

# Australian Pylon Rules!

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## **5.1 AUSTRALIAN PYLON RULES:**

### **5.1.1. SAFETY & GENERAL PYLON RULES:**

#### **5.1.1.1. Safety Headgear:**

All officials on the racecourse and all competitors must wear a crash helmet with a chinstrap.

#### **5.1.1.2. Model Aircraft Airworthiness:**

The Contest Director has the right to request any competitor to make a flight to demonstrate the airworthiness of his model aircraft and/or ability to fly the airplane around the course. If during the race, the Contest Director considers any model aircraft to be flying erratically, dangerously, or so low as to endanger Course Officials, he may disqualify the competitor from that heat or from all heats and requires the model aircraft to be landed as soon as practicable. Persistent flying below the top of the pylons may be considered dangerous.

#### **5.1.1.3 Racecourse Safety:**

The racecourse specification may be modified in the interest of safety or to suit field conditions if safety is not compromised.

#### **5.1.1.4 Builder Of The Model Aircraft**

This is not applicable to Australian Pylon Classes.

#### **5.1.1.5 Ballast**

If used to balance the Model Aircraft - it must be permanently and safely affixed.

#### **5.1.1.6 Fuel**

The organisers will supply fuel to a standard formula for glow plug and spark ignition motors. Its composition shall be 80% methanol, 20% castor oil – unless it is specified otherwise, in the Pylon Class Rules.

#### **5.1.1.7 Jettisoning**

The loss of any part of the model aircraft after the starting signal (flag drop or light signal) and before the engine stops disqualifies the model aircraft for that flight, except as a result of a collision - if a rerun condition applies.

#### **5.1.1.8. Engine Shutdown:**

The engine must be able to be stopped within 5 seconds of a starter's instruction to do so. (In Half A the requirement is within 20 seconds). If this is not done that heat score of the competitor is recorded as 200 points.

#### **5.1.1.9. Aircraft Collisions:**

After the starting signal (flag drop or light signal) is given, any contact between model aircraft shall be considered a collision and the model aircraft involved must land as soon

as it is safe to do so. The Contest Director is required to give such competitors a second opportunity to record a score in that round. Provided that in his opinion the aircraft is still airworthy or the competitor has an airworthy reserve model aircraft. The Competitor will not be awarded a rerun if the collision occurred after the 10 laps have been completed and the competitor has received an official score.

#### **5.1.1.10. Timing Malfunction**

In the event of an official's error, or a malfunction of the timing, lap counting, signaling or other such equipment which is the responsibility of the organizers, the competitor(s) affected by such malfunction shall be granted a re-run of that round.

#### **5.1.1.11. Model Aircraft Identification**

The pilot's FAI number must be permanently displayed in a prominent place on the outside of the aircraft. The lettering must be a minimum of 25mm high.

#### **5.1.1.12. Landing Gear**

A positive means of steering on the ground shall be provided - Rudder is acceptable. Steering on the ground is not required for Half A class.

The landing gear must be attached in a permanent manner to the Model Aircraft so as to permit normal take off and landings.

#### **5.1.1.13 Pylon Construction**

Pylons must be brightly coloured and should have a Minimum Height of 4m and not exceed 5m in Height.

#### **5.1.1.14 PROTESTS AND APPEALS AT PYLON EVENTS (National**

**Championships are covered by 2-12 1.3)**

1. The competitor must advise the Starter about any Appeal or protest prior to submitting his complaint to the Contest Director (CD).
2. If the appeal is a simple problem regarding general matters relating to a heat that has just been run – eg signaling faults etc. The protest shall be resolved via communication between the starter and the CD. The competitor will then be notified by either the starter or CD regarding the outcome of his appeal.
3. If the protestor is still dissatisfied he may protest orally to the CD within 15 minutes of the incident
9. CD's action following Appeals:
  - ? dismiss the protest
  - ? award a re-run to a competitor
  - ? award a rerun of the heat
  - ? cancel a round

- ? order any event to be re-run
- ? Award the penalty that is applicable as defined in the pylon rules.
- ? Make an announcement to all persons concerned by the decision.

#### 5.1.1.15 METHOD OF TEAM SELECTION FOR PYLON CLASSES AT INTERNATIONAL COMPETITIONS.

##### 5.1.1.15.1 Purpose

The MAAA team selection trials procedure recommends that only one Australian team selection trial be conducted to select the Australian team. However they are allowing that individual recognised National Special Interest Groups (NSIG), or MAAA Technical Sub-committee if there is no NSIG, may decide on any selection process method that they prefer provided they obtain permission from the MAAA.

For approval to run multiple trials for a specific World Championships, AMPRA shall apply in writing to the MAAA Executive. The application shall indicate the reason(s) for seeking the change, the selection process to be used, and the approximate dates and in which States the multiple trials are to be run.

An exemption to run multiple team trials is only applicable to the conduct of the team trial process for one championship. A new application for multiple team trials is required for each World Championship.

##### 5.1.1.15.2 Number of Trials

Each competitor shall have the option of qualifying in up to 3 selection events, (with a minimum of 2 events required).

The 3 selection events should normally be;

- o The AMPRA championships
- o The Nationals
- o The State championships in the competitors home state.

If required, alternate event(s) may be nominated by the AMPRA committee.

If a competitor does not attend the state championships in their resident state or such event is not run, they may nominate an alternate state championship event. If doing so, they must notify the AMPRA committee in writing at least 1 week prior to the running of their home state champs if these State Champs are to be conducted and at least one week prior to an alternative State Champs.

##### 5.1.1.15.3 Date of Team Selection Trial

The MAAA Secretary will advise all disciplines of the expected dates for all World Championship events.

The trials should be conducted no earlier than 18 months or later than 6 months before the international competition.

The final decision on the actual location and dates of the team trials will be decided by the AMPRA committee.

#### **5.1.1.15.4 Venue of Team Trial and organiser of the trial**

The AMPRA committee shall have the overall responsibility for the selection of the team. The venue of the team trials and actual organisers for the trials are to be approved by the AMPRA committee.

#### **5.1.1.15.5 Notification of Team Trials.**

All known trial dates are to be officially given to the executive of the MAAA no later than 6 months before the trial is held. Details of date, venue, accommodation and a plan of location should be circulated at least three months prior to the trial. The MAAA executive will assist in this matter.

#### **5.1.1.15.6 Eligibility to participate in a trial.**

All MAAA Financial Affiliate members are entitled to enter W/C Team Selection Trials, even if they are not a member of AMPRA. If successful, such team members will also be entitled to nominal support from the MAAA for uniforms and entry fee only

#### **5.1.1.15.7 Conduct of team trial**

A minimum of 5 rounds of racing shall be conducted at selection events or the event will not be deemed to have been a team trial.

The first 5 placing competitors for all team selection events must have their model(s) processed. Documented proof of this processing shall be returned to the AMPRA committee by the CD of the event. Failure to provide this documented proof shall result in the scores for this event not being counted. The recommended format for this document will be available from the AMPRA committee.

#### **5.1.1.15.8 Team Selection**

At each of the team selection events attended by a competitor, each competitor's official scores are added together then averaged to give the average score for the event. [*The average is the sum of each competitor's official score divided by the number of rounds which count in the final score and not by the number of rounds flown*] The team selection ranking for each competitor will be based on the 2 lowest scores of the selection events attended. The average of these 2 scores will be used to select the team with the lowest average scores of the top three competitors to be offered a place on the team. If a competitor does not wish to be on the team the next available competitor with the lowest score will be offered a place.

#### **5.1.1.15.9 Cancellation of a Team Trial**

When weather conditions are such that the team trial is abandoned then another team trial can be organised. If it is likely that time may become a factor then the requirement that a trial must be held no later than 6 months before a W/C can be waived. The MAAA will be duly notified of this and the proposed team trial details.

#### **5.1.1.15.10 Acceptance of a Place on an International Team.**

A person offered a position in the team shall advise AMPRA, in writing, no later than the date specified by AMPRA if they wish to accept the offer. Failure to notify AMPRA in writing of their intention by the date specified shall be considered a rejection of the offer. The team place shall then be offered to the next eligible person who shall be advised a date to notify AMPRA of their acceptance or rejection of the offer.

AMPRA shall advise the MAAA secretary of the Team Members as soon as the final team is selected.

The MAAA Secretary shall arrange payment of the MAAA support, to the extent approved by the Council, to the Team Members. The payment of the MAAA support shall be made after documented proof of the payment of the entry fees has been received by the MAAA Secretary. It is the responsibility of the Team Manager, or if is none has been appointed, AMPRA, to arrange the payment of the entry fees.

#### **5.1.1.15.11 Rules**

AMPRA will decide in conjunction with the F3D Technical Sub Committee the rules that will apply at all trials. Normally the rules used at any Australian team trial will be the pylon rules that are written in the Australian rules book.

If AMPRA is aware of any rules changes that could affect the Australian team they have the right to include or exclude them in the team trials.

## **5.2. RACE ORGANIZATION:**

### **5.2.1. OPERATION OF THE RACE**

#### **5.2.1.1. Flight timers and lap counters:**

Each competitor shall be assigned a timer for each heat. This official will time the competitor's aircraft for the required ten laps. In doing so he will count the laps flown, and signal the completion of the race. He will keep the recorded time on his electronic stopwatch until the time has been entered on the score sheet.

#### **5.2.1.2 Caller's Responsibilities:**

The caller is required to launch the Pilot's model aircraft – then direct the Pilot throughout the race – and advise the Pilot when his race is finished

#### **5.2.1.3. No1 Signalers:**

The number 1 pylon shall have one pylon judge and an official signaler for each competitor in the heat. Each signaler will operate a light of a distinctive color that is located at #1 pylon.

The signalers will have their lights off as the aircraft reach midcourse between #3 and #1 pylons, or earlier. At the instant the model aircraft draws level with the #1 pylon the signaler will switch his light on.

If a Model Aircraft turns short before reaching the pylon – the No1 signaler will not switch on his light.

The No1 Signalers will award a side line cut to any person who flies behind the No1 Signaling cage. However they will switch on the light only when they are sure that the contestant has completed the full distance to the No1 Pylon.

#### **5.2.1.4 Side Line Judge:**

The Side Line Judge will record as an infringement, any over flight of the sideline during or after the race.

The judges for #2 and #3 pylons will record any cut pylon infringements during the race. At the end of each race the Sideline and Pylon Judges will inform the timing official of any infringement by any competitor.

#### **5.2.1.5. Race Starter Responsibilities:**

The Race Starter is in charge of each heat; the starter will ensure that all competitors and Race Officials are ready to commence. The starter will arrange for each model aircraft to be identified by one signaler before the start of any heat. A radio operation check from each competitor will be made prior to starting engine(s).

The race starter will notify all competitors when the one minute countdown has commenced, and ensure that no engines are started prior to this advice.

### **5.2.2 CONDUCT OF THE RACE:**

#### **5.2.2.1. Model Aircraft per Heat:**

A maximum of 4 model aircraft per heat will be allowed.

#### **5.2.2.2. Starting Positions:**

Starting positions in all races will be allocated by the starter - with the #1 position being closest to #2 pylon. Model aircraft will be released from the starting line on the starting signal (flag drop or light signal) at a minimum of one-second intervals with timing commencing at the starting signal for that particular model aircraft.

Starting positions will change after each round –with the pilot moving to the next position on the start line.

#### **5.2.2.3. Heat Format:**

Heats shall be arranged in accordance with the radio frequencies in use to permit simultaneous flights.

**5.2.2.4. Starting Rules:**

The race starts at the start-finish line. All take-offs will be ROG, no mechanical device will be used to assist the aircraft, but hand pushing is permitted. (Hand Launch is allowed in Half A).

**5.2.2.5. Race Direction:**

All laps are to be flown counter-clockwise with turns to the left.

**5.2.2.6 Starting Time Duration:**

After the starter has announced that the one minute count down has commenced, the competitors may start and tune their engines.

After that minute the racing will commence – at flag fall or light signal.

A competitor whose engine is not running at the end of the 1-minute period will be disqualified from the heat. No competitor shall be permitted to take off once the first model aircraft has passed the start/finish line heading from #1 to #2 pylon on the first lap, and no time shall be given him for that heat.

**5.2.2.7. Duration of Race:**

The race is terminated at the start-finish line after ten 10 laps have been completed. Those who have not completed the ten laps will get a 200 points score – except if they have been granted a rerun.

At the completion of the 10 laps the pilot must immediately remove his aircraft from the course. The pilot shall land his aircraft promptly if instructed by the Starter.

**5.2.2.8. Early Release of Model Aircraft:**

A penalty will be incurred if the competitor releases the model aircraft before the drop of the starter's flag or starting signal.

**5.2.2.9. Model Aircraft Obstructing Normal Take Off:**

If another competitor impedes the normal take off of a Model Aircraft. The caller who is about to launch a Model Aircraft can abort his take off if he considers that there is a danger of hitting the Model Aircraft that caused the obstruction. He then must inform the Starter what happened. If the starter agrees that the aborted take off was valid, he will grant that competitor a re-run of that round.

**5.2.2.10. Pilots Helpers (Callers):**

Each competitor must have one helper (For Safety Reasons) in each race and the helper may release the model aircraft at the start and give the pilot verbal information regarding the flying course of his model aircraft and official signals.

No more than one helper (Caller) is allowed per pilot – with the exception of physically disabled Pilots as Detailed in these rules.

The pilot or caller of one team may act as the caller in other teams. However, more than one team may not use the same aircraft, nor roles be interchanged in a team using the same aircraft.

Any award will be made jointly to team members. (A team entry is only applicable to the "AI" class).

**5.2.2.11. Physically Disabled Pilots:**

An extra helper is permitted to assist where the competitor is physically disabled, for example, paraplegic. This helper is not eligible for a team award nor is he required to pay an entry fee (If Applicable) but is required to be a member of a MAAA affiliated club.

**5.2.2.12. Electronic Pilot Assistance:**

Electronic communication with the pilot is prohibited.

**5.2.3. SCORING**

**5.2.3.1. Timing of Model Aircraft:**

The flight of each model aircraft shall be timed by a lap counter/timekeeper with a timing device measuring to at least 1/100th of a second. Timing shall start when the starting signal is given to the individual competitor. The lap counter/timekeeper stops his timing device after the competitor has completed ten laps.

At the completion of each heat, the elapsed time from the timing devices is recorded on the Competitors Score Sheet.

The pylon and sideline judges will notify the Scorer the aircraft that have infringed. The Scorer will then record the total number of infringements for each competitor on his score sheet.

The score sheets are then processed by a Scorer who will:

- a) If one infringement was incurred, add 1/10th of the flyer's time for ten laps to give the corrected time;
- b) If two or more infringements were incurred, cancel the flight thereby resulting in a 200 point score;
- c) Round the competitor's corrected time to the nearest 1/10th of a second.

**5.2.3.2. Allocation of Points Score:**

Points shall be awarded after each race as follows: The competitor's score is his corrected time in seconds to the first decimal place. If the competitor fails to complete his flight or is disqualified the score shall be 200.

**5.2.3.3. Determination of Event Winner:**

The winner of the event is the competitor who has accumulated the lowest score after the conclusion of all heats. If four or more rounds are flown, each competitor's worst score shall be discarded. If nine or more rounds are flown, each competitor's worst (highest) two scores shall be discarded.

**5.2.3.4. Procedure relating to Event Ties:**

If the time permits and there is no frequency conflict, ties shall be broken by a fly off race. Otherwise, the best single race score shall be considered in resolving a tie.

## 5.1. AUSTRALIAN PYLON CLASSES:

### 5.3.1. FORMULA AUSTRALIA ONE (FA1) PYLON RULES (Modified F3D):

#### 5.3.1.1. Definition of Formula Australia One (FA1) Model aircraft:

This is a Model Aircraft, which the propulsion energy is provided by a piston type engine. Lift is obtained by aerodynamic forces acting on the supporting surfaces, which except for the control areas must remain, fixed in flight.

The model aircraft must be of conventional design with forward wing and an aft empennage with the general lines of a full size aircraft. Unusual or unconventional features must be justified with three view drawings or photographs of similar features used on full size aircraft.

#### 5.3.1.2. Motor:

Motor(s) must be of the reciprocating piston type, with a maximum total swept volume of 6,6 cc.

##### 5.3.1.2.1 Shut-off:

The engine shall be equipped with a positive radio controlled engine shut-off. The pilot must be able to shut off his engine by radio control, on the ground, or in the air.

##### 5.3.1.2.2. Silencer:

The motor(s) shall be fitted with a silencer. Within its length there shall be an expansion chamber of not less than 30 mm diameter and 100 mm length; the exhaust outlet's total area shall not be more than 80 mm<sup>2</sup>

##### 5.3.1.2.3. Propeller:

Only fixed propellers may be used. Two-bladed wooden or two or more blade composite resin continuous fiber construction propellers may be used.

##### 5.3.1.2.4. Propeller Spinner:

A rounded nose ~~metal~~ spinner of at least 25 mm diameter must be fitted.

#### 5.3.1.3. Fuselage

##### 5.3.1.3.1. Cross-section:

The fuselage shall have a minimum height of 175 mm and a minimum width of 85 mm, the measurements to be of the fuselage body and are to exclude any fins, attachments or spacers. Both minimum dimensions must occur at the same cross-section location. The fuselage at this point will have a minimum cross sectional area of 100 cm<sup>2</sup> excluding fillets and competitors will be required to provide templates to prove this. Fillets are not considered part of the fuselage or lifting surfaces.

##### 5.3.1.3.2. Cowls:

The engine or engines must be enclosed, with the exception of the silencer, cylinder head and controls that must be manipulated during operation of the motor. The cylinder head for this purpose is defined as the top (or outer) 1 centimeter of the motor, excluding ignition plug or compression screw.

**5.3.1.3.3. Pilot Cockpit:**

A cockpit or canopy profile must be evident and capable of enclosing a pilot's head 50 mm from the chin to the top of the head. The canopy need not be transparent and a pilot need not be fitted.

**5.3.1.4. Lifting Surfaces:****5.3.1.4.1. Area of Surfaces:**

Total projected area of the lifting surfaces (wing and horizontal tail combined) shall be a minimum of 34 dm<sup>2</sup>. With a biplane, the smaller of the two wings shall have at least 2/3 of the area of the larger wing. No delta or flying wing type aircraft are allowed

**5.3.1.4.2. Wing Span:**

Minimum wingspan shall be 1150 mm for a monoplane and 750 mm for the largest wing of a biplane.

**5.3.1.4.3. Wing Thickness:**

Wing thickness of the root shall be at least 22 mm for a monoplane, and 18 mm for a biplane. On a biplane with different size wings, the smaller wing must be at least 13 mm thick at the root. Wing thickness may decrease in a straight line taper from root to tip as viewed from the leading or trailing edge.

**Note:** Root shall be defined as the innermost wing section, not counting fillets that may be measured without removing wing from fuselage.

On a completely exposed wing, such as on a parasol monoplane or the top wing of most biplanes, the root is that section of the wing that is intersected by a projection of the outline of the fuselage as seen in the top view, i.e. the root section would be 50 mm from the centerline of an exposed wing on a model aircraft with a 100 mm wide fuselage.

**5.3.1.5. Weight:**

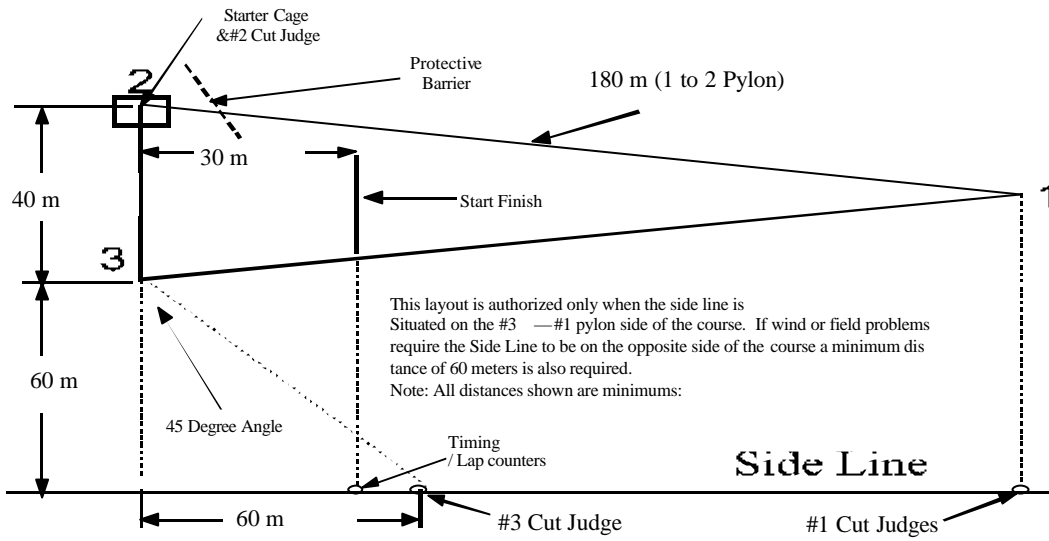
Weight less fuel, but including all equipment necessary for flight shall be at least 2200 g and not more than 3000 g. If ballast is used it must be permanently and safely affixed.

**5.3.1.6. Landing Gear:**

The landing gear may have two or three wheel design with the main wheels having a minimum track of 150 mm. The minimum diameter of the main wheels shall be 57 mm. A tailskid may be used in lieu of a tail wheel.

**5.3.1.7 FORMULA AUSTRALIA ONE (FA1) - COURSE LAYOUT:**

The triangular course will be laid out as follows. The course is 10 laps with individual length of 400 m. Total distance traveled are 4 km.



The following Australian **General Pylon Racing** Rules shall apply (Including all Paragraphs contained therein). Unless otherwise stated in the Formula Australia One (FA1) Rules above.

**5.1 Safety & General Rules:**

**5.2 Race Organization:**

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### **5.3.2. FORMULA 400 PYLON RULES (F400):**

#### **5.3.2.1. Definition of Radio Control Pylon Racing Model Aircraft:**

A Radio controlled pylon racing Model Aircraft is an aircraft in which the propulsion energy is provided by a piston type engine - the lift is obtained by aerodynamic forces acting on the supporting surfaces which, except for control areas, must remain fixed in flight. The Model Aircraft must be of a semi-scale type and their general lines must be in accordance with those of full-size aircraft. Competitors may be required to justify any unusual or unconventional features of their Model Aircraft design, with documentary evidence of similar full size aircraft.

#### **5.3.2.2 Engine:**

The engine must be of the reciprocating type, be commercially available and have a maximum swept volume of 7.5 cc. The engine must of front induction – side exhaust configuration.

#### **5.3.2.3 Shut – Off:**

The engine must be equipped with a positive radio-controlled shut off. The pilot shall be able to shut off his engine by radio control on the ground or in the air.

#### **5.3.2.4 Tanks:**

Pressurized fuel tanks are permitted. (Viz. Crankcase or muffler pressure)

#### **5.3.2.5. Silencer:**

The engine shall be fitted with a silencer; within the general length there shall be an expansion chamber not less than 19mm diameter, with a minimum length of 32mm. The silencer shall have a single orifice with a maximum outlet diameter of 10mm. Alternatively, such other muffler as is produced by the manufacturer of the engine used and specified by the manufacturer for that Engine may be used, even though it does not meet the above specifications.

Full length tuned pipes are not permitted – Magic Muffler types are allowed.

#### **5.3.2.6. Propeller:**

Only fixed propellers shall be used. Two-bladed wooden or two or more blade composite resin continuous fibre construction propellers may be used.

#### **5.3.2.7. Spinner:**

A rounded nose spinner is required.

#### **5.3.2.8. Fuselage:**

**Cross Section** –The fuselage shall have a minimum height of 150mm, and a minimum width of 75mm.

#### **5.3.2.9. Landing Gear:**

At least two wheels shall be used. The two main wheels must be a minimum lateral distance of 15cm, when the Model Aircraft is at rest on the ground. A retracting undercarriage is permissible.

**5.3.2.10. Lifting Surfaces:**

**Area** The total area of the wing shall be a minimum of 2550cm<sup>2</sup>. On biplanes with different wings, the smaller wing shall be at least two thirds of the larger wing. Flying wings and deltas will not be allowed in this event.

**5.3.2.11. Wing Thickness:**

The depth of the wing must be a minimum of 22mm at the root of the root cord of a monoplane, and 17 mm if a biplane. On a biplane with wings of a different size, the smaller wing must be at least 15mm thick at the root.

If the wing is not uniform in thickness, then the thickness must decrease in a straight line from root to tip as viewed from the leading or trailing edge.

**Note:** “Root” is defined as the innermost wing section, excluding fillets that may be measured without removing the wing from the fuselage. On a completely exposed wing, much as that of a parasol monoplane or the top wing of most biplanes, the root is that section of the wing that is intersected by a projection of the outline of the fuselage as seen in the top view, i.e. The root section would be 50mm from the center line of an exposed wing on a Model Aircraft with a 100mm wide fuselage.

**5.3.2.12. Weight:**

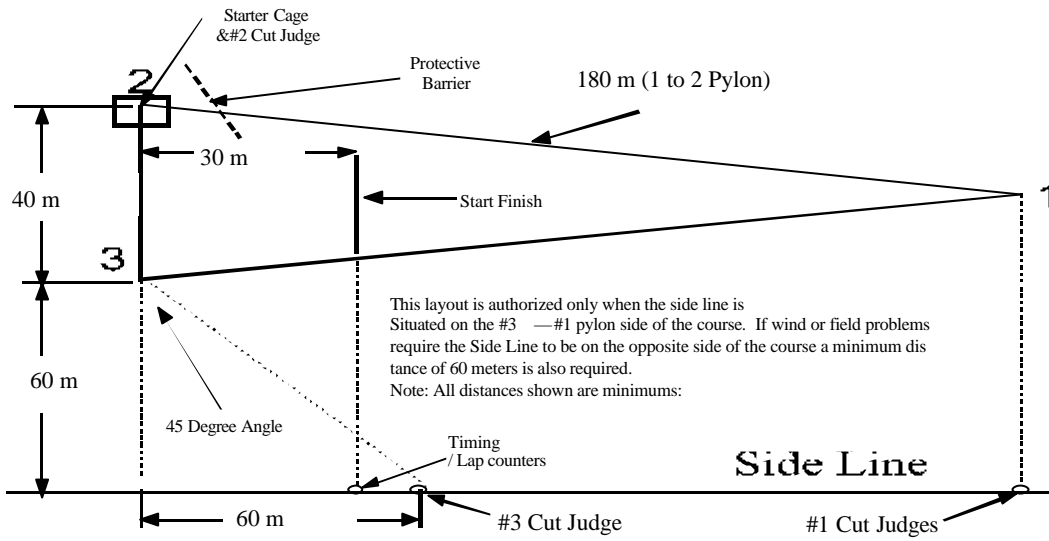
The minimum weight of an assembled aircraft, ready for flight, but less fuel shall be 1.8kg.

**5.3.2.13. Fuel:**

The organizers shall supply fuel to a standard formula for glow plug motors. Its composition shall be 80% methanol, 20% castor oil.

**5.3.2.14. F400 Course Layout:**

The triangular course will be laid out as follows.



The following Australian **General Pylon Racing** Rules shall apply (Including all Paragraphs contained therein). Unless otherwise stated in the F400 Rules above.

**5.1 Safety & General Rules:**

**5.2 Race Organization:**

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### **5.3.3. QUARTER MIDGET PYLON RULES (QM):**

#### **5.3.3.1. Definition of a Quarter Midget Model Aircraft:**

A radio controlled Quarter Midget Model Aircraft is an aircraft in which the propulsion energy is provided by a piston type engine - the lift is obtained by aerodynamic forces acting on the supporting surfaces, which, except for control areas, must remain fixed in flight. The model must be of a semi-scale type and their general lines must be in accordance with those of full-sized aircraft.

Competitors may be required to justify any unusual or unconventional features of their Model Aircraft design with documentary evidence of similar full-sized aircraft

#### **5.3.3.2. Engine:**

Engine's must be of the reciprocating piston type, be commercially available and have a maximum total swept volume of 3.50 cm<sup>3</sup>

#### **5.3.3.3. Shut – Off:**

The engine shall be equipped with a positive radio-controlled shut-off. The pilot shall be able to shut off his engine by radio control on the ground or in the air.

#### **5.3.3.4. Silencer:**

The Engine shall be fitted with a silencer, within which length there shall be an expansion chamber of not less than 19mm diameter with a minimum length of 32mm. The silencer shall have a single orifice with a maximum outlet diameter of 10mm. Alternatively, such other muffler as is produced by the manufacturer of the Engine used and specified by the manufacturer for that Engine may be used, even though it does not meet the above specifications.

#### **5.3.3.5. Propeller:**

Only fixed pitch propellers to be used. Construction shall be either of wood, or composite resin continuous fiber.

#### **5.3.3.6. Spinner:**

A rounded nose-spinner or safety nut is required.

#### **5.3.3.7. Fuselage:**

**Cross-section** - the fuselage shall have a minimum height of 12.7 cm and a minimum width of 7 cm. Both minimum dimensions must occur at the same cross-section location.

#### **5.3.3.8. Landing Gear:**

At least two wheels with a minimum diameter of 38 mm shall be used. Where applicable, a third wheel of any size may be used. The two main wheels must be a minimum lateral distance of 100 mm apart when the model is at rest on the ground.

A retracting undercarriage is permissible.

#### **5.3.3.9. Lifting Surfaces:**

### 5.3.3.9.1. Area:

The total area of the wing shall be a minimum of 1935 cm<sup>2</sup>. On biplanes with different size wings, the smaller wing shall be at least two-thirds of the larger wing. Flying wings and Deltas will not be allowed in this event

### 5.3.3.9.2. Wing Thickness:

The depth or thickness of the wing must be a minimum of 22 mm at the root chord of a monoplane and 15 mm if a biplane. On a biplane with wings of different size, the smaller wing must be at least 13 mm thick at the root.

If the wing is not uniform in thickness, then the thickness must decrease in a straight line from root to tip as viewed from the leading or trailing edge.

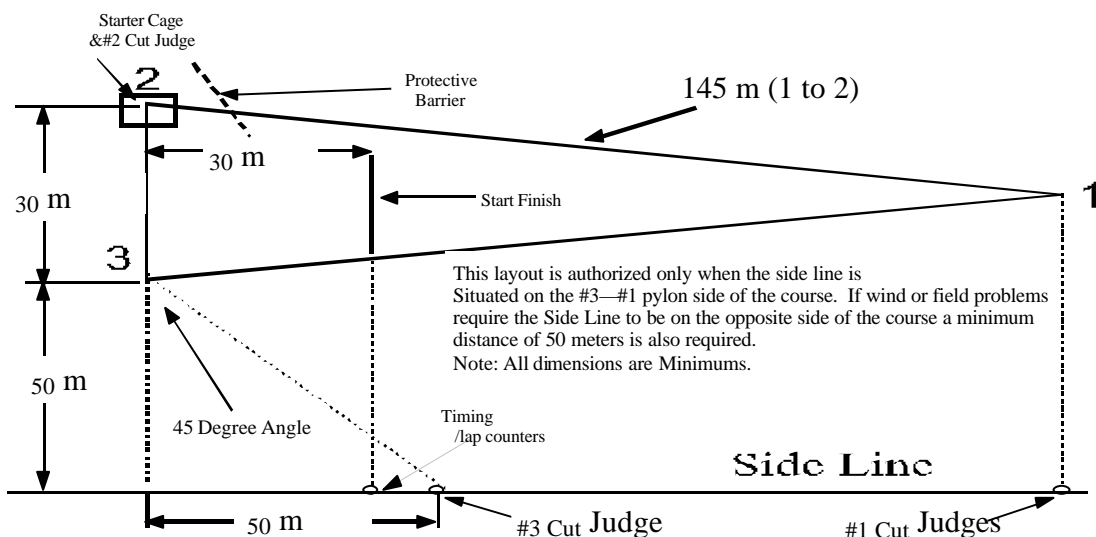
**Note:** "Root" is defined as the innermost wing section, excluding fillets that may be measured without removing the wing from the fuselage. On a completely exposed wing, such as that of a parasol monoplane or the top wing of most biplanes, the root is that section of the wing that is intersected by a projection of the outline of the fuselage as seen in the top view, i.e. the root section would be 50 mm from the center line of an exposed wing on a Model Aircraft with a 100 mm wide fuselage.

### 5.3.3.10. Weight:

The minimum weight of the assembled aircraft, ready for flight but less fuel, shall be 1134 grams.

### 5.3.3.11. Quarter Midget Course Layout:

The layout of the course is shown below.



The following Australian **General Pylon Racing** Rules shall apply (Including all Paragraphs contained therein). Unless otherwise stated in the QM Rules above.

### 5.1 Safety & General Rules:

### 5.2 Race Organization:

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### **5.3.4. HALF A PYLON RACING RULES (1/2A)**

#### **5.3.4.1. Definition of a Half A (1/2A) Model Aircraft.**

A radio controlled Half A Model Aircraft is an aircraft in which the propulsion energy is provided by a piston type engine - the lift is obtained by aerodynamic forces acting on the supporting surfaces, which, except for control areas, must remain fixed in flight. The model must be of a semi-scale type and their general lines must be in accordance with those of full-sized aircraft.

Competitors may be required to justify any unusual or unconventional features of their Model Aircraft design with documentary evidence of similar full-sized aircraft

#### **5.3.4.2. Engines.**

Engines must be of the reciprocating piston type to a maximum displacement of 1.8 cm<sup>3</sup>. All engines above 0.051 in<sup>3</sup> must be fitted with a muffler having a minimum volume of 12 cm<sup>3</sup> and a maximum volume of 25 cm<sup>3</sup>. (A test method is described at the end of these rules) The muffler is permitted a single orifice (excluding pressure nipple) of diameter not more than 8 mm. The volume measured is to include any header, which is part of the muffler. Tuned pipes or multi-path (e.g. magic muffler) type exhaust systems are not permitted.

#### **5.3.4.3. Shut – Off**

b) The Engine must be able to be stopped within 20 seconds if requested by the starter.

#### **5.3.4.4. Fuel**

- a) For glow-plug engines up to 0.83 cm<sup>3</sup> capacity and for all compression ignition engines, the fuel shall be unrestricted.
- b) For glow-plug engines with a capacity exceeding 0.83 cm<sup>3</sup>, the fuel shall be supplied by the race organisers and shall comprise 80% methanol and 20% castor oil.

#### **5.3.4.5. Fuselage.**

The cross section of the fuselage at the cockpit shall be minimum of 57 mm in width and 100 mm in depth at the same longitudinal section; this latter dimension may include windshield, canopy or headrest but excludes wing fillets.

#### **5.3.4.6. Wing**

- a) The minimum wing area, including the area displaced by the fuselage, but not including fillets or stall strips, shall be 12.90 dm<sup>2</sup>.
- b) If flaps are fitted, the wing area is to be measured with flaps retracted.
- c) In the case of biplanes with different size wings, the area of the smaller wing shall be at least two-thirds of the area of the larger wing.
- d) The minimum wing thickness at the root, measured outboard of any fillet, shall be 19 mm for a monoplane and 13 mm for a biplane.
- e) On a biplane with different size wings, the smaller wing must be at least 9 mm thick at the root.
- f) On a completely exposed wing, such as on a parasol monoplane or the top wing of most biplanes, the "root" is that section of the wing that is intersected by a projection of the outline of the fuselage as seen in the top view.

**5.3.4.7. Undercarriage**

Hand launching of the aircraft is permitted [5.1.3.4.], the installation of an undercarriage is optional.

**5.3.4.8. Weight**

The minimum all-up weight without fuel shall be 500 gm. The maximum all-up weight without fuel shall be 1 kg

**5.3.4.9. Propeller**

Only fixed pitch propellers to be used. Construction shall be either of wood, or composite resin continuous fiber.

**5.3.4.10. Muffler Volume Measurement****Test Equipment:**

Burette or similar accurately calibrated liquid measuring cylinder.

**Safety Equipment:**

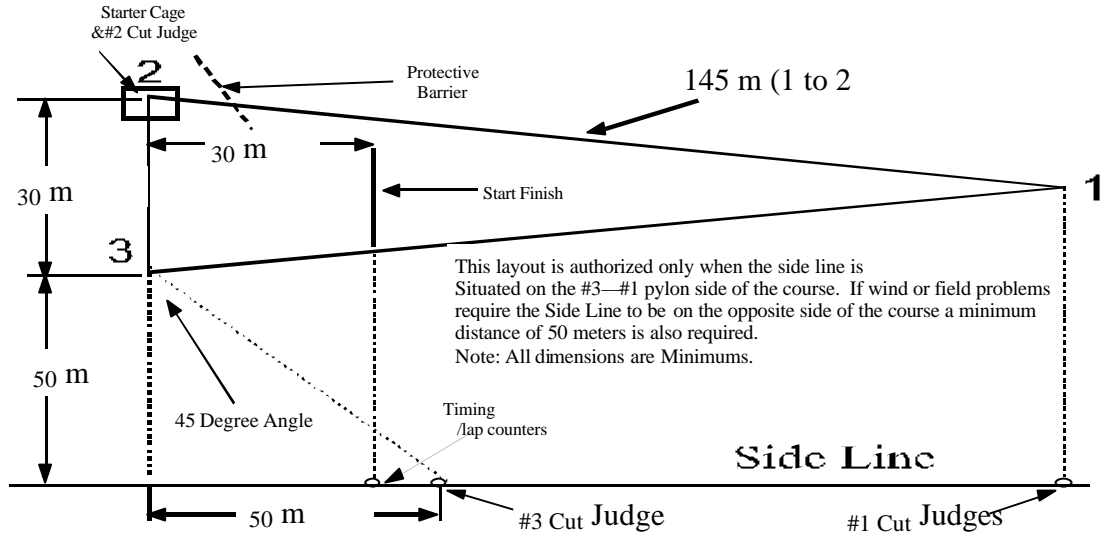
Rubber gloves. [Methanol is toxic]

**Method:**

- a) Ensure that the piston of the Engine is at top dead center.
- b) Block the pressure nipple orifice with a very short sealed length of fuel tubing.
- c) Note the liquid level in the burette. Hold the engine so that the muffler orifice is uppermost and fill the muffler with the test liquid (clean, standard fuel or methanol), from the burette until the muffler is just full.
- d) Block the orifice with a gloved finger or thumb and move the engine so as to dislodge any air bubbles in the muffler.
- e) Add any extra test liquid necessary to fill the muffler.
- f) Note the final liquid level. Calculate the difference.

**5.3.4.11. Half A Course Layout**

The layout of the course is shown below.



The following Australian **General Pylon Racing** Rules shall apply (Including all Paragraphs contained therein). Unless otherwise stated in the above Half A Rules.

**5.1 Safety & General Rules:**

**5.2 Race Organization:**

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