of the upper wing.

3. Interplane struts must remain outboard between the wings, functional or not, and be at least 3/4" thick.

4. Flaps are permitted, but wing area is figured with flaps retracted.

## 6. Landing Gear

1. Landing gear must be non-retractable.

2. Tires must be 5.00 x 4 or larger and must be of aircraft quality. At least two wheels of the specified type and size must be used. The third wheel may be of any size but not retractable.

3. Brakes are compulsory. A steerable or castor type tail wheel is mandatory.

## 7. Vision

1. A field of vision must be provided of at least 270 degrees in the horizontal plane (45 degrees to the rear from the pilot's eyes on both sides of the aircraft), 140 degrees from the top of the cowl upward and aft including the area blocked by the top wing, 25 degrees from the pilot's eyes down to the top of the leading edge of the lower wing at the fuselage and 5 degrees down to the top of the cowl. Request for approval of minor obstructions in the field of vision must be accompanied by an accurate sketch or diagram.

2. Closed canopies may be used.

a. If a closed canopy is used, the pilot's vision must be as described in 7.1.

b. Any canopy used must have clear optics to provide the pilot with a clear view from the cockpit.

3. A wind screen is mandatory.

## 8. Cockpit Dimensions

1. Minimum inside dimensions:

   a. 36 inches in height as measured vertically in the level flight attitude from the bottom center of the seat to the top of the pilot's protective helmet.

   b. 20 inches wide as measured 20 inches above the bottom of the seat.

2. The cockpit must be designed for a pilot having a minimum weight of 170 pounds, fully dressed with a protective helmet and parachute. Adequate space for a parachute is mandatory.

## 9. Roll-over Structure

1. Substantial protection for the pilot, other than the vertical fin, must be provided either fore or aft of the cockpit.

## 10. Fuel and Fuel Tanks

1. The fuel tank must have a minimum capacity of 14 gallons.

2. Fuel required for a race need not exceed that required for one hour's flying.

3. Any standard aviation fuel may be used.

4. No additives, including nitrous oxide may be used.

5. Fuel used by a participant may be subject to testing at any time.

## 11. Parachutes

Currently packed parachutes are recommended for all flying.

## 12. Safety Equipment

1. Safety belts and shoulder harness are compulsory and must be mounted to the primary fuselage structure.

2. Fire retardant flight clothing and gloves are mandatory.

## 13. Protective Helmets

Protective helmets are optional, however; they are recommended.

## 14. Materials and Workmanship

The PRPA Tech/Safety Committee is empowered to refuse permission to fly, attempt to pass flight test requirements, or to qualify any aircraft that, in its opinion, is not up to reasonably safe standards in either materials, workmanship, detail design, or condition as a result of damage.

## 15.General Design

1. Aircraft with pilots in prone position will not be permitted. A reclining seatback is limited to 20 degrees from the vertical.

2. Center of gravity must fall within 12% and 25% of the mean aerodynamic chord of the wings unless the Tech/Safety Committee permits a specific deviation

## 16. Minimum Weight

Minimum allowable aircraft weight is 500 pounds.

## 17. Inspection

1. PRPA will furnish the equipment and personnel to inspect aircraft and engines as to their conformity with these specifications. No aircraft may practice, qualify or race prior to inspection.

2. Any aircraft and its engine may be subjected to inspection prior to, or after a race. Inspection will not interfere with a contestant's preparation for a race.

3. Alterations to aircraft or engines that are found to be contrary to these specifications will disqualify the aircraft. The aircraft owner or owners will be subject to an automatic suspension from PRPA sanctioned events for a period of two years.

4. Disposition of all technical infractions shall be determined by the Tech/Safety Committee and deemed final.

## 18. Foreign Entries

Aircraft of foreign registry must meet the airworthiness requirements for certification in the country in which the aircraft is registered.

## 19. Flight Requirements

1. Before attempting to pass flight requirements, entrants will be required to show certified testing time on their aircraft of at least 5 hours consisting of no less than 10 flights. Before being permitted on the race- course, the following maneuvers will be demonstrated to the satisfaction of the biplane check-out pilot.

A. Take-off into the wind at full throttle without veering more than 10 feet either side of a straight line on the ground.

B. Pull up from straight and level flight to a minimum 4G acceleration. Pull ups to be done above 1500' AGL and at or near the maximum speed for the aircraft.

C. Dive to 110% of the maximum level flight speed of the aircraft.

D. Demonstrate two rolls, one to the left and one to the right at least 1500' AGL without an appreciable loss of altitude.

E. Once cleared by the Tech/Safety Committee, demonstrate competence and consistency on the racecourse at full speed with no appreciable gain or loss of altitude in the turns.

F. Flight requirements may be met prior to attendance at a race if the pilot/builder will substantiate same by written affidavit to an official PRPA representative.

## 20. Pilot Requirements

1. Pilots must have had at least 500 hours Pilot in Command unless they can show certified time of 10 hours in the aircraft they propose to race for every 100 hours short of the 500 hours, but in no case, shall a pilot have less than 200 hours Pilot in Command, 50 of which must have been in the six months prior to the race in question. The pilot must hold, at least, a private pilot license and a third class medical certificate.

2. All pilots must have at least 10 hours in the aircraft to be flown in the race or another aircraft of identical design and have made at least 5 take-offs and landings within 90 days of a qualification attempt.

3. In the case of a pilot with no closed course racing experience, he must fly the aircraft to be used in the race at least 10 laps of the prescribed course at a speed approximating the speed at which he would be expected to qualify.

4. An alternate pilot may be specified by the entrant, but must have the same minimum time and race aircraft time as that required by the first pilot.

5. Pilots must be familiar with and abide by the rules and regulations governing all closed course racing as published by the sponsor and qualify for a current certificate of competence issued by the F.A.A. or a designee.

## 21. Race Requirements

1. Sport Biplane pilots are encouraged to participate in only PRPA sanctioned events.

2. All pilots and plane owners participating in PRPA sanctioned races are encouraged to be members of PRPA.

## 22. Changes in Rules and Procedures.

1. Between the end of race week and the following December 31, any current member may request a change in the rules of the class by written request, seconded by any other current member. An explanation of the request and the change will be distributed by the Rules Committee to each current member for a vote. A majority vote by return mail prior to the following January 31 will determine the status of the change.

2. All rule changes will become effective immediately, however; entrants will be allowed 18 months from the date of the vote tally to bring their aircraft into compliance with changes affecting aircraft and equipment.

3. No rule change proposals for the next year's National Championship Air Races will be accepted after December 31 of the prior year.

## 23. Fill-In Aircraft

Should the field of racers be short, fill-in aircraft may be used that do not comply with the engine/propeller or single occupancy design requirements of the sport biplane class. These aircraft must meet all other race requirements of the Sport Biplane Class. No fill-in aircraft will be allowed with engine rated at more than 200 horsepower. Fill-in aircraft must take finishing positions behind the slowest legal Sport Biplane. Fill-in aircraft will be awarded trophies, prize money and contingencies behind the slowest legal biplane instead of where their actual finishing position may have been. In the case of more than one fill-in aircraft, their positioning, trophies, and etc. relative to each other will be by race speed. Fill-in aircraft will not be accepted for competition until all legal entries are accepted by RARA.

## 24. Change of Aircraft

Should an experienced race pilot change into an aircraft that has already been qualified, he shall make a racehorse start, 10 laps around the racecourse, and satisfy any other requirements of the check-out pilot.

## 25. Two Place Aircraft

Two place aircraft may be used for training new pilots at race schools, race practice, pilot qualification, promotional flights or other activities authorized by the F.A.A. waiver.

## 26. Race Starting and Progression

1. Aircraft will be assigned to "medal groups" according to their qualifying speeds. Assuming that 24 entrants post qualifying speeds, the fastest 8 qualifiers go into medal group "Gold", the second fastest 8 go into medal group "Silver" and the remaining 8 into medal group "Bronze". Each entrant will remain within his medal group for the remainder of the week's racing.* In order to encourage qualifying speeds that are representative of an entrant's true potential, one half of the prize money will be awarded based on the qualifying speed.

2. Positioning for the first heat race in each medal group will be according to qualifying times, with the fastest qualifier on the inside of the first row, next fastest on his or her right, 3rd fastest completing that row on the right. The 2nd row will be comprised of the fourth fastest on the inside and 5th fastest on the outside. The 3rd row will be as the 1st row (fastest to slowest, inside to outside).

3. Positioning for subsequent heat races or the medal races will be according to finishing position in the previous race.

4. In the event of less than 24 entrants, grid configuration will be left to the discretion of the class president for reasons of safety or spectator appeal, however; fastest to slowest, front to back and inside to outside on the grid will be adhered to.

5. Any aircraft moving forward an appreciable amount after being positioned on the runway for start will be penalized by having 30 seconds added to his or her race time.

* Should an entrant drop out of competition, all competitors behind said entrant move up one position regardless of medal group placement.

## 27. Class Officers and Responsibilities

1. The Sport Biplane Class will be comprised of a President, Vice-president, Trustee-at-Large, a Treasurer, the Tech/Safety Committee, the Rules Committee, current members and the Executive Committee.

2. The President, Vice-president and Trustee-at-Large will manage operational issues and everyday business of the class. A minimum of two class members must be F.A.A. certified designees for biplane race checkouts. Any class member is eligible to conduct race schools, however; race experience, formation experience and total biplane flying experience are considered desirable pre-requisites.

3. The Treasurer will maintain the class accounting books, write checks on behalf of the class as directed by the class President and manage the fiscal affairs of the class.

4. The Tech/Safety Committee shall be responsible for determining that all aircraft are in compliance with class rules and are constructed and maintained in a manner suitable to withstand the rigors of biplane racing. Major discrepancies discovered by the Tech/Safety Committee will be brought to the immediate attention of the class officers for review and discussion, however; the final decision as to whether or not an aircraft is airworthy shall be left up to the Tech/Safety Committee.

5. The Rules Committee will consist of three current members, whose duty it will be to transform rules change proposals into ballots, disseminate them to all current class members and tabulate results. The Rules Committee will notify class officers of vote results. In the event of successful rules change proposals, they will also be responsible for issuing to each current member an appropriate revision to the PRPA rules by March 1 of each year.

6. Current members will consist of those who have participated in a PRPA event in the past three years. Members will nominate and vote on the appointment of class officers, Rules Committee members and Tech/Safety Committee members.

7. Executive Committee members shall be comprised of current or past members of the class, a stipulation being that in the case of current members, an agreement not to race during the term of office be made. Necessary replacements to this committee will be accomplished by election.

8. Term of office for the above described positions shall be four years with no limit on the number of terms an individual may serve. On election years, nominations for the above positions will be accepted until midnight on the Monday of race week. Elections will be held on the following day in order to allow incoming officers the opportunity to work with their predecessors to effect a safe and seamless transition from old to new.

## 28. Unsafe Flying

Reports by competitors of unsafe flying will be thoroughly investigated by the class officers. If findings dictate, a letter of admonition will be transmitted to the offending competitor. Receipt of two such letters in any three consecutive racing seasons will necessitate attendance at the annual pylon racing seminar("Rookie school") prior to any further participation in the activities of the Sport Biplane racing class.