 North American Model Boat Association Official Rule Book – Update	Update #	2024-3
	Date	6/21/24

Enclosed you will find the latest Rule Book updates. To keep your Rule Book current and up to date, please make the page replacements listed below. If you feel that you have missed any updates please call the Executive Secretary to get an additional copy and/or for clarification of current revisions.

Reminder: Per Section 7 - Rule C.1, the attached rule updates are effective immediately once published on the NAMBA website or in the Propwash.

Section

Summary of changes

Table Of Contents

Remove pages: 1 - 2 (*dated 3/31/23*)
 Insert pages: 1 - 2 (*dated 6/21/24*)

Updates needed for below changes

4 - Officers

Remove pages: 1 - 2 (*dated 12/16/09*)
 Insert pages: 1 - 2 (*dated 6/21/24*)

Board of Directors passed proposal:
 - Update members of Board of Directors (Rule D.1.a)

6 - Nationals

Remove pages: 1 - 5 (*dated various*)
 Insert pages: 1 - 5 (*dated 6/21/24*)

Board of Directors passed proposals:
 - Update approval for scheduling Electric Nationals (Rule A.2.a)
 - Clarify classes torn down at Nationals (Rule D.3.a)

8 - Safety

Remove pages: 3 - 4 (*dated 2/5/24*)
 Insert pages: 3 - 4 (*dated 6/21/24*)

- Correct rule reference in rule 8.B.8 (missed with update 2019-1 that changed rules 16.G to 16.H)

9 - Insurance


Remove pages: 1 - 2 (*dated 3/31/23*)
 Insert pages: 1 - 2 (*dated 6/21/24*)

Board of Directors passed proposal:
 - Update process for submitting site insurance (Rule D.3)

13 - Official Courses

Remove pages: 3 - 4 (*dated 6/21/20*)
 Insert pages: 3 - 4 (*dated 6/21/24*)

Board of Directors passed proposal:
 - Addition of diagram and updated course measurements examples to clarify process (Rules D.1, D.2.d)

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Section

Summary of changes

18 - Heat Racing

Remove pages: 1 - 2 (*dated 11/12/23*)

Insert pages: 1 - 2 (*dated 6/21/24*)

- Correct rule reference in rule 18.D.2.a (missed with update 2020-2 that changed rule 13.B.2 to 13.B.5)

25 - Team Marathon

Remove pages: 1 - 2 (*dated 6/3/24*)

Insert pages: 1 - 2 (*dated 6/21/24*)

- Correct rule reference in rule 25.D.2 (referenced incorrectly as 16.B in update 2024-2)

28 - Electric

Remove pages: 3 - 6 (*dated 6/30/19*)

Insert pages: 3 - 6 (*dated 6/21/24*)


13 - 14 (*dated 9/7/23*)

13 - 14 (*dated 6/21/24*)

- Correct rule reference in rule 28.C.2.a.vi (missed with update 2020-2 that changed rule 18.D.2.c to 18.D.2.b)

- Correct rule reference in rule 28.D.1.a.v (missed with update 2019-1 that changed rules 16.G to 16.H)


- Correct rule reference in rule 28.E.5.e.iii.a.iv (missed with update 2023-3 that changed rules 28.F.6 to 28.F.5)

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A. PRESIDENT AND VICE PRESIDENT

1. Duties

- a. The President will be the presiding member of the Board of Directors. The Vice President will assist the President in his executive duties.
- b. The President will call Board of Director meetings as required.

2. Reimbursement

- a. The President will be allowed up to \$400 per year, and the Vice President up to \$200 per year, to make telephone calls for official NAMBA business, which will be paid upon presentation of telephone bills to the NAMBA office.
- b. The President will be allotted \$1000 toward expenses for attending the NAMBA Nationals. The Vice-President and Executive Secretary will be allotted \$750 toward expenses for attending the NAMBA Nationals. In the event that the President is unable to attend and the Vice President attends in his place, the Vice President will be reimbursed the amount dedicated for the President.

B. DISTRICT DIRECTORS

1. Duties

- a. Have a working knowledge of all clubs in the district.
- b. Act as coordinator of all activities in the district.
- c. Review all contest date requests and resolve conflicting dates within the district.
- d. Have the power to suspend or revoke a sanction at a contest for safety violations, and reinstate it when the situation is rectified. Will submit a complete report in writing to the President on all such threatened or actual action taken at a contest.
- e. Develop and institute a continuous recruitment program for members and clubs, and provide advice for new clubs.
- f. Call at least one meeting per calendar year of all delegates in the district.

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C. ASSISTANT DISTRICT DIRECTORS

1. Duties

- a. Will be appointed by the District Director to assist or to act on his behalf at a contest he cannot attend.
- b. Any Assistant Director so appointed will have the same powers as the District Director.

D. BOARD OF DIRECTORS

1. Members


- a. Will consist of the President, Vice President, immediate Past President, and all of the District Directors.

2. Duties

- a. Review/vote on NAMBA business topics not voted on by the general membership.
- b. Withdraw membership from anyone guilty of unsportsmanlike conduct.
- c. Voting power will be limited to one vote per member. A simple majority vote will constitute a Board of Directors decision unless otherwise set out in the NAMBA Official Rule Book.

3. Board Meetings

- a. The President may call Board of Directors meetings at any time deemed necessary, or 1/3 (one-third) of the Board members may request a special meeting. If necessary, such business may be conducted by mail, email, or telephone call. If conducted by mail or email, all members of the Board must receive exact copies of all correspondence.
- b. The annual meeting of the Board of Directors will be held during the NAMBA Nationals.
- c. At a minimum, the President, Vice President, or Executive Secretary will be present during the Nationals meeting. One or two representatives from each district, along with the National Chairmen, are also encouraged to attend.
- d. The Board of Directors will vote on NAMBA business, Nationals rules, Nationals bids, and all NAMBA organization business issues above and beyond the NAMBA general racing rules.
- e. Parliamentary Law will be in accordance with Roberts Rules of Order. The NAMBA Official Rule Book will supersede any such parliamentary law.

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A. GENERAL

1. There will be a NAMBA Nationals held each calendar year. It will be a minimum of six-day to a maximum of eight-day meet and offer four rounds per class.
2. An additional NAMBA Electric Nationals can also be held each calendar year, where only electric classes are offered. When held it will be a minimum of four-day to maximum of four-day meet and offer four rounds per class.
 - a. This event will be separated from the NAMBA Nationals by 30 calendar days, unless both event CD's and a majority consensus of the Board of Directors decide otherwise.
 - b. When a separate NAMBA Electric Nationals is held, any electric classes offered at the NAMBA Nationals that year will be considered as exhibition only and the winner not be recorded as a National Champion
3. Overall CD, Assistant CD, and all individual event CDs will meet the minimum requirements for a CD as set forth in Section 16 whenever possible. In addition, the District Director for the club or district holding the annual Nationals will certify that these persons are capable of performing the required duties.
4. To be classified as a Nationals a diversified selection of classes will be presented, which will adequately offer as many nationally approved classes that can be run during the event. Emphasis will be made on the classes which are popular in the area/district in which that Nationals is held.
5. Milling procedures will be advertised on the entry form and will be half mill, full mill, or both. One-quarter mill will not be allowed.
6. In case of any controversy involving the Nationals, the Contest Director or President will have the final authority in its disposition.
7. All events, etc. associated with the Nationals will meet all NAMBA requirements.
8. Vendors are not permitted to sell or advertise without the approval of the hosting club/district and payment of the appropriate fee.
9. There must be a minimum of five prepaid entries to make a class, if there are less the class can still be run at the discretion of the host club as exhibition only. In addition to be considered for a national championship there must be at least five boats that attempt to run in round 1 of the class, if less it will be an exhibition class.

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B. BIDS

1. Bids for the next annual Nationals should be received by the President no later than the start of the current year's Nationals.
2. Clubs/districts bidding for the annual Nationals who have never hosted a Nationals should receive preferential consideration.
3. The next NAMBA Nationals will be announced at the current awards banquet whenever possible.

C. FINANCES

1. General

- a. Any racer who does not provide adequate funds for payment of entries or fees will be held financially liable and not allowed to compete in any future NAMBA event, district or national, until such debt is paid. This includes bank fees, interest, and any applicable late charges.

2. Loan

- a. NAMBA will provide an interest free loan to the hosting club/district of \$3,000 for use in preparing for the NAMBA Nationals.
- b. Every hosting club/district that accepts the Nationals loan will pay one half back to the NAMBA office prior to the start of the event.
- c. Every hosting club/district that accepts the Nationals loan will pay the balance back to the NAMBA office within 30 days of the end of the event.
- d. If the hosting club/district is unable to repay the loan, they must provide a comprehensive expense report to the NAMBA office within 90 days of the end of the Nationals, to show why they are unable to do so.

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D. SPECIAL CLASS CONSIDERATIONS

1. Scale Unlimited Hydroplane

- a. All unlimited boats entered will have a photograph showing the general configuration and paint scheme of the boat being modeled when it ran.
- b. Any exception to the above must be approved in writing by the National Scale Chairman prior to the event being run.
- c. Any unlimited boat that does not comply with a. or b. above will not be allowed to race and will forfeit the entry fee.

2. Kids "R" Boaters, Too

- a. Because the Kids "R" Boaters, Too class is designed for the beginner with little or no previous model boating experience, entrants in this class will not be permitted to enter any other class at the Nationals.

3. OPC nitro classes and gas classes using G-Limited engines

- a. Engines may be torn down and inspected following the conclusion of racing on that day.
 - i) The top 5 finishers are impounded.
 - ii) The top three finishers may be torn down for inspection.
 - iii) If any of the top three finishers are found to be in violation of rules, 4th and 5th will be moved up accordingly and may also be torn down, if any of those are found to be in violation of rules, those finishing below them will be moved up accordingly without being torn down.

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E. AWARDS

1. General

- a. One award will be given per each five entries, always rounding up to the next multiple of five, with a minimum of three awards given in each class. (see chart below for examples)

Number of Entries	Number of Awards
up to 15	3
16 – 20	4
21 – 25	5
26 – 30	6
31 – 35	7
36 – up	etc.

- b. The hosting club/district will provide a list of the top three finishers in each class to the NAMBA office within 30 days of the end of the Nationals.

2. Kids “R” Boaters, Too

- a. All entrants will receive a trophy that is equally representative in size and quality of the other class awards.

3. Scale Unlimited Hydroplane

- a. Trophies will be awarded to all entrants who qualify and compete in the Unlimited Finals heat (main).

4. High Points Champion

- a. The High Point Champion award, if presented, will be given to the contestant who has accumulated the most points based on all the classes he entered.
- i) For those classes that run a ‘Love Plan’ (where a concluding round which consist of a Consolation and Main is run) only the points earned in the previous four rounds will be added to the points.
 - ii) No points will be added for participation and/or finishing order for any Team Marathon class.
- b. No contestant may use any points accumulated from any class which he entered after the start of the first heat of the Nationals.
- c. No contestant may use any points accumulated from any class that he has switched names with a fellow contestant in order to increase the number of classes entered.

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5. District Club Team

- a. Teams will be limited to a minimum of four and a maximum of eight members. They must all be from the same district. They must be registered as a team before the beginning of the first race.
- b. The entry fee for the team will be \$2 per member.
- c. Districts may enter as many teams as they wish.
- d. The winning team will be the one with the highest average points per boat. Average is determined by taking the total number of points earned by all boats entered and dividing it by the number of boats entered.
 - i) For those classes that run a 'Love Plan' (where a concluding round which consist of a Consolation and Main is run) only the points earned in the previous four rounds will be added to the points.
 - ii) No points will be added for participation and/or finishing order for any Team Marathon class.
- e. No team may use any points accumulated from any class which they have entered after the start of the first heat race of the Nationals.
- f. NAMBA will present the District Club Team patch to each member of the winning team.

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6. Boats will have some means of positive buoyancy when open compartments are filled with water. R/C Combat boats are designed to sink and must not have positive buoyancy.
7. The maximum hull length will be 60", which does not include hardware (i.e. strut, rudder/bracket, trim plates, turn fin, tuned pipe, stub shaft and propeller). R/C Combat ships are not restricted in length.
8. The maximum allowable weight for any boat shall not exceed 35 pounds. Any class may have its own maximum or minimum weight requirements as long as the maximum weight does not exceed 35 pounds. The 35 pound weight limit is "ready to run" before fuel or gas is added. This weight limit applies to all boats except legal R/C Combat classes. A boat can be weighed at the discretion of a club official, contest official or through the protest process already defined by NAMBA rules in Section 16 - rule H.
9. During practice running and non-sanctioned events, members are responsible for the safe operation of their radio equipment, including checking for conflicting frequencies before turning on transmitters.

C. BOAT RETRIEVAL

1. Boats should only be retrieved by means of a retrieve boat (manned or RC) or use of a retrieve ball or pole.
2. Under no circumstances should a person swim or dive to retrieve a boat; if a member does, they will forfeit their NAMBA membership and will be barred from rejoining NAMBA for a period of 12 months. The only exception to this would be for a certified diver that would be attempting to retrieve a sunken boat.
3. Manned retrieve boats must be hard sided, NO inflatable boat/raft can ever be used.
4. A retrieve boat must be secured along the shoreline and unoccupied when a model boat is running in the water.
5. For R/C Combat, all other combat ships must stop and/or clear the area while another ship is being retrieved. They do not need to be removed from the water.

D. R/C COMBAT SPECIFIC SAFETY REGULATIONS


1. Safety shields and/or safety glasses are required for all combatants and guests.
2. Gun safety devices (such as barrel pins or shut-off valves/switches) are required to render the guns inoperative when they are in the working pit area or otherwise not engaged in combat or combat preparation.

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3. The primary (unregulated) CO₂, HPA or Nitrogen supply vessel, whether refillable bottle or disposable cartridge, and any components between the CO₂, HPA or Nitrogen supply and the regulator, as well as the regulator that controls the pressure from the primary CO₂, HPA or Nitrogen supply vessel, must be commercially manufactured. In addition, if any part of the gas system after the regulator exceeds 200 psi, then those components must be commercially manufactured also.
4. The combat area (pond) and some area (dependant upon terrain features) around it should be sectioned off so that spectators can be controlled and kept within safe areas.
5. The by-laws and constitution of the specific club involved in the event may apply additional safety requirements as required.

E. DISREGARD OF SAFETY REGULATIONS

1. Disregard of these safety regulations will cause the loss of insurance eligibility for the member should an accident occur. Disregard of these safety regulations can also result in the member being ejected from an event by the contest officials, or can cause the member to lose use of a particular racing site.

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A. GENERAL

1. NAMBA insurance is provided to members upon payment of the appropriate fees.
2. NAMBA membership provides coverage for the calendar year. It is not prorated.
3. Single event members are covered to the same extent as full members during the event for which they have paid the single event membership fee.
4. NAMBA provides an “Arrive and Drive” program that provides insurance for non NAMBA members to operate a model boat at a specific event.
 - a) A club or district must apply for authorization of the “Arrive and Drive” program before their event. Contact the NAMBA office for specifics.
 - b) The prospective model boater must provide needed demographic information and acknowledge the rules of the program prior to being able to operate a model boat at the event.
 - c) The prospective model boater is covered to the same extent as full members during the event for which they have paid the “Arrive and Drive” event membership fee

B. LIABILITY AND PROPERTY DAMAGE INSURANCE

1. NAMBA insurance provides the member with \$1,000,000 per occurrence/\$2,000,000 aggregate in liability and property damage coverage in the event that they should be involved in an accident in which a spectator is injured or damage is done to a NAMBA insured site. NAMBA insurance also includes a \$1,000,000 umbrella policy to provide additional coverage per occurrence.
2. NAMBA property damage insurance does not cover damage done to another model boat in the normal course of running.
3. NAMBA liability insurance is primary coverage.
4. NAMBA liability insurance is for both the individual member and the owner of insured sites. To ensure coverage, NAMBA members may only participate in running boats at NAMBA insured sites.
5. NAMBA liability/property damage insurance is in effect any time a member is running a boat at a NAMBA insured site, not just during sanctioned events, as long as the member is observing all the NAMBA safety rules.
6. A member is not covered under NAMBA insurance when participating in an event which is sanctioned by another organization which also provides liability and

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property damage insurance for its members. This restriction applies whether this other insurance is of a primary or secondary nature.

7. NAMBA liability/property damage insurance has a \$500 deductible. This deductible may be paid by NAMBA.

C. PERSONAL ACCIDENT INSURANCE

1. NAMBA personal accident insurance provides a member with a \$500,000 personal accident policy which covers injuries which may occur while running a boat or while assisting someone else with their boat.
2. NAMBA personal accident insurance is secondary insurance. The member must utilize any other health or accident insurance that they have available before the NAMBA insurance can be accessed.
3. NAMBA personal accident insurance has a \$100 deductible. This deductible may be paid by NAMBA.

D. SITE INSURANCE

1. Additional site insurance is available to protect the owner of the running site with the same coverage as is afforded the individual member under the liability/property damage policy.
2. NAMBA site insurance provides insurance for, and names as an additional insured, the site owner only when the accident involves a NAMBA member.
3. Site insurance may be obtained by a registered NAMBA club by completing the application process through the NAMBA Membership Portal.

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- ii) Turns of 135 degrees or more will be marked by a minimum of three buoys for radii between 15 feet and 30 feet. For radii over 30 feet, additional buoys to a maximum of five to adequately define the turn will be used.
- c. A legal course for NAMBA Heat Racing and Oval Time Trial records must be either one in which each buoy is surveyed and placed in a fixed position, or one which is measured and has the straightaway marked by a solid fixture on each end. This fixture can either be on the water or on two sides of the lake so that a line can be drawn across to set the straightaway end positions. The radius will then be measured from these fixed straightaway end positions, and will apply to all turn buoys. The lines or devices that are used for measuring will be at the site during a race in the event that anyone should desire to verify the measurements or placement of a buoy.

2. One Mile - Six Lap Record Course

- a. The course will be one mile in total length for all classes.
- b. The course will be six laps for all classes.
- c. The radii used when establishing this course will not exceed 50 feet or be less than 15 feet.
- d. Five buoys will be used to define the turn, except on 15 foot radii turns which may use three buoys.
- e. When optional straightaway buoys are used, a maximum of three buoys will be used for each straightaway.

3. Other Courses

- a. There may be special courses listed within specific class/racing type sections (e.g. electric, offshore, etc.). See individual sections for details.

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D. COURSE MEASUREMENT

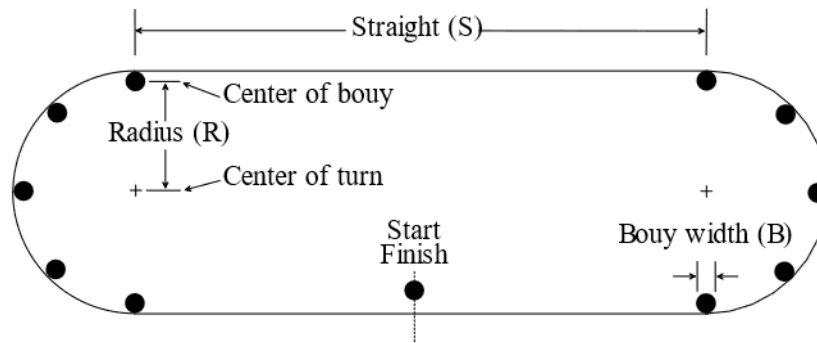
1. Mathematics of course

Course length **C** = number of laps **N** x lap length **L**

Lap length **L** = 2 x length of straight **S** + total length of turns **T**

Total length of turns **T** = $\text{Pie} \times (2 \times \text{radius of turn } \mathbf{R} + \text{buoy width } \mathbf{B})$

Radius of turn **R** (to center of buoy)



2. Formulas

a. Length of course

$$C = N \times ((2 \times S) + 3.1416 \times (2 \times R + B))$$

b. Length of straight

$$S = .5 \times ((C / N) - 3.1416 \times (2 \times R + B))$$

c. Radius of turns


$$R = .5 \times (((C / N) - (2 \times S)) / 3.1416) - B$$

d. Example of a typical course:

Using bolded measurements in table below (all measurements in feet):

$$5280' = \mathbf{6} \times ((2 \times \mathbf{330}') + 3.1416 \times (2 \times \mathbf{34.775}' + \mathbf{.5}'))$$

Course length (C)	Laps (N)	Turn Radius (R)	Buoy Width (B)	Straight (S)
1 mile (5280')	6	15'	.5' (6")	392.1' (392' 1.25")
	6	30'	.75' (9")	344.6' (344' 7.25")
	6	34.775' (34' 9.5")	.5' (6")	330'
	6	38.42' (38' 5")	.75' (9")	318.12' (318' 1.5")
	6	50'	.75' (9")	281.74' (281' 9")
	6	50'	1' (12")	281.35' (281' 4.25")

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A. GENERAL

1. An R/C model powerboat heat will consist of the simultaneous scheduling of two or more boats for a race. The number of heats constituting a race is determined by the number of entries and time available, however, a minimum of three rounds is required with ties to be broken by the fastest time.

B. HEAT RACING PROCEDURES

1. Each heat race will consist of three distinct phases:
 - a. Pit Time
 - b. Clock Time or Mill Time
 - c. Course Time or Race Time
2. The heat starts with the first phase: a two-minute period or Pit Time for starting engines, launching and releasing boats. A starting clock, placed in full view of all drivers (or and adequate audio system) and requiring no less than 30 seconds to complete one sweep, will be started. If all boats are on the water you can go onto the 30-second clock with drivers approval. Contestants will mill on the course in a designated milling pattern until the end of Clock Time. Drivers should pace their boats during Clock Time so as to arrive at the starting line at full throttle simultaneously with the expiration of the Clock Time which constitutes the start of Course Time.
3. There must be a minimum of three prepaid entries on compatible frequencies to make a class and/or race. There will be no more than eight boats in one heat.
4. Heat racing records can only be set at and during NAMBA sanctioned heat races.

C. PIT TIME

1. A Pit Time of two minutes is allowed for the starting of all engines and to allow all boats to be launched.
2. If no entrants have started engines and are under way at the expiration of Pit Time, the heat will be declared “No Contest”. All drivers will be awarded zero points, a DNS.

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3. Boaters who are in the hot pits will not be permitted to pre-start their motors prior to the start of Pit Time. Once the heat is in progress, boaters that did not get started and boaters not participating in that heat will not be permitted to start their motors in the hot pit area.

D. CLOCK TIME (MILL TIME)

1. Clock Time will be initiated at the expiration of Pit Time and no boats may be launched or released after commencement of Clock Time. At the Contest Director's and/or Pit Boss's discretion for safety reasons a boat may be launched after the commencement of Clock Time but before the commencement of Course Time as long as the boat is started, off the stand, and ready to launch by the end of Clock Time.
2. Milling procedures during Pit Time and Clock Time:
 - a. Boats on the course awaiting the expiration of Clock Time will follow the mill pattern in a clockwise direction and around the course buoys in the specified milling pattern, to be set at the discretion of the contest officials (see Rule 13.B.5). Not following the mill pattern will draw a driver infraction with a one lap penalty being assessed.
 - b. During the last five seconds of Clock Time (aka "committed"), all boats must adhere to the lane they are currently established in. They must maintain a straight course or established lane if in a turn. Zigzagging, "S" turns, or fishtailing to delay crossing the start line will draw a driver infraction with a one lap penalty being assessed. Boats will not cut thru the course (continue milling course) during the last 5 seconds to delay in jumping the start or a 1 lap penalty will be assessed. During mill time boats can be assessed a lane infraction for blatant lane violations as described in Rule 17.B.3, regardless of boat speed.

E. COURSE TIME (RACE TIME)

1. Course Time will commence with the expiration of Clock Time and will not exceed five minutes. Any boat not completing the required number of laps in this time will receive a DNF and be ordered off the course.
 - a. The exception to this is where there is active racing between two or more boats, and adverse course and/or weather conditions exist that would prevent normal racing speeds for most boats in that class. In such cases at the sole discretion of the CD, "Course Time" may be extended to eight minutes

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A. GENERAL RULES

1. Team Marathon racing rules are intended as a supplement to the general racing rules of NAMBA. In the case of a conflict, the Team Marathon racing rules will prevail.
2. Team Marathon competition will consist of a minimum of two teams simultaneously running a prescribed course for a specified distance or number of laps.
3. Teams will consist of two boats and four team members, 2 drivers and 2 pit people.
4. Maximum 6 teams per heat.

B. HULL SPECIFICATIONS

1. For Nitro Team Marathon there will be no restrictions on hull type except that both boats must be of the same type (i.e. two monos, two tunnel hulls, or two catamarans, etc.). The length of each boat must be within 10 percent of each other.
2. For Gas Team Marathon the hulls must be monos.

C. ENGINE SPECIFICATIONS

1. For Nitro Team Marathon engines must conform to NAMBA Class B specifications, see Section 10 – rule A.1.
2. For Gas Team Marathon engines must conform to NAMBA Class G-1 specifications, see Section 27 – rule B.1.a.
3. All boats must use positive radio control to shut down the engine. A demonstration of each boat's ability to shut down the engine may be requested prior to the start of the race. Teams with a boat(s) not able to shutdown will not be allowed to compete unless repaired.
4. Boats losing shutdown capability during the race will be required to demonstrate that the shutdown capability has been repaired before being allowed to resume competition.

D. RACE FORMAT

1. The competition will consist of 100 laps run in a clockwise direction over a standard NAMBA oval course.
2. The competition will follow a standard heat race start as described in Section 18 - Rule B.

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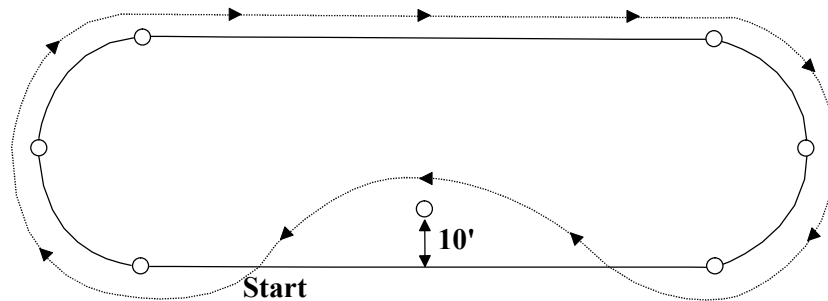
3. Each team boat will run 10 laps alternately until 100 laps have been completed plus any penalty laps. The first team completing 100 laps and any lap penalties will be declared the winner. In the case of multiple heats, the team with the fastest time of all heats will be the winner.
4. When the launch area is too small to allow all teams to safely pit at the same time the following change will be made to the first 2 lap segments:
 - a) Teams will be randomly put into groups of 2, where the first group will pit for the first time on lap 9, the second group on lap 10, and the third group on lap 11.
 - b) The second team boat in each group will run the needed number of laps to bring their team up to 20 laps, i.e. the first group will run 11 laps, the second group will run 10 laps, and the third group will run 9 laps.
 - c) Then all teams will return to running 10 laps per segment.
5. Pitting procedure:
 - a) Boats coming into the pits must use positive radio control to shut down. If the running boat is stopped by other means (i.e. the shore or pit person), a one lap penalty will be assessed.
 - b) If the boat coming into the pits cannot properly shut down it must continue around the course and make another attempt, there is no credit for that extra lap. There will be no circling the launch area or back tracking allowed and will result in a penalty.
 - c) Once the current boat comes in after completing its lap segment, stops running and is retrieved from the water, the pit person retrieving that boat will high five the other pit person who can then start the next boat.
 - d) If in the eyes of the race announcer and/or judges there are excessive safety concerns during the process, the team can be disqualified from the class.
6. Drivers may not leave the drivers' stand or driving area at any time, leaving will result in the team being disqualified. Pit people may leave the hot pit area and return.
7. There will be a pit manager for the entirety of the race, who will monitor activities around boat retrieving, boat launching, and overall safety procedures in the pits. The pit manager will be able to assess penalties as deemed necessary.

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2. M Offshore

- a. Course will be a standard oval with a left turn buoy which will be placed halfway down the middle of either the front or back straightaway and 10 feet inside the course (see diagram).

“M” Offshore Course

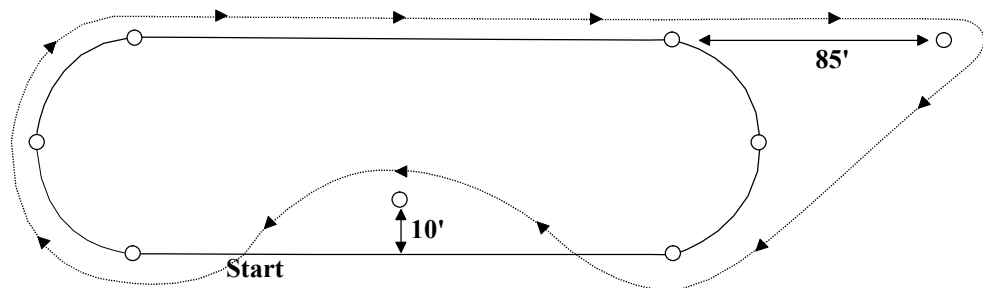


3. Offset Offshore

- a. Same as the “M” course with the addition of an “Offset Buoy”. The Offset Buoy will be positioned in line with either the front or back straightaway, and 85 ft. from any of the course's 4 outside turn buoys.

This diagram is provided as example and illustrates the right rear offset with the left turn buoy in the front straightaway.

Offset Offshore Course



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C. RACE FORMAT

1. Launches - Hand launching or dead-in-the-water launching will be at the driver's discretion.
2. Starts - Two types of starts will be permissible for heat racing. The choice of start format is up to the individual district or Contest Director.
 - a. Flying Clock Start
 - i) The clock system used may be a visual clock or an audio tape type clock.
 - ii) An audible sound or statement will start the Pit Time. Pit Time will be one minute, and a horn or audible sound will signal the end of this time period.
 - iii) Clock Time (Mill Time) will commence immediately upon the expiration of Pit Time, and will last for 30 seconds. At 10 seconds, no more boats will be allowed to be launched. Any boat launched after this time will be ordered off the course and will receive a "Did Not Start" for that heat.
 - iv) All boats will leave the launch area and will go to the left of the start buoy and to the right of the buoys in the left end of the course. All boats will then utilize a 3/4 mill during Pit Time and during Clock Time.
 - v) The start of the race will be at the end of Clock Time when the countdown reaches zero. All stop watches will be started at this point, and will be stopped when the driver finishes the required laps.
 - vi) All boats coming from the right turn at the start of the race will adhere to the five second rule (as defined in Section 18 - rule D.2.b). All boats jumping the start will proceed around the complete course to the start line for a legal start. No boat may be stopped on the course for the purpose of waiting in order to better time the start. A disqualification from the heat will be given for this infraction resulting in zero points.
 - b. LeMans Start
 - i) The official start of the heat will be a signal from the Contest Director.
 - ii) All stop watches will be started at the signal, and will be stopped when the driver finishes the required laps.

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- iii) All boats will race toward buoy one and two on the left end of the course, and will continue around the course to the start/finish line. This will constitute the completion of the first lap under power.

D. CLASS SPECIFICATIONS

1. POWER SPECIFICATIONS

- a. The following motor and cell configurations will be considered official for electric racing in NAMBA:

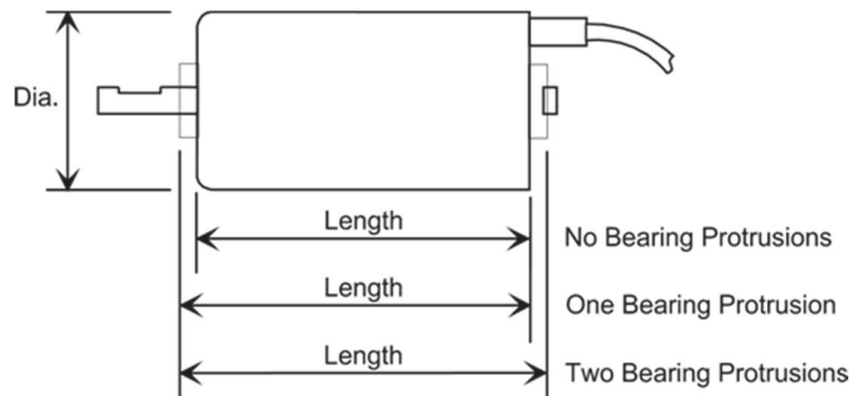
Class	Motor Type	Actual Voltage Limits	Capacity (mAh)
M-2*	Any single motor.	0 - 4.23 V	10,000 max
N-1	Any current ROAR approved stock .05 motor.	0 - 8.46 V	
N-2	Any single motor.		
P-Limited	Any single motor that meets the P-Limited requirements, see rule D.1.d below.	11.10 - 16.92 V	
P	Any amount and/or size of motors	18.5 - 25.38 V	12,000 max
Q		25.90 - 33.84 V	
S*		18.50 - 42.30 V	
T			

** Note: Classes M-2 and S will be allowed for SAW and 2-Lap Competition only.*

- i) The Actual Voltage limits are pre-run/race limits.
- ii) For all sanctioned events, the Contest Director shall designate digital voltage meter equipment for technical inspections.
- iii) For SAW/2-Lap record events, The Contest Director shall establish protocol for a voltage check technical inspection before a boat makes a record attempt.
- iv) For Heat Racing, the Contest Director has the authority to implement pre-race inspections and/or spot inspections as they see fit.
- v) NAMBA Protest Rules shall apply (Section 16 - Rules H.1-3), with “cells” being an included item under #3. If the cells are found to be non-compliant by the Contest Director, the racer will be withdrawn from the class. The Contest Director also has the authority to ban the member for the remainder of the event.

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- b. All of the above Power Specification may be further divided into various hull types. For specifications on these hull types see Section 11, as well as rule E in this section.
- c. There are two acceptable multi-motor configurations for the Power Specifications that allow multiple motors:
 - i) Each motor must see a nominal voltage within the Power Specification. The mAh capacity maximum within the same Power Specification is for all motors combined.
 - ii) The sum of the nominal voltages powering each motor must be within the Power Specification. The mAh capacity maximum within the same Power Specification is for each motor.
- d. P-Limited Approved Motors
 - i) Motors shall be of an inrunner design and shall not exceed the following dimensions:
 - (a) Length: 60mm (2.362 in.), this includes any bearing protrusion
 - (b) Diameter: 37 mm (1.457 in.)



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5. ELECTRIC 1/8 SCALE UNLIMITED HYDROPLANE

a. General Rules

- i) Electric Scale Unlimited Hydroplane rules will follow the Scale Unlimited Hydroplane rules (see Section 21) with the exception of the following:
- ii) Electric Scale Unlimited Hydroplane rules are intended as a supplement to the Electric general rules. In the case of a conflict with the Scale Unlimited Hydroplane rules (see Section 21), the Electric rules will prevail.

b. Power Specifications

- i) Motors shall not exceed the manufacturer's kV rating of 860 kV (950kV breakout threshold).
- ii) Motors may not have a motor case exceeding the following dimensions, including any bearing protrusions:
 - (a) Length: 105 mm (4.134 in.)
- iii) Diameter: 42 mm (1.654 in. Motors without permanently marked factory kV rating will undergo technical inspection to verify rule compliance.
- iv) Twin motors are not allowed.

c. Drivetrain Specifications

- i) No gear boxes allowed.
- ii) Any propeller may be used up to maximum of 57mm in diameter.

d. Batteries

- i) A maximum capacity of 8S Lithium Polymer (LiPo) batteries are allowed. Only LiPo batteries with a cell rating of 4.20 or less volts per cell are allowed.
- ii) LiHV batteries with per cell capacities to 4.35 volts or higher are not allowed.

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e. Motor kV inspection procedure and formulas

- i) The following formula will be used to determine a brushless motor kV output:

$$kV = (120f/p)/(1.343V)$$

Variable definitions:

f = frequency of the motor, as measured in hertz (Hz)

p = number of poles in the motor

V = voltage measured across the motor, as measured in volts (V)

- ii) It is recognized that identical technical inspections of FE motors can provide different results for two or more identically represented motors. Because of this, 950 kV is the “may not exceed” kV output value.

- iii) Technical Testing Process for Determining a Brushless Motor KV Output:

(a) Tools/motor information/KV formula needed for testing:

- (i) Drill motor capable of at least 1200 RPM.
- (ii) Multimeter with frequency-checking capability.
- (iii) Number of poles on the motor to be tested (i.e., 2, 4, 6).
- (iv) Formula as stated in rule E.5.e.i in this section.

(b) Testing motor KV output:

- (i) Attach the multimeter leads to any 2 of the 3 wires extending from the motor.
- (ii) Connect the motor shaft to the drill motor chuck. This can be done by removing the motor from the boat and directly attaching the drill chuck to the motor shaft. If the motor is still in the boat, remove the propeller and attach the drill chuck to the stub shaft/cable driveline.
- (iii) Set the multimeter to “Frequency” mode and spin the motor with the drill until the reading is shown. Record the frequency.