ANNEX 5 Y
CLASS F3T – PYLON RACING MODELS WITH LIMITED TECHNOLOGY

5.W ***Intention:*** *This class is defined for pylon racing at a limited level of technology in aircraft aerodynamic design, aircraft construction and power plant with maximum safety.*

Rules strategy: *The technical rules have the intention that speeds will not increase substantially over the years in order to maintain safety and controllability of model pylon racing aircraft. This is achieved by approved models of a semi scale type, standard, unmodified engines, definition of propeller and dimensions and limitation of exhaust systems.*

The F3X rules and Annexes are basically identical to the F3D rules and Annexes (FAI Sporting Code section 4 – Aeromodelling Volume F3D Radio Controlled Pylon Racing) except for the technical specification of the models (5.W.3 – 5.W.10 and Annex 5.W.A1).

5.W.1 Definition of Radio Control Pylon Racing Model Aircraft:

See 5.2.1

5.W.2 Technical Specifications of Pylon Racing Model Aircraft.

See 5.2.2

a.) The model aircraft must be of conventional design with forward wing and an aft empennage and shall be a recognizable replica of a full-scale, human-carrying, propeller-driven aircraft, that either raced in or was built for close course or cross country racing or a speed record attempt.
Only models that have been approved by a committee of 3 specialists, nominated in each NAC, will be allowed to race.
Approval procedure: All designs, past and future inclusive, shall not be entered in competition until three (3) accurate views with measurements of the model have been submitted to the F3X committee and approved. Such approval shall be published on the CIAM web site. In the case of unusual or little known designs, the designer shall produce documentation to clarify that such a design did exist. A model shall be considered eligible for competition if it meets all dimensional requirements of these rules and, in addition, does not vary significantly from the approved three-views or photos of the same design.

5.W.3 Weight

Weight, less fuel but including all equipment necessary for flight, shall be at least 1800 g and not more than 2200 g. If ballast is used it must be permanently and safely affixed.

5.W.4 Fuselage

5.W.4.1. Depth and width

Fuselage depth will be Minimum 125 mm at its deepest point; except that full-scale prototypes with belly-mounted radiators shall have a fuselage depth of at least 150 mm, if the belly mounted radiator is used for the depth of the fuselage. Depth includes the radiator or belly scoop (if any) and the windshield canopy, pilot's head, or headrest, but does not include tail surfaces, dorsal or sub fins, tail skids, or non-scale protuberances.
The fuselage shall have a minimum width of 76 mm, the measurement to be of the fuselage body and to exclude any fins, attachments or spacers. Width and depth points need not to coïncide .

5.W.4.2 Cross-sectional shape and features:

At some point the fuselage will have a minimum cross sectional area of 80 cm² excluding fillets and cheeck cowls and competitors shall provide templates to prove this. Fillets are not considered part of the fuselage or lifting surfaces.

(a) Profile representations of any significant feature of the full-scale prototype are prohibited. Cross-sectional contours at the height and width measurements and at stations determining the likeness to the full-scale prototype shall maintain the integrity of the contours in the full-scale prototype. The only exception permitted shall be in the engine compartment for maintenance purposes.

(b) Cockpit, cheek cowls, canopy, and belly scoop, if any, must be evident and capable of enclosing a dummy pilots head 32 mm from the chin to the top of the head. The cockpit needs not to be transparent and a dummy pilot´s head need not be fitted.

(c) The front end of the fuselage shall be configured so that the engine head and cylinder protrude on all sides at least 19 mm, not including the glow plug and the exhaust system is fully exposed for its entire length. However, the fuselage may incorporate a shallow channel, dimple or trough to provide clearance for the exhaust system. In addition, the access hole for the engine crankcase and mounting lugs may be covered with a piece of fiberglass, Mylar, or other stiff material that restores the original contours of the fuselage in that area.

5.W.5 Lifting Surfaces

5.W.5.1. Area of Surfaces

Total projected area of the lifting surfaces (wing and horizontal tail combined) shall be a minimum of 25.8 dm^2. No delta or flying wing type aircraft are permitted

5.W.5.2 Wing Span

The maximum wing span shall be 1425 mm.

5.W.5.3 Wing Thickness

Wing thickness of the wing shall be at least 22 mm. Thickness shall progress uniformly in a straight line or convex taper from root to tip; except that, if the full-scale prototype has a different progression, the progression on the model may be similar. The wing taper, in addition to other distinctive design features, is subject to the design approval requirements.

5.W.6 Engine(s)

Engine(s) must be of the single cylinder reciprocating piston type, with a maximum total swept volume of 6.60 cm^3. Propellers must rotate at the speed of the crankshaft. Engine shall have only one front intake and one side exhaust. Only commercially available engines are allowed of which a minimum number of 25 were built.

Engine air intake cross sectional area is limited to 114 mm^2 (12 mm diameter in case of a circular shape)

No modifications to the following parts of engine are allowed:

- crankcase,
- cylinder,
- cylinder head,
- piston, conrod,
- crankshaft

5.W.7 Exhaust system:

(a) General description: The engine shall be equipped with an expansion chamber muffler, zero-boost muffler, or tuned muffler as provided by the manufacturer for the engine being used, and having a single exhaust outlet with a maximum outlet area of 40.2 square millimetres (equivalent to the area of a round hole measuring 7.15 mm diameter).

(b) Inner configuration or tuned mufflers: A tuned muffler used in this event shall have only one internal part, a straight tube or extractor of the type commonly known as a “mini-pipe”. The mini-pipe shall have a constant, circular cross section and constant inside and outside diameter, with the following exception: the sidewall of the tube may be thickened not to exceed 2 mm wall thickness, within 12.7 mm of the front end of the mini-pipe where it attaches to the header.

(c) Outside dimensions: The distance from the centre of the piston to the centreline of the muffler shall not exceed 70 mm. The overall length of the muffler shall not exceed 185 mm, measured from the front of the header to the back of the exhaust outlet. The outside diameter shall not exceed 45 mm and both the inside and outside diameter of the outside shell of the muffler shall remain constant for at least 75 mm.

(d) Modifications: No modifications to the muffler, as provided by the manufacturer, are permitted except that the muffler may be tapped for a pressure fitting to supply pressure to the fuel system.

5.W.8 Fuel pressure

If the tank is pressurized, only the pressure from the silencer is permitted.

5.W.9 Propellers and spinners

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5.W.9.1 Propellers shall be fixed, with two (2) fixed-pitch blades of equal length, area, and shape. Composite resin continuous fibre construction propellers and metal propellers are not allowed.

Material:
Either wood or a chopped carbon fiber filled injection-molded compound with material and physical properties equivalent or exceeding that of Ticona Celstran PA6-CF35-15. These material properties, which shall include tensile strength and other industry standard properties, must be equivalent to the above product for temperatures ranging from 30 to 150 degrees Fahrenheit. Substitutions of polymers that fall outside these specifications are not allowed.
Wood propellers may be modified from a commercial product or can be home made . A wood propeller shall be made from a single piece of wood and may be finished with a clear coating for purposes of waterproofing or balancing only.

Dimensions:

Wooden propellers: No limits

Injection Molded propellers.
Only stock propellers which are commercially available shall be used.
The propeller shall have a minimum diameter of 7.4" (188 mm).
The type and dimensions must be indicated on the propeller by the manufacturer. The recommended rpm limit for this type as given by the manufacturer must not be exceeded during flights.
Eligibility for competition: A propeller once approved shall be eligible for competition so long as it remains commercially available.

Changes to the propeller blades are not permitted, except for:
- **a.** one blade may be sanded on the top (front) side only for balancing.
- **b.** One side of the hub may be sanded for balancing.
- **c.** The shaft hole may be enlarged, but only as much as necessary to fit the engine crankshaft. The enlarged hole shall be concentric with the original hole.
- **d.** Edges and tips may be sanded, but only as much as necessary to remove sharp moulding flash.

`5.W.9.2 A rounded nose spinner of at least 25 mm diameter, with a nose radius of not less than 5 mm (ABR B.19.4) must be fitted. The spinner shall be made of metal only.

5.W.10 Landing gear.

1) Location and size: The landing gear shall be fixed and shall resemble that of the full-scale prototype aircraft as to location on the airframe and the number of wheels used. At least two (2) of the wheels shall have a diameter of at least 2-1/4 inches.

2) Streamlining: Wheel pants, wheel spats, or strut fairings are not required, and are permitted only if they were used on the full-scale prototype.

Only non retractable landing gears are permitted.

A tail skid may be used in lieu of a tail wheel. A positive means of steering on the ground shall be provided; rudder control is acceptable.

5.W.11 Shut-off

See 5.2.9

5.W.12 Fuel

c. Fuel. The fuel shall be supplied by the organizer of the competition. Fuel specification see 5.2.15 which is only 80:20 acc. To FAI

5.W.13 Technical checks and safety requirements

See 5.2.11

5.W.14 Competitors

See 5.2.12

5.W.15 Helmets

See 5.2.13

5.W.16 Transmitter and frequency check

See 5.2.14

5.W.17 Race Course, Distance and Number of Rounds

See 5.2.16

5.W.18 Race from Start to Finish

See 5.2.17

5.W.19 Timekeeping and Judging

See 5.2.18

5.W.20 Infringements and Penalties

See 5.2.19

5.W.21 Scoring and Classification

See 5.2.20

Note: 5.2.20.2 does not apply to F3T.

Annexes

The following F3D annexes also apply to F3T

ANNEX 5Q - GUIDELINES FOR AIRFIELD LAY-OUT,

ANNEX 5R - GUIDELINES FOR DUTIES OF PERSONNEL

ANNEX 5S - GUIDELINES FOR TECHNICAL EQUIPMENT

ANNEX 5T - GUIDELINES FOR DRAW OF RACES

ANNEX 5U - GUIDELINES FOR PRACTICE FLYING

ANNEX 5V - GUIDELINES FOR ORGANISERS

Note: Within the annexes, references to World and Continental Championships do not apply to F3T.