T-6 Racing Association, Inc

Technical Specifications
2008

July 4, 2008 updated version

Technical Specification General Notes

This set of specifications is intended for use by T-6 Racing Association members in preparation of their aircraft for racing competition. These specifications seek to establish fair competition in T-6 racing and are subject to revision and interpretation by the Board of Directors. It is the intent of the Board of Directors to solicit input from the Class after the completion of each annual race to facilitate any changes or recommendations that are appropriate to improve the safety and the quality of racing. Any changes to the *Technical Specifications* of a race aircraft or the *Racing Rules and Procedures* shall be approved by simple majority of the eligible voting T-6 Racing Association members that responds within 21 days of receipt of said proposals. It is the intent of the Board that these rules are not to be changed during race week to avoid compromising safety or allowing personal interest to prevail over the Class.

The philosophy of the T-6 Racing Association is to retain the T-6 as a stock class while allowing mechanical ingenuity, within prescribed limits and in the spirit of competition. Each pilot/owner is responsible for the airworthiness of his/her own aircraft including compliance with applicable Federal Aviation regulations.

The T-6 Race Association does not make determination of airworthiness, but does make determination as to compliance with the following specifications to ensure fair racing.

These rules are established in conjunction with the Reno Air Racing Association's (RARA) Rules of Competition, and are approved by the current RARA Contest Committee. Therefore, any conflict between these rules and the RARA Rules of Competition will be presented by the President and all available Board of Directors of the T-6 Racing Association to the RARA Contest Committee for resolution. All rulings by the RARA Contest Committee and the Board of Directors of the T-6 Racing Association are final and are not subject to dispute.

This revision supersedes all previous specifications, memos, or understandings and will be in effect until revised in writing by the T-6 Racing Association, Inc., Board of Directors.

Definitions

As related to these specifications

Bondo Filler used to repair dents, imperfections, and skin lap joints as allowed.

Flush Mechanically adding or taking off metal or filler to smooth surface. Examples are countersunk screws and rivets.

Fill See bondo above, also any building up of a surface by adding of paint, primer or liquid filler that upon hardening could be shaped to desired configuration.

Ramp Boss Appointed by Board of Directors for a specific race. The Ramp Boss is responsible for any operational questions, protest, aircraft movement, and reports directly to the T-6 Racing Association Board of Directors and the Class President.

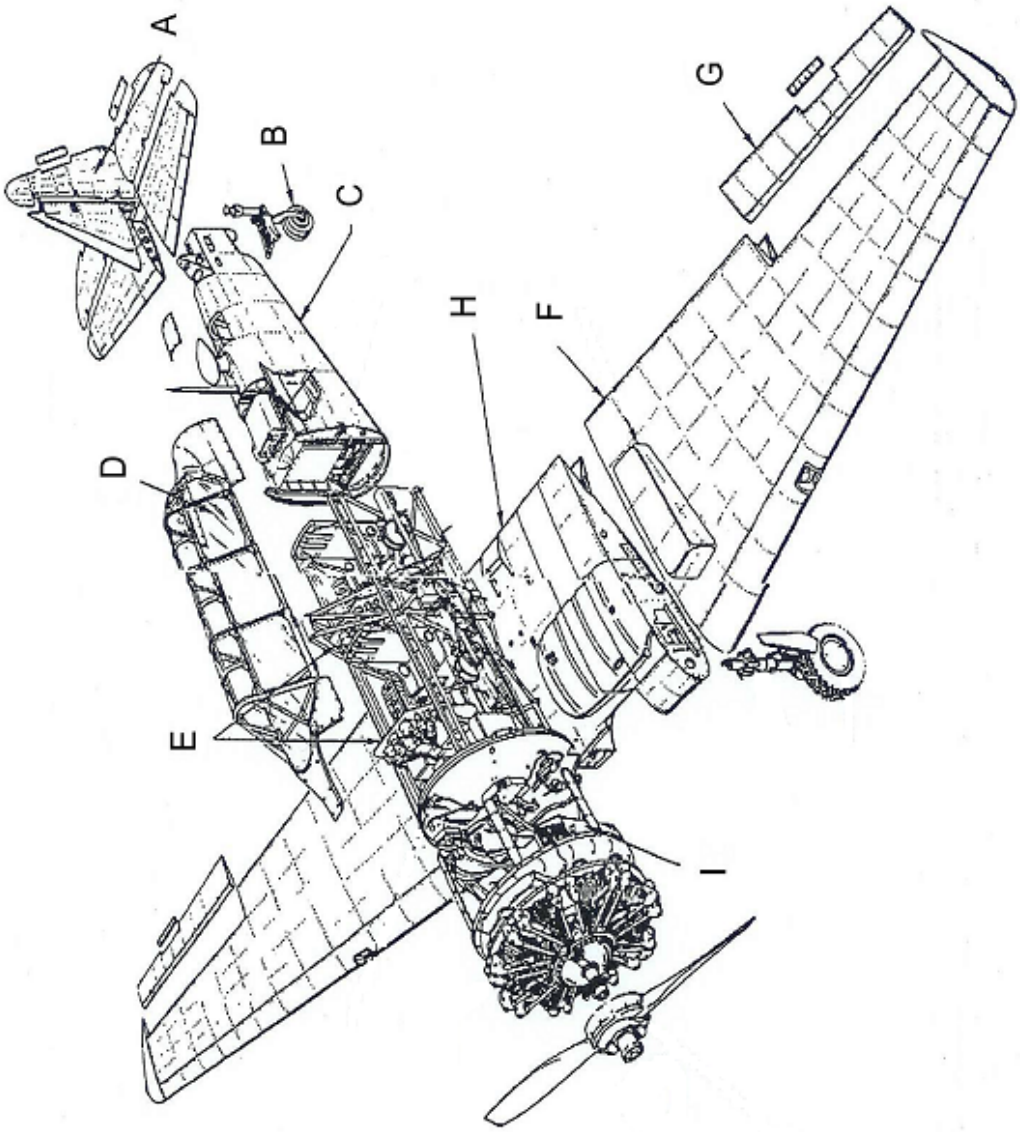
Tech Team Appointed by the Board of Directors for a specific race and reports to the T-6 Racing Association Board of Directors, Ramp Boss and the Class President.

Board of Directors

Members of the Board of Directors of the T-6 Racing Association, Inc. as described in more detail in the By-Laws of the T-6 Racing Association, Inc.

Voting Member

All current dues paying member holding a race number, (owner or pilot) and Honorary (Lifetime) members in accordance with the By-Laws of the T-6 Racing Association, Inc. - one race number, one vote.



Aircraft Eligibility

Technical Inspection

The Board of Directors will establish a T-6 Technical Inspection Committee (TIC) each year. This committee will consist of the T-6 Ramp Boss, Chief Technical Inspector, and any others designated by the Board of Directors. The TIC in conjunction with the Board of Directors will have final authority as to the eligibility of any aircraft for qualification or competition. The TIC will be available at the race site and be prepared to inspect aircraft no later two days prior to a racing event.

The interpretation of these Technical Specifications and any issues that are not addressed in these Technical Specifications are subject to the Board of Directors final determination.

No owner and/or pilot will attempt to enter an approved racecourse until the TIC has approved the aircraft. The TIC will present in writing a list of all approved aircraft to RARA or other appropriate race event coordinator, and the T-6 Racing Association Board of Directors. Only aircraft on that list will be allowed to enter an approved racecourse.

Each aircraft owner, or their designated representative, will present the following items at registration sign-in with RARA and will be made available to the TIC:

1. A valid airworthiness certificate, allowing for the intended operation (CFR 21.191),

2. A current registration certificate (CFR 21),

3. Statement of Airworthiness as required by FAA Flight Standards Handbook Bulletin for Airworthiness (HBAW) 00-17 of FAA Order 8300.10, Appendix 3 or a current annual/100 Hour/Progressive inspection statement/conditional inspection. A copy of this statement is acceptable if certificated by the inspecting Inspection Authorization (IA) showing Registration Number, TTAF, TTE, and date of inspection.

4. Experimental decal, if appropriate (CFR 45.23(b)).

5. FAA Form 337 for any major alterations to standard certificated aircraft or experimental aircraft that were previously certificated as Standard (CFR 43.1),

6. Appropriate operating limitations, if applicable,

7. Commercial Pilot certificate (Private Pilot, on an individually approved basis), and a current Medical Certificate (at least Third Class)

8. A Pilot that does not have a minimum of two years prior race experience must provide a current FAST card for both racing and Pylon Race School (PRS).

9. Other documents as required by RARA

General Technical Specifications:

1. Any model T-6, SNJ, BC-1, AT-6, or Harvard (excluding prototype designs) in current license is eligible if it conforms to the T-6 Racing Association approved Technical Specifications and modifications as set forth herein. Stock means that the parts, engine, configuration, etc. must have been stock on some type of the models. (This means no helicopter or tank engine parts. Example -- steel push rods, magnesium blower case, high voltage mags, high compression pistons are not allowed.) The applicable parts manual will be used to determine if parts or assembles are stock. Aircraft licensed Experimental must conform to Standard Category specifications and be able to meet the T-6 Class technical specifications. The applicable Type Data Certificate (TDC) and the appropriate Illustrated Parts Catalog (IPC) will be used to determine if parts or assemblies are

standard on the particular model of T-6 aircraft. FAA PMA parts are authorized unless as otherwise noted herein.

2. Seat belt and shoulder harness must be in the front seat. Seat belts must be metal to metal, quick release type.

3. Two-way VHF transceiver of current technology is required. An operable intercom system must be installed for any dual flight required for racing certification. The front microphone switch must be on either the throttle or stick.

4. Parachute at pilots' discretion (must have current pack).

5. Race numbers are issued based upon availability by the Secretary of the T-6 Racing Association. Race number must be approximately 30 inches high, 2.5 inches wide and contrasting in color. Numbers must be on both sides of plane and may also be on wings and meet RARA requirements for race number identification.

6. After completion of the technical inspection of an aircraft, all approved race aircraft will remain at the race site. Any modifications, component change, or alteration to the aircraft - made after said inspection - requires that a technical inspector be notified and approve said modification prior to reentering the racecourse.

7. A checklist to open up the necessary inspection panels will be furnished at race site on Saturday prior to inspections.

8. Taping of various areas completed in a professional and safe manner is permitted. No taping of the flap section is permitted. See sections D, H, and I.

9. Fuel samples may be taken at any time by the TIC to confirm compliance that permitted fuel is or has been used.

10. Any Board of Director or T-6 Class Officer must abstain and remove himself/herself in the event a protest or technical issue involves his or her aircraft or race team.

11. The blower wheel will be inspected by the TIC using all reasonable means to confirm that the configuration and dimensions of the blower wheel is Pratt part number 12788.

12. Internal sealing of the airframe is permitted. Example: lightening holes in flap wells and landing gear wells.

13. Exterior openings on the airframe may be sealed if accomplished in a professional manner, except where specifically disallowed herein.

14. Aircraft must weigh a minimum of 4000 pounds including pilot and 50 US gallons of fuel. Weighing of aircraft will be at the discretion of the Tech Team and or the Board of Directors.

15. All lights may be removed and flushed.

16. The engine shall be run on 100 low lead Avgas. No additives or injection permitted. All fuel must be dispensed from a common source at the race site.

17. Each aircraft will have a minimum of 50 US gallons fuel to start each race.

Pilot Requirements

The Board of Directors will establish a Pilot Qualification Committee (PQC) each year consisting of the President of the T-6 Racing Association and all designated Air Racing Check Pilots. No pilot will attempt to enter an approved racecourse until certified by the current PQC. The PQC will present, in writing, a list of all approved pilots to the FAA Representative at the race site.

Each pilot, prior to qualification or competition, must meet the following requirements:

1. All pilots and/or owners must be members of the T-6 Racing Association in good standing for the current year. Members in good standing are those members whose dues are paid timely each year prior to qualification. Dues will be presented to the T-6 Racing Association Secretary/Treasurer in cash or personal check.

2. All pilots must possess at least a Commercial Pilot Certificate[1].

3. All pilots must have logged a minimum of 500 hours Pilot-in-Command (PIC) time in a single-engine land airplane, and have logged a minimum of 40 hours in an SNJ, T-6, or Harvard, within the last 24 months prior to any racing event.

4. With emphasis on safety and proficiency, all pilots must satisfactorily demonstrate to the PQC their ability to perform the following, but not limited to:

    a. Formation flying skills -- re-joins, wing-tip, line-abreast, and breakout.

    b. Certain aerobatic maneuvers -- a roll in each direction without appreciable altitude loss and a left and right roll to inverted immediately followed by a recovery in the opposite direction without appreciable altitude loss.

    c. At least five consecutive satisfactory laps around the racecourse. The emphasis will be on -- flying the designated T-6 race course, low flying around pylons, pylon cuts, remaining inside the race course boundaries, and on the final lap abort the race course from race altitude demonstrating a successful simulated power-off landing on a designated runway.

[1] This rule may be waived by the RARA Director of Operations for foreign pilots. Pilots possessing only a Private Pilot Certificate must be approved on an individual basis by the PQC.

d. Successfully complete the RARA Pylon Racing Seminar within the last two years or have previously raced at Reno within the last three years.

e. Completion of either a written and oral examination of the safety race rules -- including but not limited to where and how to enter/exit the race course, safe passing techniques, proper radio terminology, emergency procedures, sportsmanship, and familiarity with all RARA Race Rules.

f. Have a FAST card unless the pilot has raced in the T-6 Class for a minimum of two previous years.

The Pilot Qualification Team will accept or reject the applicant pilots. The team's decision will be final.

Safety Requirements

1. All pilots will wear flame retardant clothing (F.R.C.) and gloves.
2. Helmets at pilot's discretion.
3. Parachutes at pilot's discretion. (Some events may require them.)

FIGURE "A" Tail Section

1. Rudder height must be a 79 inches
2. Horizontal stabilizer is 12.9 feet wide, with incidence of one degree
3. The vertical stabilizer off-set shall remain stock. This off-set is 1 degree, 45' left.
4. Front and top skin laps shall not be filled on vertical fin.
5. Rudder and elevator hinges may be faired in, except top rudder hinge.
6. Flush screws may be used on jackscrew inspection plates.
7. Rudder and elevator shall be stock size on all aircraft.

Figure "B" Tail Area

1. Tail fork may be 10 or 12.5 inch in size and the tire must be a minimum of 8.5 inches in diameter.

2. Tail strut must be a stock Glidon or Bendix.

3. Tail wheel strut shall extend fully while in flight.

4. Gap sealing of tail wheel strut is allowed.

Figure "C" Fuselage

1. Baggage door shall be an original stock size and dimensions. The top attach hinge may be flush screwed.

2. Basic fuselage part number 88-31001. Camera doors may be skinned over. All external antennas, lights, and static discharge wires may be removed and flushed.

3. Top inspection plate may have flush Dzus fasteners and radio racks may be removed.

4. All inspection plates may have flush screws.

5. Nothing shall be changed on rudder cable inspection doors.

6. Fuselage lift tube may be flushed.

7. Interior deck inside rear canopy (turtle deck) shall not be removed.

8. Any ballast used will be professionally and mechanically secured

Figure "D" Canopy

1. A one–piece Plexiglas windshield may be flush fit and must be a minimum of 1/4-inch thickness through out.

2. The canopy may be one-piece Plexiglas, clear or tinted. This may be flush routed and any or all-metal framing may be removed except for the leading and aft canopy edges.

3. SNJ-6 or AT-6F rear bubbles may be flush routed.

4. The front and rear canopy may be gap sealed but must remain movable the full length of the track. Temporary taping of the rear canopy is permitted at pilot's discretion. Objects that might obstruct the pilot's view are not allowed.

5. Canopy dimensions to be stock in size and circumference.

Figure "E" Cockpit

1. Fuel wobble pump assembly may be removed, all or part.

2. Front shoulder harness bar may be removed; however, shoulder harnesses are required.

3. To prevent inadvertent release, a pin or bolt must be installed on one of the front cockpit seat rails. Clamping devices are not acceptable.

4. The rear seat may be removed for racing. Pilot is responsible for a revised weight and balance.

5. Map cases, APU receptacle system, non-essential electrical components, hot and cold air ducts, camera mounts, and fire extinguisher may be removed from cockpit.

6. Rear instrument panel may be cut down to 5 instruments, 3-1/8", none alike. All five instruments must be attached to the appropriate source and be fully functional. Electric instruments are allowed. Each race aircraft will have in the front cockpit a minimum of the instruments required under FAR 91.205 for day VFR flight.
7.

8. Cockpit entry steps shall be installed and be original dimensions except width may be reduced as long as sufficient to support normal use

9. The fire extinguisher door may be flushed, or entire area re-skinned.

10. Rear turtle deck may be either "F" model or gunners hood.

11. Roll bar must be installed.

12. Right and left foot floor trays in the rear cockpit only may be removed from the aircraft.

13. Handgrip may be removed and flushed.

Figure "F" Wings

1. Outer wing panel, right and left, are part number 88-14200-93/92. Harvard wings are permitted.

2. Wing span is a minimum of 42 feet.

3. All navigation lights may be removed and flushed.

4. The forward span wise seam may be filled, fore and aft seams may be filled back to the bulb head rivets, and any dents on wing may be filled.

5. Wing tip may be attached with flush screws and entire seam filled. The filling shall not extend inboard more than 18" from the wing tip inboard edge. All rivets on wing tip may be flushed. Bondo may be used on the seam joining the two halves. Navigation lights may be flushed mounted in wing tip.

6. Landing lights and wire may be removed and flushed. Non-stock landing lights may be installed in the main wheel well or retract under wing.

7. All inspection plates on wing may be flushed.

8. The forward span wise (leading edge) seam on the bottom of the wing may be filled along the entire length. Jack pads may be flushed and filled.

9. The tie down rings may be removed and flushed. The rocket stress plates may be flushed. Dents on wing may be filled with Bondo.

10. Internal wiring may be removed along with guns and bomb mountings.

Figure "G" Flight Controls

1. Ailerons left and right are part number 84-16001 and -1. All dimensions will remain stock.

2. The gap must not be altered in any way. Trim tabs may have flush rivets.

Figure "H" Center Section

1. Wing walk material may be removed. Joints on wing bands may be flush screwed and wing band dents filled.

2. Gas caps may be flush style. Gas cap covers may be installed. Access to the fuel via the caps must be accessible to the Tec committee for fuel testing at any time during the event. No taping of fuel cap covers.

3. Landing gear pins must remain visible to pilot from cockpit.

4. Gear doors may have flush screws and Bondo.

5. Gas tank sump covers may be remade and flush screwed. Drains must work.

6. Gas tank stress plates may be flush screwed.

7. Center section flap may be secured in the up position IAW Army Service Letter.

8. Wheel covers shall be stock shape, metal, or transparent.

9. Brakes and tires at pilot's discretion; however, the tires must be of normal dimensions including height of the tire and the width measured at the outer wheel rim.

10. Wheel well seals are at pilots discretion

11. The spacers must be in place at the rear and front wing to fuselage attachment so the angle of incidence remains stock. The distance from the trailing edge to the screw head on the rail below the canopy must be 50" +/- ¼" including the bulge in the fuselage.

12. Fuselage faring strips on each side may be flush screwed.

Figure "I" Engine and Propeller

1. Prop governor shall be either Woodward or Hamilton Standard 1M12A or 1P12A or IM12G.

2. Air chamber assembly internal shoulders and corners may be modified. No internal enlargement permitted.

3. Filing of main air inlet box is permitted (1/8" radius max.) and entire inside may be polished smooth. Carb heat shall remain fully operational. No filler, Bondo or fiberglass material inside this unit. No ramps in air box.

4. Carburetor is a NAY-91. Must be stock. No enlargements allowed to Venturis. Jetting of the carburetor is at pilots discretion

5. Venturis must be 2.750 in diameter with a +/- of .025" I. D.

6. Only 5 engine primers shall be installed.

7. Oil cooler shutters may be removed. Oil cooler, brass or aluminum, 8" or 9" style are permitted.

8. Any method of sealing cooler to duct is acceptable, no internal enlargements allowed. No filler allowed.

9. The engine thrust line shall not be changed.

10. The engine shall be a Pratt & Whitney R-1340 AN-1 [un-geared] or Canadian S3H-1 version with a 10:1 blower and 6:1 compression ratio. All engine accessories must be operational including the starter, generator/alternator, and hydraulic pump. Generator/alternator shall be 12 or 24 volt. The starter shall be #80 or Jack & Heintz JH-6. Magnetos shall be Bosch no. SB9RU3 or Bendix no. SB9RN. No exceptions. Blower maybe polished. Timing and spark plugs optional.

11. Polishing the rear case may not exceed the guidelines in Pratt & Whitney Service Bulletin 1708. Polishing, blending, or rework of the impeller may not exceed the limits in Pratt & Whitney Service Bulletin 621.

12. FAA certified battery, 12 or 24 volt, sufficient to start the aircraft.

13. If converted to an alternator -- generator and associated equipment may be removed.

14. Any other unnecessary, unused wire, hose, fuel line, monitoring lines and clamps will be removed.

15. Engine cowling must have a minimum circumference at its widest point of 166 inches. Basic cowl framework must be NAA. All rivets and screws may be flush and all exterior seams filled.

16. Gun dish may be removed.

17. Upper accessory cowl may be remade completely flush.

18. Cowl assembly NAA 88-31027 or 66-31027 must have an originally manufactured stock scoop. No dimensional changes are permitted. Starter access door and crank position may be flushed. No filler shall be used inside the cowling air scoop.

19. Lower right and left accessory cowl may have filler used on seams and patches.

20. The front cowl rear formers may be aluminum.

21. All cowl seams and openings on the outside may be filled and taped.
22. Propeller must a Hamilton Standard 2 blade hub number 12D40 with blades 6101A-12 through 6101A-20. Diameter not less than 100” and not more than 109”. Relative twist at pilot owner’s discretion. Counter weights, stop screws, and nuts must be installed.

23. Shielding in an around carburetor area to be stock and in place. Dish pan behind the exhaust will be stock and not modified to have non-stock openings.

24. No wrapping of the entire exhaust system. Use of adequate material to ensure the joining of exhaust sections is permissible.

25. Exhaust coatings are specifically allowed to prolong the life of the exhaust system.

26. Induction wrapping is permitted if performed in a professional and safe manner.

27. Current technology engine monitoring equipment that is commercially available to all racers is allowed to increase safety.

28. CAM lift and duration, and dimensions shall be stock in accordance with the Pratt and Whitney specifications.

29. Diffuser vanes may be polished and ground to pilot's preference; no addition of any materials may be used.

30. Vernier controls are permitted if the original stock control rods excreta are present and operational.

31. Fiberglass parts panels and or replacement parts with PMA are permitted unless specifically disallowed by the TIC and or BOD.

32. No coatings are allowed in the blower section

33. Sealing between the cylinder cooling vanes and engine baffling is permitted.

34. With the intention of preserving and maintaining a compression ratio close to stock, the TIC shall determine a standard for piston height and travel within the cylinder based on standard overhaul practices and develop a method to measure this standard approximately a .040 of an inch variance will be permitted in piston height and travel.

35. No filler will be used inside the any of the air induction system components

Prohibited Items

1. Streamline fairings. Not Stock

2. Steel push rods, magnesium blower section, tank and helicopter engine parts, non-stock impeller, and other internal engine parts.

3. Gap stripping flight controls.

4. Any modification that would alter area or general configuration of a T-6.

5. Any modification not specifically approved in the current T-6 class specs or by the Board of Directors and the Technical Inspection Team.

6. Spinners of any type are not permitted for racing.

7. Hydromatic propeller hub.

8. Magnetos that are not original type certificate for T-6's

9. Modification of carburetor butterfly and corresponding butterfly shaft beyond +/- .010 of an inch of polishing from a butterfly width of 155 thousands of an inch and a shaft width of 497 thousands of an inch.