



Australian Model Power Boat Association Official Rule Book

Updated April 2018 – Effective from July 2018

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AMPBA BY-LAWS

1. AMPBA Membership.

1 - Persons applying for AMPBA membership must do so by completing and signing the official AMPBA Membership Application Form that is available from the AMPBA web site or from affiliated club Secretaries. Persons applying for membership must do so through a club affiliated with the AMPBA. Membership is from 1 July to 30 June the following year.

2 - AMPBA Membership applications and fees shall be submitted to affiliated club Secretaries at any convenient time. Insurance coverage will be effective immediately upon payment of fees however, final acceptance of membership to the Association is subject to approval of the AMPBA committee.

3 - It is the responsibility of affiliated club Secretary's to supply the applicant's full details including contact telephone number and e-mail address, if available, when forwarding the application form to the AMPBA Secretary for processing and approval.

2. Classes of membership - *Adult member* – anyone over the age of 16 years and have full voting rights. - *Junior member* – aged 8 to 16 years and have no voting rights. - *Trialling day member* – aged 2 to 100 years and have no voting rights. Must be under the full supervision of a current AMPBA Adult member. May participate in events or races under the discretion of the host club but is not permitted to enter or participate in sanctioned events. Trialling membership excludes any previous member of the Association and is not valid until the host club has received payment of the set fee of \$10. The set fee is to be forwarded to the AMPBA Treasurer and covers insurance for the Trialling member for three (3) attendances at any affiliated club within the AMPBA.

- *Pit membership* – for pit personnel only, can't operate a model and have no voting rights.

3. Club Affiliation with the AMPBA Inc.

1 - All clubs must be incorporated to be affiliated with the AMPBA Inc.

2 - All affiliated clubs must supply a copy of their current Certificate of Incorporation and Constitution to the AMPBA Secretary. If any changes are made to the Incorporation or Constitution, a revised copy must be sent the AMPBA Secretary within thirty (30) days of Lodgment with Business Affairs in their State.

4. Committee of Affiliated Clubs.

1 - Affiliated clubs must supply complete contact details of their officer bearers to the AMPBA Secretary together with the Club Affiliation Fee paid each year.

2 - If office bearers change within the year, details of the changes must be sent to the AMPBA Secretary within thirty (30) days of the changes.

5. Permanent changes to the AMPBA Constitution and Competition Rules.

1 - Motions for changes to sections of the AMPBA constitution or official rulebook shall only be accepted by the AMPBA Secretary up to 3 months prior to the date fixed for the AMPBA annual general meeting each year, for distribution and voting.

2- Permanent changes to the AMPBA Constitution or Competition Rules may only be submitted by a club affiliated with the AMPBA or by the AMPBA Executive Committee. The AMPBA Secretary will distribute the proposals and voting forms no less than 2 months prior to the AGM, to the Secretary's of all affiliated clubs and published on the AMPBA Forum for voting.

3 - A member may choose to either download a voting form and return the completed document directly to the AMPBA Secretary or the affiliated club may hold a general/special meeting for its members to vote on the constitution or competition rule change proposals. Only financial AMPBA members are allowed to vote and must include their name, AMPBA membership number and signature on the voting form.

4 - It is the affiliated club Secretary's responsibility to collate the voting forms from a general/ special meeting held and return them to the AMPBA secretary at least one (1) month prior to the AMPBA annual general meeting. Individual members completing their own voting forms may return them to their club Secretary or return them directly to the AMPBA Secretary at least one (1) month prior to the AGM.

5 - The AMPBA secretary will collate the valid voting forms, making sure all names, AMPBA numbers and signatures are clearly marked on the voting forms, and announce the outcome of the voting at the AMPBA annual general meeting.

6 - Should a rule change be carried, it shall not take effect for three (3) months from the date of the AMPBA annual general meeting. The rule change must apply for a minimum of twelve (12) months.

6. Club calendars – Each year a National calendar shall be compiled with information received from affiliated clubs.

National and State Championships along with proposed Sanctioned events shall be included on the National calendar. All clubs must submit a calendar by November each year for the following year, including all club activities and sanctioned events for insurance purposes.

7. National Record Claims - to be submitted to the AMPBA Secretary by a competitor or club Secretary and must be accompanied by a fee of \$5.00 per claim for official recognition and acceptance.

8. The Middleton Trophy - is a perpetual trophy awarded at the National Championships by using the following rules:

For each official National event, a competitor will score points equal to the number of competitors entered for that event, divided by his or her own final position. Thus First place in an event with 24 competitors entered will gain 24 points (24/1=24), and a fifth place in the same event would gain 4.8 points (24/5=4.8). The scores from the competitor's best four events are added together to determine the winner.

AMPBA COMPETITION RULES

Competition rules for the Australian Model Power boating Association have, by a process of evolution, reached the level where the majority of radio-controlled power boating competition is covered.

The underlying principle behind the development of a single, standard set of rules, is to remove the elements of uncertainty and surprise which can make life harder for the competition modeler, whilst also making possible performance comparisons both nationally and in many cases, internationally.

For these reasons, race organisers are strongly urged to adopt the rules wherever possible. Provisions exist within Section 1.3. (Announcement) to over-ride the standard rules where necessary. Eg. Through lack of time or suitable water. Additionally, some sections are labeled 'OPTIONAL'. Such sections are more recommendations than rules, and it is the prerogative of organisers to use or disregard these. Mandatory sections should only be changed with advanced warning at the announcement of the race. (Normally on the entry form). The rules cannot be altered for National or State Championships or any other AMPBA sanctioned event without prior approval by the AMPBA committee.

Requirements for the running of a Sanctioned Event.

- a) Notification of the event for sanctioning along with any proposed alterations to the rules must be received by the Association Secretary at least three (3) months before the date of the proposed event. (Sanction required for all State Titles and Speed Events)
- b) The AMPBA Secretary will post approval of the sanction on the AMPBA forum along with notification to the host club. Sanctioning protects the event from conflict with other affiliated clubs hosting an event.
- c) Entry forms for the event to be sent by the host club to all AMPBA Affiliated Club Secretaries and posted on the AMPBA forum at least two (2) months prior to the date of the event. A Sanction is an authorization or approval of a certain event, which binds the holders of the event to comply with the AMPBA Rules and Regulations and guarantees that the results of the said event will be recognized as official.

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SECTION 1: ANNOUNCEMENT (MANDATORY)

The Race Organisers must give advanced notice to include the following:

- 1.1 Organising Body.
- 1.2 Date and Venue of the race.
- 1.3 Declaration of rules regarding any alterations to AMPBA rules that the AMPBA committee has approved.
- 1.4 Conditions of entry (see section 4).
- 1.5 Address for entries and closing date.
- 1.6 Race events and classes.
- 1.7 Appointed time for the arrival of competitors and Drivers meeting.
- 1.8 Closing time for registrations of competitors and models.
- 1.9 Entry fee.
- 1.10 Protests and protest lodgement fees (refer section 5).
- 1.11 Notification of the event for sanctioning along with any alterations to the rules must be received by the Association Secretary at least three (3) months before the date of the proposed event. Notification (or entry form) of the event to be sent to all Clubs at least two (2) months prior to the date of the event.
- 1.12 Verification of the event by two (2) appointed officials to represent the AMPBA at any sanctioned event. (Refer 3.4)
- 1.13 The Australian Nationals will be run during the months of April or May each year. It is recommended that a club applying to host the Nationals should make every effort to plan for 2 days of practice followed by 5 rounds of racing where possible, to ensure that the AMPBA's premier event will be of the highest standard possible.

SECTION 2. RACE COMMITTEE (OPTIONAL)

- 2.1 The Race Committee shall be appointed by the organizing body and will consist of -
 1. Contest Director
 2. Committee Secretary
 3. Technical Adviser
 4. Timekeeper/ scorer
 5. Other Officials as required
- 2.2 The race committee will confirm the registration of the entrant and model and accept the admission of same.
- 2.3 They shall confirm the Race results, the composition of each set of officials, the layout of the courses and the appointment of officials.

SECTION 3: OFFICIALS (MANDATORY)

The Organising Body shall appoint the Contest Director. Officials will be required to stipulate qualifications and experience if required to do so. All officials and appointed officials must be AMPBA affiliated members for insurance purposes. This includes officials, judges, rescue personnel or any persons appointed in any capacity associated with the running of an event. An official may hold more than one position.

3.1 CONTEST DIRECTOR

The Contest Director is the chief Official of the event. His or her duties and responsibilities include:

- (1) To appoint officials to assist in whatever capacity he deems fit.
- (2) To disqualify any competitor where necessary.
- (3) To interrupt any competitor where necessary.
- (4) To interrupt or abandon any competition where necessary.
- (5) To effect corrections to the course where necessary.
- (6) To ensure all competitors and officials understand the event and his or her directions by conducting a drivers meeting prior to the start of each day's competition.

3.2 TIMEKEEPER / SCORER

The Timekeeper/Scorer shall be responsible for the recording and publishing of all results.

3.3 RETRIEVAL / RESCUE PERSONNEL

No retrieval boat shall be on the water whilst any model boat is running. During practice, all running boats will be called off the water when the event organisers determine the need to do so to permit rescue to be effected safely (usually 3 dead boats). Also refer rules 8.6.3 and 8.6.4. Safety equipment must be provided and present in all retrieval boats such as a life jacket, paddle and any other safety equipment as required. Clear instructions for the safe operation of the retrieval boat and equipment must be provided to rescue personnel.

3.4 AMPBA DELEGATES

At any Sanctioned National or State Oval Race Meeting, 1/2K Oval and Straight Line Speed event, two (2) officials appointed to represent the AMPBA must be present to oversee the measuring of the course and scrutineering of engines, boat hulls and any other areas that may be required for the type of meeting being run. It is mandatory that at least one of the officials appointed to represent the AMPBA will be from an independent club and not a member of the host club.

3.5 Appointment of the Protest committee, refer Section 5.

SECTION 4: COMPETITORS (MANDATORY)

- 4.1 By the submission of their entry form, a competitor acknowledges their understanding and acceptance of the rules and that attendance at drivers meetings is mandatory for all competitors.
- 4.2 Only one model per competitor can be entered in each class of any event. The same model can only be entered in one class at any event. The hull by definition (refer Section 7) is the model. In all events and classes having multiple heats, the same hull must be used for each heat. Motors, radios, damaged sponsons and other accessories may be changed.
- 4.3 Engine classes are as detailed in Section 7.3. A boat will not be permitted to compete outside its designated engine and/or hull classifications. Should there not be sufficient entries (5 boats) to constitute a class, competitors will be given the opportunity to upgrade to the next engine class in the Hull classification, if possible.
- 4.4 Should a competitor violate the AMPBA race rules, special instructions announced at the drivers meeting or are absent from the drivers meeting, the following action may be taken by the Race organisers and/or Contest Director:-
- (a) The competitor can be disqualified from a heat and have all scores from that heat cancelled;
 - (b) The competitor can be disqualified from the class and have all scores cancelled;
 - (c) The competitor can be disqualified from the entire event and have all scores cancelled.
 - (d) The competitor can be disqualified from their first heat of the day for not attending the drivers meeting.
- 4.5 Disqualification from a heat, class or entire meeting may also be declared for "UNSPORTING BEHAVIOR". Every competitor is obliged to comply with the directions of the Contest Director and appointed officials as nominated.
- 4.6 Only financial members of the AMPBA will be allowed to compete in an event hosted by any AMPBA affiliated club. Proof of a member's financial status (i.e. a current AMPBA Membership Card) must be presented on request, to the organizers at all AMPBA sanctioned events.
- 4.7 A competitor's **NAME, FREQUENCY and CHANNEL MUST BE CLEARLY MARKED** on their transmitter. 2.4 GHz Systems are exempt although it is recommended that competitors have their **NAME or AMPBA NUMBER** on their transmitters. A radio pound is no longer considered to be a requirement for competition.
- 4.8 When applying for an AMPBA National Straight Line Speed or 1/2K Oval Record, a competitors boat must comply with all AMPBA rules and will be subject to an engine displacement inspection, and if applicable, engine scrutineering immediately following its record breaking run or impounded for inspection that day at a time deemed appropriate by the officials. If the engine, or engines are found to be out of limits specified in the AMPBA engine classifications rules for that class, or if the hull and set up does not comply with the rules, the record will not be allowed.
- 4.9 All competitors and pit persons must wear closed toed shoes whilst in the pit area or when launching or retrieving a boat and must be financial members of the AMPBA for insurance purposes.
- 4.10 All competitors are required to display their AMPBA number on their boat(s) for easy identification. Numbers to have characters with a minimum height of 20mm and be clearly visible.
- 4.11 For all competitors, officials and spectators at any sanctioned event.
- (a) No smoking is permitted in the hot pits or the general pit area.
 - (b) No spectators allowed in the hot pit area.
 - (c) All pets/ animals must be supervised or on a leash.
 - (d) All children must be supervised by a parent or guardian at all times.

SECTION 5: PROTESTS (MANDATORY)

A Protest committee shall be formed on each day of a sanctioned event and will consist of three (3) judges. The three (3) appointed judges will be volunteers selected at the Drivers meeting from members present from other states firstly, selected from members present from affiliated clubs other than the host club secondly or selected from the host club if there are no other members present from any other affiliated club. The same volunteer/s, if they are present, may be appointed for all days of competition at an event. The Contest Director cannot be appointed to the Protest Committee.

- (a) The Protest Committee shall deliberate on protests when required and shall then announce the verdict.
 - (b) The Protest Committee only requires a single vote majority to make a decision.
 - (c) The verdict of the Protest Committee can only be appealed to the Contest Director for review along with the Organising body of the event and their decision is final. (Refer Protests 5.11)
- 5.1 Every competitor has the right to lodge a protest and is required to inform the Contest Director when it is their intention to do so.
- 5.2 A protest can be submitted if :-
- (a) The current AMPBA Race Rules are violated by a competitor;
 - (b) The current AMPBA Race Rules are violated by an official or the competition programme.
 - (c) Instructions issued at the drivers briefing are outside of those conditions specified in the entry form.
- 5.3 Should a protest be lodged regarding hull classifications, the competitor is still permitted to compete in the nominated class but the standing of the results will depend on the findings of the committee dealing with the protests. (Refer 7.2.4)
- 5.4 The lodging of a protest does not prevent a competitor from taking part in the remainder of the event. If, as a result of the protest, a competitor withdraws from the class or event, then the relative protest shall be withdrawn.
- 5.5 The protest shall be lodged in writing within one (1) hour of the relative run or prior to confirmation of the results and should include:
- (a) Time and place of the incident
 - (b) Declaration of the relative point of the race rules, which, in the opinion of the protester, has been violated.
 - (c) Description of the incident with, where possible, necessary sketches and names of eyewitnesses.
- 5.6 At the same time that a competitor lodges a protest, the protester must pay the Lodgement Fee to the Contest Director.
- 5.7 The amount of the Protest Fee shall be set by the AMPBA at each AGM and the amount shall be stated by the event organisers on the entry form. If the protest is upheld by the Protest Committee, then the fee shall be returned to the protester.
- 5.8 A written protest, once submitted, cannot be returned with the fee. A withdrawn protest is to be treated as one that is rejected.
- 5.9 The publication of the final results of each event, the awarding of prizes, medallions and certificates, shall only take place after all protests are dealt with.
- 5.10 The Protest Committee, when receiving a protest, shall call the competitor concerned and any eye witnesses, to obtain the necessary facts, etc, of the incident.
- 5.11 The verdict of the Protest Committee must be made known to the competitor concerned and, if required, the verdict and reasons must be given in writing. In the case of the competitor concerned not accepting the verdict, he or she has the right of appeal, at the same time depositing a new lodgement fee. The protest shall then be re-examined by the Contest Director and Officials of the organizing body. THEIR DECISION IS FINAL.
- 5.12 Representatives appointed to the Protest committee cannot be a participant in the class or event concerned in the protest, unless there is only one class or event being held on that day of the regatta. The affected representatives may only be called as witnesses. In this instance, new representatives must be appointed to participate on the Protest committee to deal with the protest at that time.

SECTION 6: RESULTS (MANDATORY)

- 6.1 The race committee shall confirm all the results in each class.
- 6.2 The results of each heat or round and those of any finals, shall be published, if possible, within one hour of their completion.
- 6.3 The confirmation of these results by the committee shall follow no earlier than one hour after their publication.

- 6.4 Protests may be lodged against the published results during the period between publishing and confirmation.
- 6.5 Once the results have been confirmed, no more protests will be accepted.
- 6.6 The announcement of the winners, presentation of titles, prizes and certificates shall be done immediately after the results are confirmed or at a time and place as set out on the entry form.

SECTION 7: GENERAL CONSTRUCTION, HULL & ENGINE CLASSIFICATIONS, DEMONSTRATION CLASS REQUIREMENTS (MANDATORY)

7.1 Definition of a Radio Control Model Boat :

A model boat may be either a true life replica or of free construction appropriate to the requirements of competition. Control of the craft must be by Radio Control without the aid of external lines or cables. All boats must be able to be stopped on the water by transmitter control. The overall size of the model must not exceed 2135mm (84 inches) as specified for Offshore classes and 1397mm (55 inches) for all other classes. All models must be propelled by water reaction. Interior reaction devices such as rockets or jets are prohibited. All boats shall have positive buoyancy when open compartments are filled with water.

7.2 HULL CLASSIFICATION:

7.2.1 Hydroplane (Hydro)

A Hydro hull is supported on two or more wetted surfaces when operating at racing speed. The following are classified as Hydros:

- | | |
|------------------------------|---------------------------|
| (a) 3 point suspension hull. | (d) Multi step hull |
| (b) 4 point suspension hull. | (e) Hydro suspension hull |
| (c) Single step hull. | |

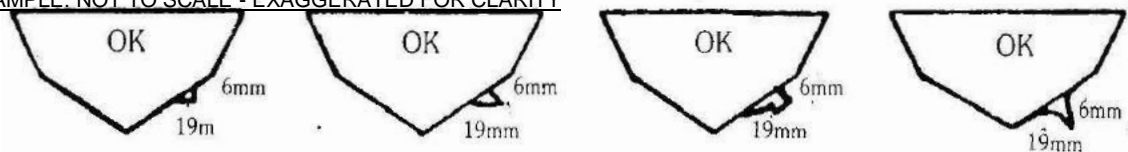
In addition, any hull with added appendage, with air lifting characteristics capable of lifting the hull free of the water while maintaining stability, will also be classified as a Hydro.

7.2.2 Monoplane (Mono)

A mono is a hull that has one continuous wetted surface when operating at racing speed. A Mono must incorporate the following design characteristics and not exceed any of the dimensional restrictions.

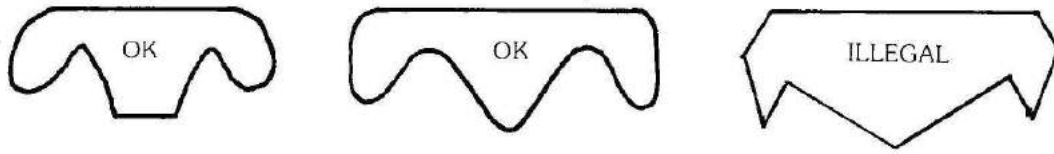
- (a) A hull which has no discontinuities between or steps in the wetted surface running at more than a 15 degree angle with keel, in plain view (bottom view);
- (b) No point on a hull cross section shall be deeper in the water than the center keel (turn fins and trim tabs excepted);
- (c) If trim tabs are used, they must be no more than 2 mm above or below the bottom surface at the intersection of the bottom surface, transom or ride plate;
- (d) A lap straked hull is defined as a single wetted surface hull, with at least one strake on each side of keel. Any number of strakes may be used;
 - (1) A strake is a strip of wood, metal, fiberglass or other material which is permanently attached to hull bottom or used in an overlapping "weatherboard" hull construction.
 - (2) If Strakes are used between mid-point of hull length and transom, they must be parallel with keel.
 - (3) Strakes may be of any cross section, provided they are not deeper than 6mm vertically and 19mm wide horizontally. This measurement is made from intersection (or projected intersection) of the hull bottom and strake when viewed from rear.

EXAMPLE: NOT TO SCALE - EXAGGERATED FOR CLARITY



- (4) Strakes must not be as low as keel.
- (5) Strakes must not meet keel at more than 15 degrees angle as noted in (a)
- (e) Cathedral type hulls are legal Monos as long as the bottom is one continuously curved surface and no flat planing surface exists other than keel.

EXAMPLES:



Multiple wetted surfaces
Not continuously curved bottom

If an enclosed propeller shaft is used, that portion exposed to the water must be either circular or streamlined to a sharper leading edge in the bottom 180 degree of leg. No flat planing surface is allowed.

OTHER HULL EXAMPLES - MONOS: OK (WITH OR WITHOUT STRAKES)



Chine strakes must meet strake dimensions as in (d) 4

HYDROS - TUNNELS-OK



7.2.3 A tunnel Hull is defined as one having two (2) only unbroken sponsons, with or without steps, running the full length of the craft. The sponsons are to be the only part of the hull to come into contact with the water, thus creating a tunnel effect through the length of the craft.

7.2.4 A new hull design should have their outlines submitted to the AMPBA for classification. New designs may be recognised if the information supplied is sufficient. If a competitor is in doubt about a design, or a protest has been lodged, the hull outlines must be submitted to the AMPBA who shall make the findings of the submission available within two (2) months of the date of receipt of the outlines. Refer section 5.3 (Protests)

7.2.5 A Multi Boat hull shall have the propeller and rudder units mounted under the hull and forward of the transom.

7.3 ENGINE CLASSIFICATIONS

The following are the classes and displacement recognized by the AMPBA for :

Oval Competition:

A Class	0.001cc - 3.509cc	I.C.
B Class	3.510cc - 7.509cc	I.C.
C Class	7.510cc - 11.09cc	I.C.
X Class	11.10cc - 33.20cc	I.C.
X Class Hydro	11.10cc - 16.60cc	I.C. Single engine FOVH-X
M class Hydro	7.0cc - 33.20cc	I.C. Multi engine FOVH-M
15 - 27cc Petrol	15.01cc - 27.00cc	Spark Ignition
35cc Open Petrol	27.01cc - 35.00cc	Spark Ignition
Outboard A	0.001cc - 3.509 cc	I.C. Outboard
Outboard A Sport	0.001cc - 3.509cc	I.C. Outboard
Outboard B	3.510cc - 7.509cc	I.C. Outboard
Outboard C	7.510cc - 11.09cc	I.C. Outboard
Outboard X	11.10cc - 30.00cc	I.C. Outboard
EA Class	Up to 14.80v	E
EB Class	15.60v - 22.20v	E
EC Class	22.80v - 44.40v	E
Offshore Lites	0.000cc - 70.00cc	Spark Ignition
Offshore Class 1	0.000cc - 35.00cc	Spark Ignition
Offshore Class 2	35.01cc - 70.00cc	Spark Ignition
Twin Petrol Outrigger Hydroplane	35.01cc - 70.00cc	Twin Spark Ignition

Definitions - I.C. = Internal Combustion E = Electric

Multi Competition:

3.5 Class	0.001cc - 3.509cc	I.C.
7.5 Class	3.510cc - 7.509cc	I.C.
15 Class	7.510cc - 15.00cc	I.C.
35 Petrol	15.01 - 35.00cc	Spark Ignition.

7.4 COMPETITION EVENT AND HULL TYPE CLASSIFICATIONS

F	Formula	H	Hydro
OV	Oval Heat Racing	M	Mono
SL	Straight Line Speed	T	Tunnel
1/2k	1/2Kilometre Oval Speed	P	Petrol
SR	Multi Boat Racing	E	Electric
SH	1/8 Scale Hydroplane	I	Naviga
OS	Offshore	C	Catamaran
		O/B	Outboard

E.G. FOVH-C = 11cc Hydro Oval Heat racing.

7.5 DEMONSTRATION CLASSES (Demo)

From time to time, model builders come up with engine/ hull configurations that are not covered under current rulebook classifications for a specific class. To see if a new class is viable to run as a stand-alone category, an alternative to going through the whole process of the rule change procedure is to adopt the class at a committee level as a "demo class" for a specified amount of time. Demo classes do not require voting on by the general membership and can be submitted to the AMPBA committee at any time.

1. A demo class proposal must be presented to the AMPBA committee for review by following the current rule change procedure manual guidelines or in a format best understood by all.
2. The affiliated club initiating the proposal can opt for either an immediate demo class status, provided the proposal meets item 7.5.4 requirements, or ask that the proposal be reviewed by the committee for voting on by the general membership prior to the next AGM, as the club believes the new class is already viable.
3. The committee reserves the right to decide if the proposal should be adopted as either a demo class, or submitted to the general membership for voting prior to the next AGM or dismissed as a proposal outlining the reasons why.
4. For insurance purposes, a demo class can only be adopted using any combination of current hull types and engine classification specifications within the current rulebook.
5. Upon acceptance by the committee of a demo class proposal, all club Secretaries will be notified to include a demo class on their entry forms for up coming sanctioned events for a minimum of 12 months. This may be extended upon review after the trial period or submitted to the general membership for voting prior to the next AGM if the class has shown sufficient support in that time.

SECTION 8 : OVAL HEAT RACING (FOV)

8.1 GENERAL

An Oval racing heat at a sanctioned event shall consist of:

- a) A minimum of 5 entries to constitute a class except in the case of demonstration classes.
- b) A Maximum of 6 boats will compete in each heat.
- c) All racing will now include the ½ course mill option.
- d) The course will be set out as specified in Section 8.7 and appendix 1.
- e) A race will normally consist of 5 laps but this may be varied (at the discretion of the Race Organisers) to accommodate different course lengths. The minimum requirement is to race over a distance of 1.5 kilometers.
- f) A minimum of 3 heats is required to determine final class placings.
- g) Five (5) buoy ends will be used for all oval racing and all buoys including the start/ finish buoy are considered live from launch to retrieval.

8.2 DRIVERS MEETING

A Drivers Meeting will be held prior to the start of each day's events. It is mandatory for competitor's to attend these meetings (refer 4.4). The primary purpose of the meeting is for interpretation and clarification of the Race Rules and procedures and the appointment of officials where required. Any questions should be asked at this time. Once an event is under way, the Contest Officials should not be distracted from their duties by questions that should have been asked at the Drivers Meeting. Absence will not be considered as an excuse in applying any penalties. The buoy that is to be used as the Mill Buoy will be announced at the driver's meeting, usually the start/ finish buoy.

8.3 GENERAL RACE PROCEDURES

All races are to be started by means of a Recorded Start sequence played over a public address system. Each race will consist of the following distinct phases : - Pit time – Mill time – Start of race – Course time (the race)

8.3.1 RACE STARTING PROCEDURES. Pit time

- 1 A two (2) minute period will be announced over the P.A system for the starting and launching of the competing boats.
- 2 At the expiration of the two minute period, there shall be no more boats allowed to launch. (NB) A boat which has the engine running and at the waters edge ready to launch will be allowed to launch. Running in the pits by competitors or their pit crew will not be tolerated and may result in disqualification from the heat.
- 3 Recovery of stalled, launched boats in this period will only be permitted by using the boat hooks provided. NO ONE will be allowed to enter the water to affect a recovery. Doing so will bring immediate disqualification from that heat.
- 4 All competitors must complete one (1) full lap of the course after launching their boat, before they can ½ course Mill (It is not mandatory to cut the course)
- 5 All boats that cut the course on ½ course mill must enter the infield between the mill buoy, usually the start/ finish buoy and buoy 1, then must re-enter the course on the back straight between buoys 3 and 4 only and must give way to boats that are travelling the full course. A competitor entering the infield or re-entering the course at any other point will be awarded a plus 15 seconds of race time penalty for each buoy that is cut.
- 6 Boats must not cut the course from an outer lane and force a boat that is travelling on their inside to cut the course.
- 7 Competitors who have not started and launched by the expiration of the Pit Time shall be considered a Did Not Start (DNS) and will be awarded NO POINTS.
- 8 Delays and/or cancellation of Pit Time may only be instigated by the Contest Director and then only for Course and/or equipment failure or corrections.
- 9 During pit time, it is recommended that the Contest Director continually announces the position of dead boats on the course.
- 10 If all boats are on the water, the Contest Director can initiate the 30 second mill time. This can only be done after calling his or her intention to do so to all racing competitors. Any objection by either Competitors or Pit Persons will cause the start sequence to continue normally.

8.3.2 Mill time

1. A thirty (30) second period from the expiration of Pit Time, leading up to the race start, will be announced over the P.A system.
2. All competitors may, after completing one full lap, run the ½ course mill up to the 10 second call. Any boat which turns in around the mill buoy after the 10 second call will be assessed to have made a buoy infraction and will be awarded a PLUS 15 SECOND OF RACE TIME PENALTY.
3. All boats must follow the set course from launch and driver/buoy infractions will be called from launch to returning to the pit area unless otherwise directed to safely cut the course by the race official.
4. During the last Five (5) seconds of Mill Time, boats passing buoy 6 MUST steer a straight course and observe driver safety rules (refer 8.6) in selecting lanes. Zigzagging, 'S' turns, or fishtailing to delay crossing the start line early will either a PLUS 15 SECOND OF RACE TIME PENALTY (refer 8.6) or, should the other boat be disabled, the offending boat will automatically be ordered from the course, disqualified from the heat and awarded 'No Points'.

8.3.3 Start of race

1. The expiration of Mill Time will signify the start of the race and will be called over the P.A regardless of the position of competing boats on the course
2. Boats crossing the start line prior to the start announcement will have broken the start and will have to complete the remainder of the lap before officially starting when crossing the start line next. Any broken starts shall be called by a start Judge, or Contest Director, and the boats shall be called by colour or number, NOT by competitors name. eg. the first white boat has broken the start, the second white boat is the leader. All decisions will be instantaneous and final. Undue comments or outbursts from competitors or their pit crew, whether directed at officials or not, over decisions made will not be tolerated and may draw either a penalty or possible disqualification (refer rule 4.4).
3. A race will be officially started when one (1) boat has legally crossed the line.
4. Should no boat legally cross the start line, the heat will be declared a NO CONTEST. No points will be awarded and that heat will not be re-run.

8.3.4 Course Time (The Race)

1. A five (5) minute period will commence with the start. Any boat not completing the required number of laps in this time will be ordered from the course and awarded a Did Not Finish (DNF)
2. If, in the opinion of the Contestant Director, any boats remaining on the course are incapable of finishing the race in the five (5) minute period, they will be ordered from the course and awarded a Did Not Finish (DNF)
3. Course Time shall not be considered a 'right' to stay on the course. All drivers, on completion of their final lap, will move to the outside of the course and must return to the pit area while observing driver safety and due care for drivers still competing. All driver/buoy infractions remain in effect until a boat returns to the pit area unless otherwise directed to safely cut the course by the race official.
4. Laps will be counted with the first legal crossing of the start line counted as zero. Each consecutive crossing of the line will be counted as an additional lap until the required number of laps has been completed. This will constitute the finish of the race for each competitor.
5. The first boat to legitimately complete the required number of laps will be declared the winner except where time penalties have or have yet to be applied.
6. In the event that no boat finishes the required number of laps, the heat shall be forfeited and will not be re-run.
7. All boats must cross the start/finish line under their own power to be awarded points.
8. Heats will only be re-run at the Contest Director's instigation and then only for Electronic Timing equipment failure or for Hazardous Dead Boats (refer 8.6.3). Only boats under power and operating under full control of the driver, at the announcement of the re-run, will be permitted to start in the re-run. There will be NO EXCEPTIONS.
9. All racing will be Governed by the Course Driving and Safety Rules as stated in 8.6.

8.4 SCORING

Boats will score and accumulate points in order of their finish position according to the following table. A negative score cannot be awarded after penalties have been imposed. A score of zero points is the lowest a competitor can be awarded for each and every round.

1 st place - 400 points	5 th place - 127 points
2 nd place - 300 points	6 th place - 96 points
3 rd place - 225 points	Did Not Finish - 25 points
4 th place - 169 points	Did Not Start - Nil (0) points

8.5 DRIVER/BUOY INFRACTIONS AND PENALTIES

1. Touching, striking or cutting any course marker buoy at any time from launch to retrieval will draw a PLUS 15 SECONDS OF RACE TIME PENALTY.
2. Buoy infractions shall be called by the Contest Director or appointed officials and any decision will be final.
3. A boat intentionally completing a 360 degree turn anywhere on or inside the course will automatically be disqualified from the heat with NO POINTS.

8.6 COURSE DRIVING AND SAFETY RULES

Course Driving and Safety Rules shall be defined as those necessary for all boats to compete fairly and with assurance to finishing safely without damage.

8.6.1 Left Turns

Severe left turns on the course, except to avoid collision, are NOT PERMITTED. Mild left corrections may be necessary as in passing another boat. However, a left turn on the course of more than 45 degrees will be grounds for a penalty at the Contest Directors discretion. A left turn endangering another boat will automatically draw a PLUS 15 SECONDS OF RACE TIME PENALTY. Should the other boat be disabled, the offending boat will be ordered from the course and disqualified from the heat and awarded NO POINTS.

8.6.2 Right of Way

1. A boat operating in a line of travel around the course has the right to maintain that lane without undue interference.
2. In racing, the natural lane of choice is the lane nearest to the course outline. This is known as lane one (1) and shall have right of way over the other lanes of travel.
3. Right of way also applies in the turns - please refer to the illustrations after 8.6.10 - re good driving in the turns.
4. Good driving techniques and sportsmanship decree that a relatively straight course be driven. Fishtailing, Zigzag and 'S' turns or other tactics leading up to the start or to prevent or hinder an overtaking boat from passing will be grounds for a PLUS 15 SECONDS OF RACE TIME PENALTY at the Contest Director's discretion.

Should any of these tactics result in another boat being disabled or stopped, the offending boat will automatically be ordered from the course, disqualified from the heat and awarded 'No Points'.

5. During half-course mill time, the right of way rule still applies and boats wishing to half course mill must be aware of competing boats and must not cut across other competitors in order to mill. Hindering or cutting other boats off to mill will be grounds for a PLUS 15 SECOND OF RACE TIME PENALTY at the Contest Director's discretion and should another boat be disabled or stopped, the offending boat will be automatically ordered from the course, disqualified from the heat and awarded 'No Points'.

While executing the half course mill, boats operating in an established lane on the back of the course have right of way over boats re-entering the course from the infield. Should a boat need to take evasive action to avoid another re-entering the course, will be grounds for a PLUS 15 SECOND OF RACE TIME PENALTY at the Contest Directors discretion and should another boat be disabled or stopped, the offending boat will be automatically ordered from the course, disqualified from the heat and awarded 'No Points'.

6. At any time, should a passing boat Swamp, Blow-over or any other way disable the boat being passed, the offending boat will automatically be ordered from the course, disqualified from the heat and awarded 'No Points'.

8.6.3 Dead Boats

1. Should a Dead Boat be struck during the course of a race, AFTER IT HAS BEEN ANNOUNCED OVER THE P.A SYSTEM, the offending boat will be ordered from the course and disqualified from the heat and awarded NO POINTS.
2. At the discretion of the Contest Director (not open to protest) if he or she believes any dead boat/boats are in such a position as to make racing hazardous to competitors, spectators or to boats racing (making collision unavoidable), all boats will be called off the water. Boats will be allowed to cut the course as directed, at reduced speed, keeping the general course rotation. The race will then be restarted as per Rule 8.3.4.8

- 8.6.4. Any boat that, in the opinion of the Contest Director, is being controlled to the danger of other boats due to mechanical, radio or hull design malfunction or driver error, will be removed from the course until the error has been corrected. Should it be impossible to rectify this malfunction or error, the driver will be retired from the remainder of the event and retain his score to that point.

- 8.6.5. A competitor must use a Pit Person to aid in starting and launching a boat. Only one Pit Person will be permitted in the pit area with the driver to minimize congestion in the pit area.

- 8.6.6. The Pit Person must launch the boat so that the driver will have his full attention directed at controlling the boat.

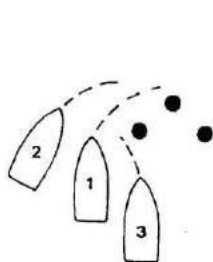
- 8.6.7. The Pit Person must assist as Co-Driver on the Driver's stand but must not hinder any other competitors.

- 8.6.8. Where possible, the driver's area should be an elevated platform in line with the center of the main straight.

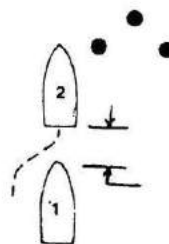
- 8.6.9. Heat Delays - It shall be the policy of the Organisers to maintain a sympathetic and helpful attitude towards contestants and their problems. Any equipment problem discovered by a competitor before reaching the pits should be reported to the Contest Directors immediately. The start of Pit Time may be delayed but the heat will not be re-scheduled.

- 8.6.10. All boats must be able to be stopped on the water by transmitter control. Failure to comply will result in the immediate disqualification from that heat, unless mechanical failure can be proven to be the cause.

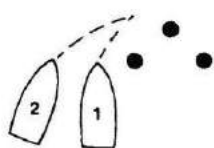
Passing Examples



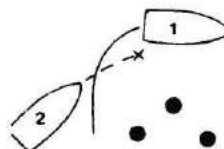
Driver No. 1 has lane 1 and "right of way". Drivers No. 2 and 3 are attempting to overtake improperly. Driver No. 2 is cutting off Driver No. 1. -INFRACTION. Driver No. 3 is attempting to squeeze by on the inside. He will have to turn left and cut off No. 1 to miss buoy. - INFRACTION



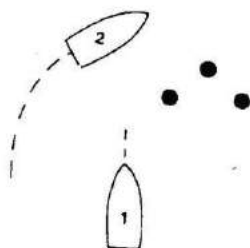
Driver No. 2 is overtaking properly. If a driver passes and stays in his lane for a minimum of three boat lengths before attempting to take over the next inner lane, he is acting properly.



These same procedures pertain to the turns. No. 2 is asking to be penalised. Note that No. 1 is being forced into the buoy to avoid a possible collision. Infraction against No. 2.



In this instance, the driver in lane 1 abandons it by turning too wide allowing another driver to take over the lane on a pass with a shorter run. No infraction. No. 2 at point X now has right of way.



No. 2 is clear, No. 1 is not being forced into the buoy. NO Infraction.

8.7 THE COURSE (see Appendix 1)

8.7.1 Regulation Courses

1. The minimum total race distance shall be 1.5 kilometers (1500m) for all classes.
2. The race will normally consist of five (5) laps for all classes, this may be varied by the Race Organisers to accommodate variations in course length.
3. There shall be a minimum of three (3) heats required to run to determine final placings in any individual class.
4. Stop watches used to time races shall be capable of measuring race time to a nearest 1/10 (0.1) of a second.
4. Course marker buoys shall be fashioned from materials so as not to be harmful to boats that come into contact with them.
6. Course marker buoys should be a colour that is easily distinguished from the surroundings.
7. Five (5) turn buoys shall be used at each end of the course to define the turn at all sanctioned events

8.7.2 Course Terms

1. The area between the turns shall be referred to as the 'Front Straight' and 'Back Straight'.
2. The area within the course outline shall be referred to as 'Within the Course' or the 'Infield'.
5. The marker buoys to the left of the course shall be numbered and referred to as 'Buoy 1, Buoy 1 ½ , Buoy 2, Buoy 2 ½ and Buoy 3'. The marker buoys to the right of the course shall be numbered and referred to as 'Buoy 4, Buoy 4 ½, Buoy 5 , Buoy 5 ½ and Buoy 6' .
4. The marker buoy in the center of the course shall be referred to as the 'Start Buoy'.
5. Some courses may have a line of marker buoys between the shore and the course proper. This shall be referred to as a 'Pit Lane'. This lane should be considered present during all events, whether marker buoys are present or not, and the drivers entering or leaving the Pit Area are encouraged to drive their boats with due care and safety. If unmarked, the pit lane will be within five (5) meters of the bank.
6. 'Milling' is a term used to describe the period from launch to the start of the race where drivers position themselves for a good start.

SECTION 9: STRAIGHT LINE SPEED (FSL)

- 9.1 At sanctioned events, the total number of competitors will constitute a round, not the total number of boats nominated by competitors for the event. There is no limit to the number of rounds that can be run for the duration of the event, time and weather permitting.
- 9.2 A five (5) minute period shall be allowed for each competitor each round, to make as many attempts as they like. Also during that five (5) minute period per round -
 - a - A competitor may choose to return their model to shore to make repairs or alterations to their boat.
 - b - A competitor may choose to run more than one class of boat.
 - c - A competitor must notify the CD if they choose to run another boat within their allotted time.
 - d - Any dead boats on the course shall be collected before any other boat can be launched for the competitor within their allotted time. At the discretion of the CD, a dead boat may be deemed to be in a safe position on the lake to allow the competitor to continue with their allotted time.
 - e - A competitor may waive any remaining time per round if they are satisfied with their performance.
 - f - A competitor may run more than one boat in the same class however cannot run those boats in any other class at that event.
- 9.3 The period will commence when the competitor has their first boat at the waters edge ready for launch and notifies the timekeeper he or she is ready. The competitor shall notify the timekeeper when he or she is ready to start his or her timed passes. At the conclusion of the period the boat must be removed from the course immediately along with any dead boats retrieved.
- 9.4 A Straight Line Speed run will consist of two (2) consecutive and uninterrupted passes in opposite directions, through a one hundred (100) meter course without any physical intervention. One pass for each boat will be used to certify the noise level requirements as set out in Section 12 during each round. The average speeds from the best two (2) consecutive passes starting from either direction will be used to determine the boats overall average speed.

9.5 Records will only be recognized for Engine and Hull Classifications as recognized within the current rulebook. Following any new record being set, appointed officials shall impound the record setting boat in a designated area, away from the competitors pit area. This is so mandatory scrutineering and fuel testing where applicable can take place, before the model is released back to the competitor to prepare for any further attempts. For safety, electric boats shall have batteries checked and weighed immediately following a successful attempt while impounded and awaiting scrutineering. (Also refer rule 4.8)

9.6 At Sanctioned Events, the course must be laid out in one of the options shown. When laying out the course, particularly for option 1, a suitable surveying instrument should be used. The course must be stipulated in Record Application Claim Forms sent to the AMPBA for recognition.

9.6.1 **Electronic timing systems**

An automatic infrared or laser electronic timing system is the preferred method to the manual timing system.

1. The electronic measuring device must utilize fixed infrared or laser sights coupled to a digital automatically actuated timing console, laptop computer or PC.
2. The timing device must be capable of timing the run to the nearest 1/100 th second. (0.00)
3. All Straight Line Speed automated electronic timing systems must be approved by the AMPBA Committee prior to use.

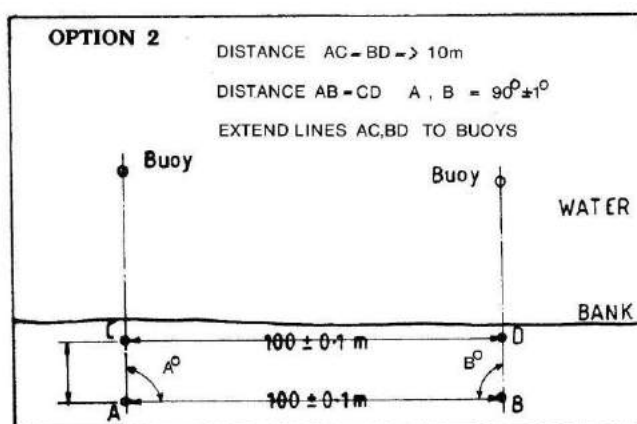
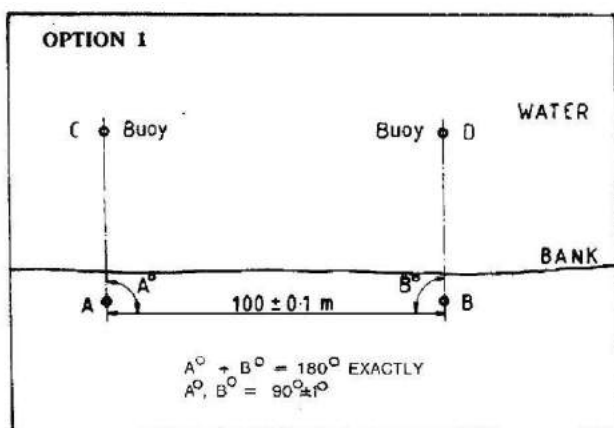
9.6.2 Manual timing system.

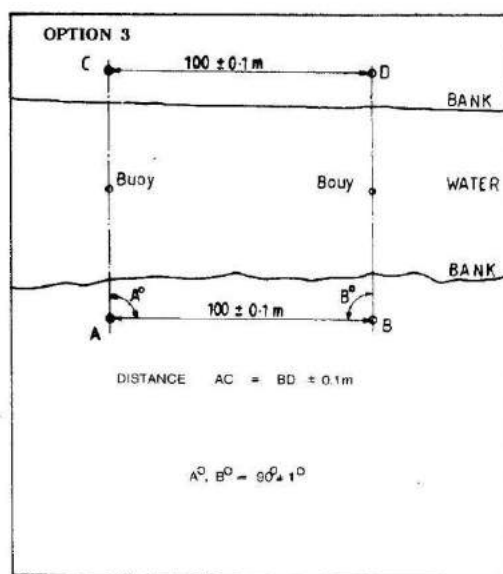
Manually triggered electronic timing is not as accurate as laser or infrared triggered timing and should only be used if a system as described in 9.6.1 is not available to event organizers.

1. The timing of boats will be by the use of two (2) independent manually initiated electronic systems.
2. The system will be activated by an operator at each end of a measured course, for each watch. Four (4) operators will be needed to run the event.
3. The Timekeeper will be responsible for recording times from both watches for each consecutive pass.
4. All Times will be rounded off and recorded to a minimum of two (2) decimal places. (0.00)
5. The average time from the two (2) recorded times for each one-way pass will be used to ascertain a single time for each one-way pass.
6. The average times from the two (2) consecutive passes will then be used to ascertain a single time for the attempt.
7. The single time will then be converted to a speed in kilometers per hour.
8. Should the primary watches from any pass differ by 0.10 of a second or more, a record claim will not be recognized.
9. The timekeeper will be responsible for advising the competitor, at the time of his attempt, of any time discrepancy so that another run may be made.

9.7 Should the timing equipment fail, the competitor's allotted time shall be immediately stopped while repairs are carried out. The whole time may be taken immediately or scheduled later at the discretion of the Organizers.

9.8 It is of the utmost importance that times are recorded with the greatest of accuracy. 1/10 (0.10) of a second's difference can cause considerable change in the speed recorded. Stopwatches used must be accurate to 1/100 (0.01) of a second. When recording and calculating speeds and times, figures must be worked with three (3) decimal places (if possible), e.g. 3.996 seconds. The results must be given with two (2) decimal places minimum, properly rounded up or down.





SECTION 10 : 1/2 KILOMETRE OVAL SPEED (F 1/2K)

10.1 Where a venue does not allow a full Straight Line Speed course to be laid out, the 1/2 Kilometer Oval Speed event may be used as an alternative competition event.

10.2 The 1/2 Kilometer Oval Speed event shall consist of timing a single boat over two (2) consecutive laps of a suitable course where the total distance traveled for the two (2) laps is 1/2 a Kilometer (500m plus or minus one (1) meter)

Formula: 2 x straight + 6.286 x Radius x 2 = 500 meters	<u>Example A:</u> 2 x 100 = 200 meters + 6.285 x 8 = 50.28 meters 250.28 x 2 = 500.56 meters	<u>Example B:</u> 2 x 75 = 150 meters + 6.285 x 15.95 = 100.25 meters 250.25 x 2 = 500.50 meters
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10.3 GENERAL PROCEDURE

1. Pit Time - A maximum of two (2) minutes Pit Time shall be allowed to start and launch the competitor's boat. Should the competitor not be able to launch within this time, his attempted run shall be cancelled and recorded as Did Not Start (DNS).
2. Running time - Running Time shall commence at the expiration of Pit Time or at the instigation of the competitor. Running Time shall be a maximum of five (5) minutes without interruption or until the competitor waives the balance of any remaining time should he or she be satisfied with their performance. Adjustments to the competitor's boats may be made during either Pit or Running Time. However, no time extensions will be given for these adjustments.
3. Timing - Timing shall commence when the boat crosses the start/finish Line and will end when the boat has completed two (2) "clean" consecutive laps. No buoys may be touched, struck or cut for a 'clean' lap. Should a buoy infraction occur, the clocks will be reset and the officials will advise the competitor to re-start. The competitor shall notify the officials when he or she is ready to start their timed laps.
4. Timing Equipment As with Straight Line Speed, two (2) Stop Watches must be used and be accurate to one hundredth (1/100 or 0.01) of a second. Results must be given with two (2) decimal places properly rounded up or down. The times registered by both watches must be within 0.30 of a second to be recognized and the average of these two (2) times will be used.
5. Course The course shall be measured and certified by an Organizing Official for a record to be recognized. The total distance of the two (2) laps is to be 500m plus or minus one (1) meter.

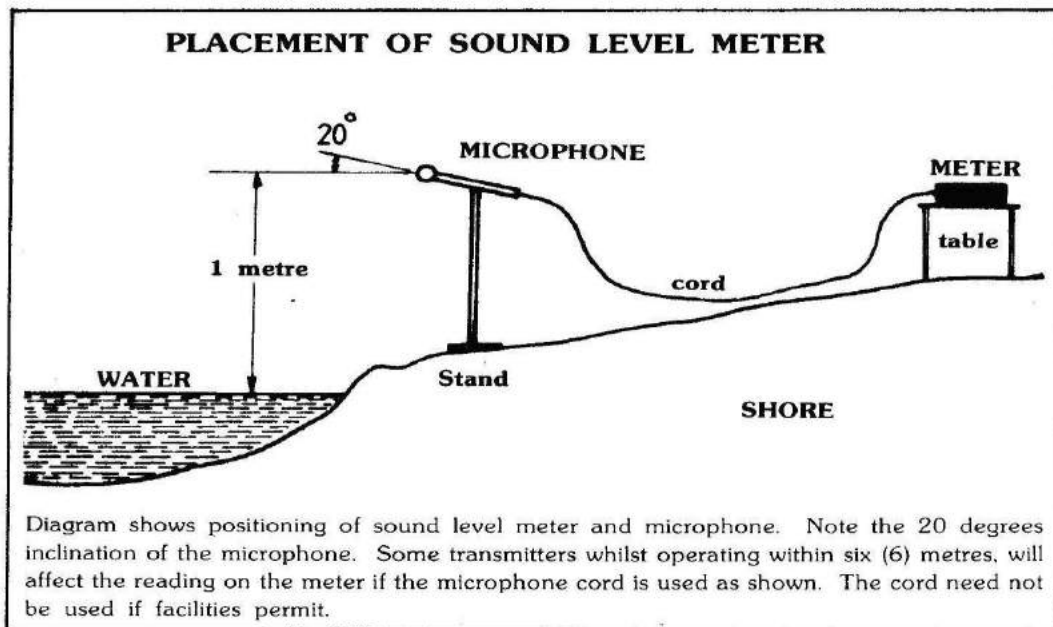
SECTION 11 : MULTI BOAT RACING (FSR)

- 11.1
1. All Multi races are to be started by a means of a recorded Start Sequence being played over a public address system.
 2. The race duration will be fifteen (15) minutes with a maximum at three (3) minutes allowed before the start for each competitor to check his motor and stand away from his boat. This will be followed by a period called "hands off". It will be normally thirty (30) seconds so the organisers may check that competitors are standing away from their boats. Competitors may hold their transmitters. The race start will be announced at the finish of the "hands off" period. "Hands off " will commence when all competitors are ready or the three (3) minutes have elapsed.
 3. The race will be "Le Mans" type start with dead engines.
 4. Racing will be carried out in a clockwise direction.
 5. Each heat will have a maximum number of fifteen (15) competitors with a minimum of two (2) heats per competitor at State and National levels.
- 11.2
1. Winners will be decided on a total of points scored in the heats.
 2. Formulas for calculating points scored during a heat are as follows:(Laps completed x 5)+ buoys passed (Buoys missed x 2)
 3. When a boat stops during a lap, the buoys passed during that lap are to be counted. This also applies at the completion of the race. Dead boats must remain on the course for the remainder of the race. Rule 8.6.3 applies
 4. A boat entering the pits will score the number of buoys passed for that lap. A new lap starts when the boat exits during the race. For a 'W' course, score four (4) buoys passed. For an 'M' Course, score five (5) buoys passed.
- 11.3 The course will be one of the two alternatives shown in Appendix 2.
- 11.4
1. Boats entering the pits shall have right of way over boats leaving the pits.
 2. Boats leaving the pits during the course of the race must give way to any competitions on the course.
 3. Boats entering and leaving the apron must do so at a slow speed.
- 11.5 For safety and insurance policy requirements, rescue is no longer permitted during the course of the race.
- 11.6 Only the competitor will be permitted to operate the transmitter at any time during the competition. In the event of an emergency, the assistant may operate the transmitter to bring the boat into the pit at the completion of the lap.
- 11.7 During the competition, the competitor must use the driver's platform. The chosen assistant is permitted to remain with the competitor to help during the race, but his actions must not impede other competitors.

SECTION 12 : NOISE REGULATIONS (MANDATORY)

- 12.1 The total sound level output from any boat competing will be as follows: -
- FOV
FSL -Shall not exceed eighty four (84) dbA at a distance of forty meters (40m)
F 1/2K
- FSR -Shall not exceed Ninety (90) dbA at a distance of ten and a half meters (10.5)
- For FSL, two buoys are positioned from the microphone, one at twenty (20) meters, the other at Forty (40) meters. Boats should pass between the two buoys and the sound level must not exceed eighty (84) dbA. Officials should exercise maximum care in taking readings and if there is any doubt, the decision must be made in favour of the competitor.
- The measurements are 'A' weighted as this is the basic rule for noise measurements.
- 12.2 Competition organisers shall be responsible for the enforcement of these rules.
- 12.3 In classes FOV and FSR, one warning will be given to a competitor to allow him to make immediate modifications. Exceeding the limit subsequent to this warning will result in disqualification from that heat.
- In classes FSL and F½ K, exceeding the limit will result in disqualification from the attempt concerned.
- 12.4
1. At any Sanctioned event, the AMPBA Sound Meter is preferred but an alternative may be used. All Sound Meters MUST be calibrated using the Calibrator designed for that model sound meter. If the AMPBA Sound Meter is used and the AMPBA Calibrator is not available for the entire meeting, due to conflicting meetings, the sound meter must be calibrated using the AMPBA Calibrator within Five (5) days of the meeting.
 2. For Club and General meetings, Sound Meters used Must be calibrated every twelve (12) months.
 3. The host club will be responsible for the security, postage and insurance of the AMPBA Sound Level Meter and/or the calibrator, from the AMPBA Secretary and return. The meter and/or calibrator must be returned to the Secretary immediately after the meeting.

- 12.5 Where possible, meters used must be calibrated at the start of each different class or in the event of a sizeable weather change, but never within the running of a class.
- 12.6 The measurement will be taken when the boat passes the point where the microphone is at right angles to the course. Where possible, this point will be marked by a buoy. The distance between the buoy and the microphones is detailed in Section 12.1.



- 12.7
1. Competitors must not reduce the noise level of their boat as they pass the measuring buoy, by reducing throttle or other such means. Penalties, as detailed in Section 12.3, apply for this action.
 2. During class FSR and FOV, care must be taken to ensure that the noise is measured at the correct distance, since the model may be forced to come well inside the measuring buoy. If a boat passes consistently well inside the measuring buoy, (most probably FOV), an allowance for distance must be made.

Table of Relevant Noise Levels

Distance (m)	FOV-FSL-F1/2K (db)	FSR (db)
40	84	
30	86.5	
20	90	
10	96	90
7.5		92.5
5.0		96

- 12.8 Accordingly, the silencer should be installed on the boat in the most horizontal position possible. The final outlet must not in any way be masked by a 'screen to divert the sound'.
- 12.9 The microphone should be between 1 - 1.5 meters above water level. Measurements shall be taken towards the water to eliminate lateral sound reflections and difference in humidity which could affect the readings. A wind suppression device is to be fitted.
- 12.10 Individual states may specify an alternative lower noise level to comply with local government/authority laws. Such a lower level shall be advised to all states and the AMPBA immediately it is in force and in any case, not less than one (1) year before the said event is to take place.

SECTION 13 : 1/8 SCALE HYDRO UNLIMITED HYDROPLANES

13. The purpose of these rules is to duplicate the unlimited class of hydroplanes as closely as possible.
- 13.1 Precedence of R/C Unlimited Rules
1. In the case of a conflict between the general racing rules and the 1/8 scale unlimited racing rules, the 1/8 scale rules will take precedence.
 2. The R/C Unlimited Committee shall be made up of members of the AMPBA. The R/C Unlimited Committee shall reserve onto itself the power of decision in all matters of duplication or conflict.

13.2 Boat Specification, Eligibility hull, Engine and Equipment Requirement.

1. All boats shall be models of past or present American Power Boat Association Unlimited Hydroplanes that are listed on the R/C Unlimited Master Hull Roster. Other Unlimited hydroplanes that raced or are racing outside the USA will be allowed.
2. Boats are to be built on a scale of 1 ½ inches equals 1 foot of actual boat (41" minimum length).
3. Boats shall measure within the following tolerance of the true scale size, excluding appendages:
 - a. Length overall + or -1"
 - b. Beam + or -10%
 - c. Maximum depth + or - 10 %
 - d. Afterplane length + or -10 %
 - e. Tunnel width + or -10 %

The true scale dimensions of any R/C Unlimited shall to be derived from the unlimited dimensions listed on the R/C Unlimited Master Hull Register.

4. Boats shall be painted, configured and detailed like the actual unlimited as it ran in the water. The acquisition of proof validating the paint scheme, cowling configuration, engine or other scale details shall be the responsibility of a boat's owner. Photographs of a boat will constitute proof.
5. Boats shall enter the competition complete with cowling(s) and driver(s).
6. If any removable parts should fall off a boat during a race, you should make every effort to replace it before the next heat you are competing in.
7. The boat engine(s) shall be concealed by either an engine cowl or fake engine (modeling an Allison, Rolls Royce, etc.) or both.
8. A boat bottom shall be of the same general appearance as that of the unlimited. Exceptions: -
 - a. Sponson riding surfaces which may be modified.
 - b. Propeller shaft(s) which may be articulated and ride plate fitted.
 - c. Rudder and turn fin which may be configured and located as desired.
 - d. Air dams are permitted, if concealed.
9. Outdrive units are strictly prohibited and the drive dog shall not extend beyond the transom. Exceptions are two (2) outboard powered tunnels and one (1) Mercuriser powered tunnel.
10. The engine size shall be up to and including 0.67cu. in. (11cc).
11. Tunnel pipes and mufflers must be concealed under the deck or cowl where practical.
12. The number of props and rudders shall coincide with that of the original Unlimited.

13.3 MASTER HULL ROSTER AND REGISTER

1. The R/C Unlimited Hull Roster shall contain the name and details that identify each boat which may be built for R/C Unlimited competition. It shall contain the principal dimensions of the boat that is listed.
2. All boats are to be registered with the National Secretary in writing prior to building.
3. Only people who are financial members of the AMPBA may register a 1/8 Scale Unlimited Hydroplane.
4. If a member's membership lapses for one (1) year, the registered boat will be struck from the roster.
5. Only boats registered on the roster will be allowed to compete in State or National Titles.

13.4 SCALE JUDGING

1. All boats are to be judged from a distance of two (2) meters stand off scale. A picture must be supplied of a full sized boat to the Contest Director for each boat entered.
2. To be eligible, the boat must start and finish at least one (1) competition heat at that meeting. Judging will be held before the start of racing.

Points :

1 to 10 points for general appearance.

1 to 10 points for detail, engine, cowl, driver, etc.

1 to 10 points for paint job, markings, etc. (Ride Plates and Air Dams, if not original will be penalized.)

13.5 SCORING

1. As detailed in 8.4 or at the organiser's discretion.
2. When events are run with qualifying heats and points, to determine final heat placing's, only points in the final heat shall determine the event winner and placing's.

SECTION 14 : UP TO 27cc PETROL SPARK IGNITION

14.1 ENGINE SPECIFICATIONS

1. Engines may use any type of induction method. (e.g. Piston Port, Drum or Rotary Disk etc.)
2. Engines to have a capacity from 15.01cc to a maximum of 27.00cc
3. May be either single or multiple cylinders.
4. Shall rely on the spark ignition system for the initiation of combustion. No Glow Plug engines are allowed. Engine must be able to be stopped on the water by transmitter control.

5. Fuel dopes such as Methanol, nitromethane, propolyne oxide, octane boosters and oxidants etc are prohibited.
6. Mixed fuel may be supplied for racers by the club hosting the event, in this instance no racer supplied fuel if allowed.
7. All AMPBA racing rules apply.
8. Maximum hull length of 1397mm (55 inches) maximum width 711.2mm (28 inches).
9. Any brand mono, hydroplane and tunnel hulls allowed, but must run in their respective classes. All hull designs and set ups must comply with AMPBA rules.

14.3 HULL CLASSIFICATIONS

1. Maximum length 1397mm (55inches), Maximum width 711.2mm (28inches).
2. Single engine only allowed.
3. Any brand Mono, Hydroplane or Tunnel hulls allowed, but must be run in their respective classes. All hull designs and setups must comply with AMPBA rules.

14.4 FUEL

The only fuel permitted to be used in AMPBA gasoline classes must comply with the following:

1. It must be Unleaded.
2. Be no more than 98 R.O.N.
3. Be readily available from retail petrol pumps throughout Australia.
4. Be manufactured for the use in road registered vehicles, which comply with Aust. Design Rules.
5. Contain no additives other than those added at point of manufacture or lubrication oil for two stroke engines.
6. Fuel dopes or additives such as methanol, nitromethane, propolyne oxide, octane boosters and oxidants etc are prohibited.
7. Two stroke lubricating oil brand, type and mixed ratio is open, but must not contain octane boosters, oxidants or any other performance boosters.

14.5 FUEL TESTING

1. Fuel samples may be drawn for testing from competing boats at any time during the period from the commencement of the event until the competing boat is released from scrutineering at the conclusion of the event, or the event results have been ratified.
2. It is the competitors responsibility to provide the means by which the fuel samples may be taken from the boat.
3. Whilst the fuel samples for testing are being taken, the competitor must be in immediate attendance to observe the process.
4. Fuel samples shall be tested according to the procedure listed below:
 - a. The event contest director or his/her nominated representative will take one sample of the fuel for testing.
 - b. The competitor may, at their discretion, request a second sample be drawn at the same time. After being duly identified and sealed, this second sample may be retained by the competitor. The competitor may use the retained sample in his/her defence provided that the seal is only broken in the presence of the contest director of the meeting. Where the contest director deems that no action is necessary the container holding the competitors sample shall be returned to the contest director.
 - c. A Digatron DT15 or DT47 series Fuel Testing Kit used as per the manufacturers instructions shall be the only acceptable method of on-site fuel testing at all AMPBA Sanctioned Meetings.
5. It is the competitor's responsibility to ensure the added two stroke oil conforms to these rules. Ignorance will not be a defence.
6. Any competitor found to be using fuel not conforming to AMPBA rules 14.4 will be immediately disqualified from that class. The competitor has the right of appeal as described in Section 5 (Protests).

SECTION 15 : 35cc OPEN PETROL SPARK IGNITION

15.1 SPECIFICATIONS

1. Engines may use any type of induction method. (e.g. Piston Port, Drum or Rotary Disk etc.)
2. Engines to have a capacity from 27.01cc to a maximum of 35.00cc.
3. May be either single or multi cylinder.
4. Shall rely on the spark ignition system for the initiation of combustion. No Glow Plug engines are allowed.
5. Engine must be able to be stopped on the water by transmitter control.
6. Fuel dopes such as Methanol, nitromethane, propolyne oxide, octane boosters and oxidants etc are prohibited.
7. Mixed fuel may be supplied for racers by the club hosting the event, in this instance no racer supplied fuel if allowed.
8. All AMPBA racing rules apply.
9. Maximum hull length of 1397mm (55 inches) maximum width 711.2mm (28 inches).
10. Any brand mono, hydroplane and tunnel hulls allowed, but must run in their respective classes. All hull designs and set ups must comply with AMPBA rules.

15.2 FUEL AND TESTING

Fuel used in this class must comply with section 14.4 and fuel testing must comply with section 14.5.

SECTION 16 : OUTBOARD TUNNEL CLASS

16.1 DEFINITION

The spirit of the rules is designed to represent Scale Formula One Outboard Tunnel Hulls.

16.2 HULLS

1. The hull must consist of unbroken full length sponsons, with or without steps which are the sole running surface of the boat.
2. The motor must turn on a pivot off the transom to provide the steering of the craft. No extra rudders are to be used.

16.3 ENGINES

The class is to be broken in to five 5 categories.

- | | | | |
|----|---------------|----|---------|
| 1. | A Class | 4. | C Class |
| 2. | A Class Sport | 5. | X Class |
| 3. | B Class | | |

16.4 **A Class (3.5 cc) SPORT OUTBOARD**

1. Engines and lower drive combinations must visually represent original manufacturer's factory production available to the general public.
2. To be race eligible, the manufacturer must have offered a similar outboard engine commercially for sale prior to the sanctioned regatta (no prototypes).
3. The powerhead and lower drive unit must be of the same manufacturer and general type.
 - a. Powerhead and lower drive unit may be of a different version but must have been produced for the equivalent engine cubic capacity.
 - b. No *after-market* adaptor plates or couplings are permitted to attach the powerhead to the lower drive unit.
4. The Carburettor and muffler should be original equipment supplied with the outboard engine type being used and must match external factory appearance. Muffler outlets and carburettor inlet are subject to and must pass measurement by dial callipers or the Go, No Go Gauge test.
 - a. No high performance exhaust systems (tuned pipes) will be allowed even if offered by the engine manufacturer.
 - b. Standard chamber and ducted exhausts offered by O.S. Max, K&B and Thunder Tiger are allowed.
 - c. Legal outboard powerhead exhausts may be exchanged between different versions of the same manufacturer's engines without penalty, provided they were produced for an engine of the same cubic capacity.
 - d. After market carburettors are specifically excluded.
 - e. External mixture controls are permitted.
5. Engine internal component substitutions and modifications are permitted, subject to preserving the engine capacity within AMPBA class tolerances.
6. Modifications to the skeg and cavitation plate, such as polishing or re-profiling are permitted. Use of external oil feed systems for drive lubrication are permitted.
7. Visual scrutineering of engine and lower drive unit compliance with the spirit of the class rules is the responsibility of event committee and all competitors.
 - a. It is not intended that scrutineering becomes onerous or an end in itself. Measurement of engine parameters is at the discretion of the event committee.
 - b. Engine carburettor bore and exhaust outlets may be checked with a 'GO, NO-GO' gauge or dial callipers against original manufacturer's specifications. The GO/NO GO gauge shall not enter the exhaust outlets or the carburettor barrel bore.
 - c. The GO/ NO-GO gauge must be 0.3205" in diameter, preferably a commercially available Pin Gauge.

Note: It will be the contestant's responsibility to check and verify carb bore and exhaust outlet bores prior to the contest.

SECTION 17 : ELECTRIC COMPETITION

17.1 INTENT AND DEFINITION

To create a national standard for Electric Radio Controlled boats which is able to be easily scrutineered and which provides racers with a clear understanding of what is a safe race legal vessel.

17.2 PROPULSION CELL AND BATTERY SPECIFICATIONS

1. PROPULSION CELL AND BATTERY CLASSIFICATION

- a - Propulsion energy to be provided by Lithium Polymer (LiPo) cells only. The cells may be assembled into one or more batteries. The total system of cells providing propulsion energy on board the boat shall subsequently be referred to as the "battery."
- b - The configuration of cells within the battery is open. All cells in the battery shall be the same brand, model, discharge rate and capacity.
- c - If the original labeling has been removed from the battery, it is up to the competitor to ensure the number of cells can be easily determined for scrutineering.
- d - Total battery weight includes all parts of the battery and attachments (e.g. wires, balance lead, plugs, shrink wrap, Velcro etc).
- e - The battery must be easily removed from hulls for scrutineering.
- f - A model without an externally fitted means of physically disconnecting the battery from the speed control shall not practice or race in competition (including club days). A blue or orange triangle should indicate the location of the "safety loop".

2. PROPULSION BATTERY CLASSIFICATIONS

- a. EA: The battery shall have:
 - i. up to 4 LiPo cells (maximum battery weight of 650g)
 - ii. a maximum nominal voltage of 14.8V.
- b. EB: The battery shall have:
 - i. 5 - 6 LiPo cells (maximum battery weight of 975g)
 - ii. a maximum nominal voltage of 22.2V.
- c. EC: The battery shall have:
 - i. 7 - 12 LiPo cells (maximum battery weight of 1,950g)
 - ii. a maximum nominal voltage of 44.0V.

17.3. MOTOR SPECIFICATIONS

- a. Open Motors can be any permanent magnet motor.
- b. A boat must have a means of starting and stopping the motor by radio control.

17.4 HULL CLASSIFICATIONS

- 1. Mono, Hydro and Tunnel hulls may be separated into classes according to the combination of hull type and class of battery used.
- 2. Sport Hydro
 - a. The intent of the Sport Hydro class is to provide a racing class that resembles full size hydroplanes, without requiring scale detail.
 - b. Hull specifications shall be as per Section 20.2 (Petrol Sports Hydro).

17.5 RACE SPECIFICATIONS

- 1. Any boat that stops during the race and does not immediately resume is deemed to be a Dead Boat (and will be called as 'Dead Boat') and must not be moved until so directed by the race controller.
- 2. All other race rules are as per Section 8 - OVAL HEAT RACING.

SECTION 18 : OFFSHORE CLASS

A class designated specifically for larger model powerboats to promote fair competition amongst similar sized larger craft in oval racing competition. Whilst a scale representation is encouraged, boats may be a true-life replica or of free construction appropriate to, and within the requirements and specifications set out for Offshore competition. All Offshore craft shall sport a form of either - sponsor logo, manufacturer logo, graphic design or true-life replica theme. This may include, but is not limited to, the use of gelcoat colors, paints and or vinyl graphics. EG: basically, no plain white boats. Hull classifications recognized for the class will reflect full size Offshore race craft that fall into two categories. Eg: mono and catamaran. All hull designs and set ups must comply with AMPBA rules.

18.1. Offshore classes;

Offshore Lites	0 - 70cc FOSLS Formula Offshore Lites
Offshore Class 1	0 - 35cc FOSC1 Formula Offshore Class 1
Offshore Class 2	35.01 - 70cc FOSC2 Formula Offshore Class 2

18.2. Hull classifications;

Offshore Lites class hulls not subject to any rules under 18.2 - refer to 18.3.4

Mono; A monoplane, stepped mono or deep vee are all acceptable hull types for Offshore mono and must have a single keel, with or without steps, with or without transom overhang, running the full length of the hull excluding transom overhang. Hulls may have transom overhang and is not included in total hull length.

Catamaran; An Offshore catamaran hull is defined as having two unbroken sponsons, with or without steps, with or without transom overhang, running the full length of the hull excluding transom overhang. Hulls may have transom overhang and is not included in total hull length.

Note; Transom overhang is defined as being a rearward section of the hull that is free from the water at racing speed. As transom overhang can vary greatly in lengths where applicable, it is excluded from overall hull length measurements to simplify this process on all hull types. All Offshore hulls are to be fitted with a tow hook on the forward section of the hull for recovery purposes. Catamaran tow hook may be fitted underneath the tunnel. Lifting handles are optional. All boats shall have positive buoyancy when open compartments are filled with water.

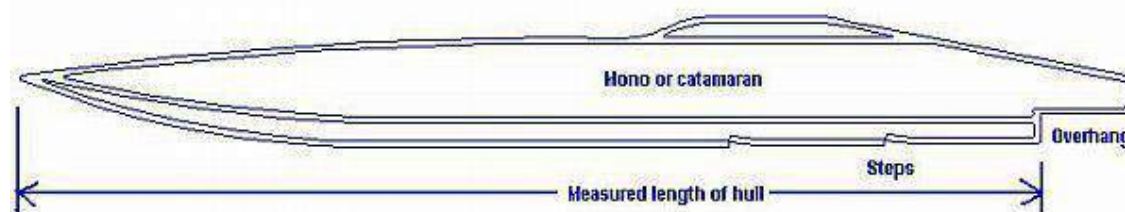
18.3. Hull dimensions;

18.3.1. The height difference spanning any 2 steps on an Offshore class 1 or 2 hull to be no more than 10mm measured on what is the running surface of the hull at racing speed. A step or notch is where there is a difference in height between the running surfaces along the keel.

18.3.2. Strakes as defined in section 7.2.2.d with a new measurement of 10mm vertically and 22mm wide horizontally to accommodate the larger craft being used in Offshore class 1 and 2 competition.

18.3.3. A minimum length of 1397.01mm (55.01 inches) to a maximum of 2135mm (84 inches) excluding any transom overhang for all hull types used in Offshore class 1 and 2 competition. Measurement of length is to be taken from the bow to the rear most wetted surface of the hull at racing speed and excludes any transom overhang, hardware, ornaments or fittings. Eg; arnesens, rudder, strut, bow rail, trim tabs and so on.

18.3.4. Offshore Lites only. A maximum length of 1397mm (55 inches). Hull requirements - mono as per rules 7.2.2 and tunnel/ catamaran as per rules 7.2.3.



18.4. Engine classifications;

Offshore Lites.	0 - 70cc. Single cylinder up to 35cc or 35.01 to 70cc multiple cylinders only of equal capacities
Class 1.	0 - 35cc. Single cylinder only.
Class 2.	35.01 - 70cc. Single cylinder or multiple cylinders of equal capacities.

18.5. Engine types;

Classes 1, 2 and Offshore Lites.

Any induction method – EG: piston port, rotary disc etc, no turbo or supercharging. Manual or electric start is allowed in all classes. Engines must be spark ignition and may be either commercially available lawn trimmer type engines EG; Kawasaki, Stihl, Mitsubishi and so on, or recognized hobby or model engines or engines and parts specifically manufactured for the purposes of remote control craft. Eg; Zenoah, Sikk, QD, RCMK, CMB, SG, Mathe and so on. No glow engines converted to spark ignition. Any engine modifications are permitted.

Note; Turbines, motorbike, mini bike, pocket bike and similar types of engines are prohibited at this time in any and all classes. Any engine type or brand not covered by rule 18.5 to be submitted to the AMPBA for clarification and for insurance purposes prior to any approval for general use. An engine or engines capacities alone are not grounds for automatic acceptance.

18.6. Fuel types;

Classes 1, 2 and Offshore Lites. As described in rule 14.4 and subject to rules as set out in 14.5.

18.7. Fuel capacities;

Offshore Lites – Maximum of 1.2 litres.
Class 1 – Maximum of 1.2 litres.
Class 2 – Maximum of 2.4 litres.

18.8. Race rules;

Race durations will be no less than a standard oval heat race of 1500 meters. (5 laps of 300 meter courses or 6 laps of 250 meter courses) There will be provision to run timed races and / or course alterations if desired and as directed by a host club. Timed races along with any course alterations or any rule changes are to be stated on entry forms by a club hosting a sanctioned event. All other AMPBA race rules apply.

18.9. Failsafes;

At least one failsafe device must be fitted and operational in all Offshore boats to shut down the throttle or to kill the engines ignition system. No Offshore boat will be permitted to enter the water without at least one working failsafe and will be checked at random. It may be inbuilt into the radio equipment and programmed to the model or it may be an add on component. Eg; Venom, Engine-kill and so on. An externally mounted kill switch is not regarded as a failsafe device but may be fitted. The use of more than one failsafe is encouraged.

SECTION 19 : GRAND PRIX HYDRO 7.5cc

19.1 BOAT SPECIFICATIONS

- 1 The boat may be purchased ready built, modified from an existing hull, or scratch built from any suitable material generally used in model boat construction.
- 2 Minimum hull length will be 35".
- 3 The deck, cockpit, tail, or fin configuration may be changed to keep boats interesting.
- 4 a. Hulls must be of Unlimited and/or Limited design, with all riding surfaces (drive train and prop not included) in the front 50% of hulls length. Picklefork hulls may not be recessed more than 25% of the total length of the hull.
b. No boat shall have an afterplane greater than 60% of the total length of the hull. Length "C" shall be measured from the transom to the point where the sponson is attached to the hull. (Fig 1)
c. The air trap / tunnel, if applicable, shall be no deeper than 1/2". The depth shall be taken at the rear of the sponson, measured from the bottom of the hull to the top of the air trap. (fig 2)
d. In determining width "D", the rear sponson width shall not be included in the minimum measurement. The minimum tub widths shall be 5 1/2".
e. Length "A" plus "B" must not exceed 25% of the total hull length.
- 5 a. The boat must be attractively painted in the spirit of Unlimited Racing. Each boat must have a sponsors name or logo affixed to the hull.
b. The boat must have the drivers AMPBA number on it proceeded by the letter "U". The number can be on the hull or tail.
c. A driver of scale like appearance must be of shoulder height except where a boat has an enclosed cockpit design. A visible driver will not be needed as long as a simulation of a windshield is part of the paint scheme.
d. There shall be no exposed tuned pipes allowed. Tuned pipes shall be covered by either a deck, a cowl, or an exhaust shroud. That portion of a tuned pipe which is confined to the engine compartment shall be exempt.
- 6 Engine compartment covers and fake engines are not mandatory. Driver's cockpit, cowls and tail fin sections are mandatory.
- 7 No outdrive assemblies will be allowed. No twin rudders or twin props will be allowed. The strut may be mounted on the transom or underneath the rear of the hull. The rear of the strut assembly including the drive dog must not be more than 70mm behind the transom. That translates to a measurement taken from the transom to the propeller contact face of the drive dog, which must not exceed 70mm at the maximum limit. The drive dog must be a standard over the counter type.

19.2 ENGINE SPECIFICATIONS

1. The engine must conform to AMPBA "Class B" specifications. Tuned pipes are allowed.

19.3 GENERAL RULES

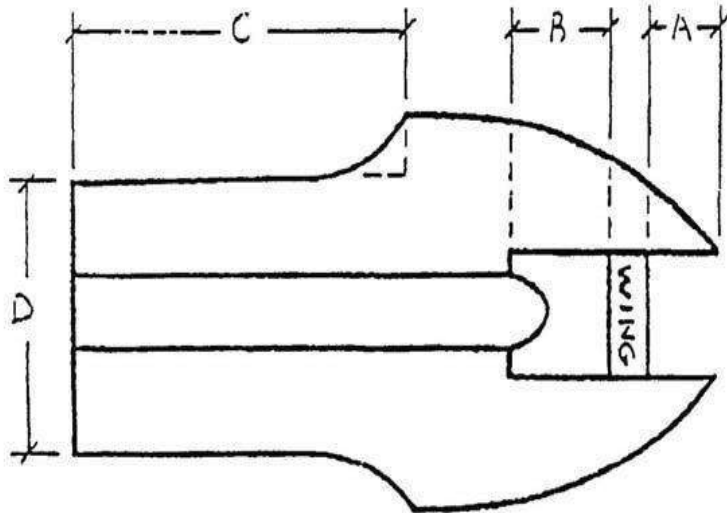
1. Boats will be checked for appearance prior to racing.
2. There are no restrictions on fuel or prop used.
3. Any boat not passing the technical inspection will be disqualified and forfeit entry fee for that race
4. Boats will run on standard AMPBA course(s).

19.2 ENGINE SPECIFICATIONS

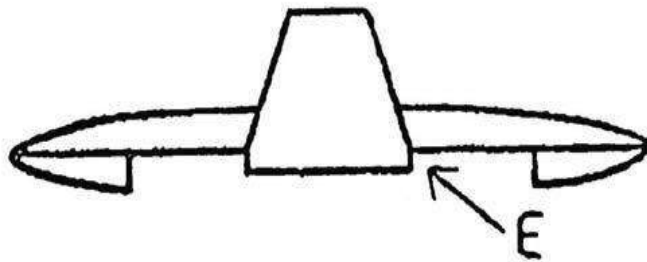
1. The engine must conform to AMPBA "Class B" specifications. Tuned pipes are allowed.

19.3 GENERAL RULES

1. Boats will be checked for appearance prior to racing.
2. There are no restrictions on fuel or prop used.
3. Any boat not passing the technical inspection will be disqualified and forfeit entry fee for that race.
4. Boats will run on standard AMPBA course(s).



(Fig 1)



(Fig 2)

SECTION 20 : SPORTS PETROL HYDRO

20.1 DEFINITION

The intent of the Sports Petrol Hydro classes is to provide a racing class that resembles the full size Limited Inboard, Unlimited Light and Unlimited Hydroplane Classes as closely as possible.

20.2 HULL SPECIFICATION

1. The hull must resemble a limited or unlimited hydroplane design of the past or present with the exception that (outrigger, modified outrigger and/or tunnel hulls are not permitted in this class).
2. Sport hydroplanes may have more than two riding surfaces touching the water at planing speeds.
3. The hull can contain rear wings and/or front wings.
4. A Canard hull defined as having two rear sponsons and a single forward sponson, will be allowed to run in this class.
5. The sponsons may have pads or breaks that contact the water at planing speeds.
6. The boat must have a name and/or sponsor's name, logo and AMPBA racing number affixed to hull (a local, national, or fictitious sponsor name is acceptable).
7. If the bow is recessed behind the tips of the sponsons, the recess must be no larger than 25% of the overall length of the boat.
8. The boat must have a driver and cockpit/or defined simulated enclosed cockpit.

20.3 ENGINE SPECIFICATION

1. Engines must conform to current AMPBA Gasoline Engine Classes as defined in section 14 or 15.
2. All engines must have a canister muffler, custom muffled exhaust system or tuned pipe.

Section 21- TWIN PETROL OUTRIGGER CLASS

21. A class specifically designated for twin cylinder or twin engine powered Petrol Outrigger Hydroplane type models. No single cylinder applications are allowed. All AMPBA racing rules apply.
- 21.1 Twin cylinders only of equal capacity, each with a minimum total capacity of 35.01cc and a maximum total of 70cc. Engine configurations may be either (a) two separate single engines, (b) twin cylinder engine physically joined from two single cylinder engines, or (c) a twin cylinder engine may be used.
- 21.2 The Hull will be an Outrigger Hydroplane type with a maximum length of the centre tub section of 1397mm (55 inches) not including running gear. Front and rear sponsons are considered accessories and are not included in any measurements. No Sport Hydroplane, Scale Hydroplane, Mono, Tunnel or Catamaran type hulls allowed.
- 21.3 **Engine types:** As per 18.5 Offshore
- 21.4 **Fuel types:** As described in rule 14.4 and subject to rules set out in 14.5.
- 21.5 **Fail Safe:** All boats eligible for this class are to be fitted with a functioning engine ignition stop/kill device that will automatically turn off the motor/motors in the event of either/or the failure of
1. Transmitter.
 2. Receiver.
 3. On/Off switch, wiring harness.
 4. Battery pack.
 5. Servo.

This device is also to be able to be manually operated via a switch/button on the transmitter in the event of a servo or carburetor linkage failure resulting in the motor/s being unable to be throttle controlled. This system is to be in addition to any transmitter 'built in' FAIL SAFE SYSTEM that may be present.

Scrutineering of the device is to be done prior to the boats competing at an event.

APPENDIX 1
OVAL HEAT RACING (FOV) COURSES.

Course Measurements (Refer 8.7)

5 Laps = 1.5 kilometers (1500m)

Formula
$$\frac{2 \times S + 6.285 \times R}{5}$$
 1,500m

S = Length of straight from buoy 1 to buoy 6.
R=Radius of corner.

Example 1: 100m straight with 16 m Corner Radius

$$\begin{aligned} 2 \times 100 &= 200 + \\ 6.286 \times 16 &= 100.56 + \\ &300.56 \times \\ &5 \\ &----- \\ &1500.80\text{m} \end{aligned}$$

Example 2: 90m straights with 19.1m Corner Radius

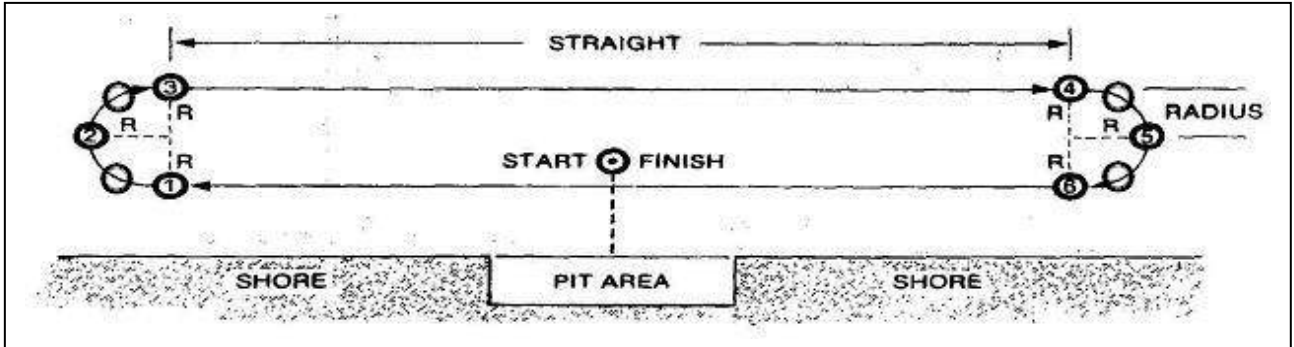
$$\begin{aligned} 2 \times 90 &= 180 + \\ 6.286 \times 19.1 &= 120.04 + \\ &300.4 \times \\ &5 \\ &----- \\ &1,500.20\text{m} \end{aligned}$$

Smaller ponds may consider running six laps.

Formula
$$\frac{2 \times S + 6.285 \times R}{5} \times 6 = 1,500$$

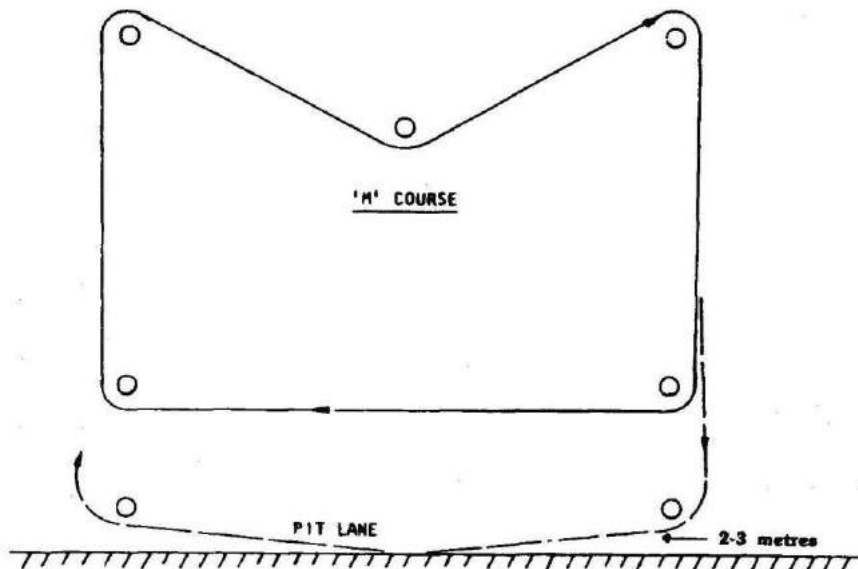
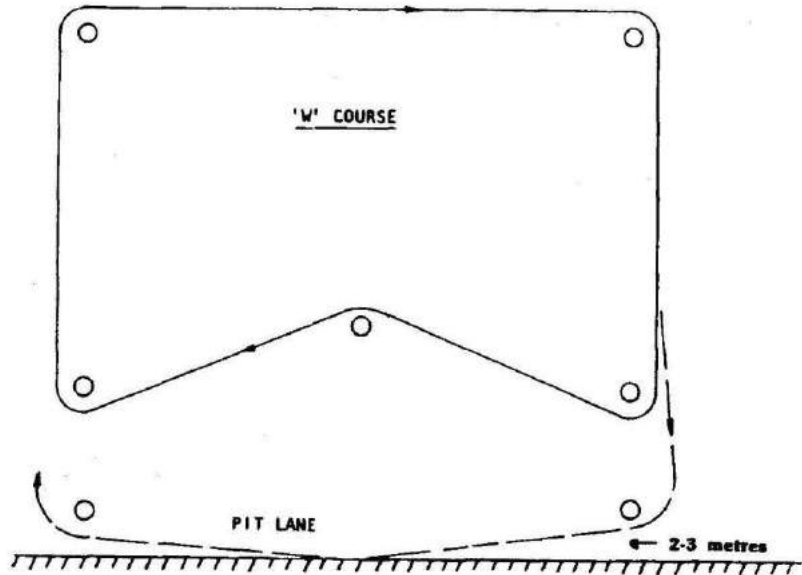
Example 3:

$$\begin{aligned}
 &2 \times 80 = 160 + \\
 &6.285 \times 14.4 = 90.50 + \\
 &\hline
 &= 250.50 \\
 &\quad \times 6 \\
 &= 1,503.00\text{m}
 \end{aligned}$$



APPENDIX 2

FSR COURSES



APPENDIX 3

Safety for Electric Racing

RECOMMENDED CELL AND BATTERY SAFETY

- a. At race meetings batteries should only be charged with a charger and charge program designed for the battery Chemistry/Voltage/Capacity, to which it is applied.
- b. Lithium batteries;
 - i. A balancer should be attached to the battery and the battery must be placed in a fire proof receptacle/LiPo Sack if it is charged or discharged outside a boat. An alternative is a plastic bag of sand placed on top of the battery whilst the battery is in a non-combustible container.
 - ii. Should power only a speed control which is fitted with an automatic or variable voltage cut-off to prevent over-discharge; or a device inline between the speed control and battery which cuts power to the motor if the battery voltage drops below the accepted minimum voltage value i.e. 2.9v per cell
- c. Any battery containing cells which have vented, deformed, perforated or been otherwise damaged must be immediately discharged and stored safely or disposed of in an empty steel bin provided by the club. This battery may not be used in competition until all the damaged cells are removed from it.
- d. Batteries are only permitted if they are constructed with one type of cell, i.e. all cells are the same chemistry, capacity, discharge rate and brand.

Updated 21/09/2007

March 2011: FE Sub committee
Safety Statement
19 March 2011 Revision#3:
Sanctioned event, Club Race or Practice at AMPBA venues.
Electric: Safety

1. An externally fitted safety loop must be fitted which physically disconnects battery from esc. One loop per esc is allowed. An orange or blue triangle (>15mm sides) will visibly indicate this location.
2. The hatch/cover is not to be removed until safety loop is disconnected.
3. Electric class driver must remain on stand 'in control' until safety loop disconnected [usually as their boat is retrieved from water end of run or during rescue]
4. A returned boat must have the safety loop disconnected before removed from launch/retrieval area

Rescue team:

1. Safety loop must be removed as boat is retrieved from water.
2. If a boat has uncontrolled movement, assess risk and act within the following guidelines.

If safe to collect from water, do so and remove safety loop.

If not safe to collect from water, attempt safety loop removal via rod or pole or paddle.

Safety is paramount, if the boat is deemed too dangerous for rescue, protect the team and abandon rescue.

In cases where the boat is an unmitigated hazard, safely dispose of the boat with whatever means available. Submerge with pole/paddle guide away from shoreline ensure other water users are aware the hazard.

Smoke fire etc ..

Li(xx) batteries can self combust if overcharged/overheated.

Cooling the battery is the best option to slow ignition.

During rescue the boat is to be treated as an uncontrolled boat.

If already in pits/shore areas, promptly notify all to evacuate the area only that pit crew and safety crew are able to remain.

Removing safety loop may eliminate the cause, but not eliminate the source

Quickly assess source and disable where possible.

Placing a smoking Li(xx) into a charge sack is an appropriate measure.

If Li(xx) source not removable, cover with fire blanket or submerge into water.

If fire exists, use fire extinguisher and/or cover source with water/soil

Charging :

An appropriately manufactured and labeled LiSafe sack must be used at all times.

An appropriate Lithium chemistry profiled charger must be used.

Batteries must be near air temp prior to charge.

Batteries must be balance charged.

Maximum charge rate must not exceed manufacturer's ratings.

Maximum LithiumPolymer cell voltage must not exceed 4.2V per cell..

Charging must not be unattended. One person may monitor many charging packs within close proximity.