 <b>North American Model Boat Association</b> <b>Official Rule Book – Update</b>	Update #	<b>2021-1</b>
	Date	<b>6/5/21</b>

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. Proposals

**Section**

**Summary of changes**

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Remove pages: v - vi (*dated 6/21/20*)

Updates needed for below changes

Insert pages: v - vi (*dated 6/5/21*)

8 - Safety

Remove pages: 1 - 4 (*dated various*)

Board of Directors passed proposal:

Insert pages: 1 - 4 (*dated 6/5/21*)

- New rule re: securing of canopies and sunshine prevention devices (Rule A.12)

28 - Electric

Remove pages: 1 - 2 (*dated 5/13/18*)

Update number of pages in section

Insert pages: 1 - 2 (*dated 6/5/21*)

Remove pages: 13 - 18 (*dated 5/13/18*)

Updates from proposal sent out in March 2021 Propwash:

Insert pages: 13 - 19 (*dated 6/5/21*)

- Proposal 1: Rules for 1/8th Scale Unlimited Hydroplane (Rule E.6)

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## A. GENERAL SAFETY REGULATIONS

1. NAMBA members must have their NAMBA numbers on their boats and their backs for easy identification. Minimum number sizes will be 1-1/2" on the back and 1" on the boat, except where noted in specific class rules. R/C Combat ships do not require numbers on boats or members.
2. Every contestant entering NAMBA competition must show proper evidence of current NAMBA membership.
3. Every driver must have a pit person at all times, whether in practice or during a contest, who is also a NAMBA member and who is aware of all course conditions and NAMBA regulations. R/C Combat ships do not require a pit person or separate observer.
4. Only NAMBA members are allowed in the hot pit area. No persons other than those running a boat, those assisting with the running of a boat, or contest officials will be permitted in the pit area. For R/C Combat the pit is defined as the shoreline of the pond/lake. Other specific crowd control requirements are contained in the specific R/C Combat rules listed below.
5. All persons in the hot pit area, those driving a boat, or those launching or retrieving a boat, must at all times wear shoes which cover the entire foot.
6. At NAMBA events, no smoking will be allowed in the drivers stand area or hot pit area. The hot pit area is defined as the area where boats are started and launched.
7. At NAMBA events, the host club will provide a fire extinguisher in the hot pit area. The hot pit area is defined as the area where boats are started and launched. It is the Contest Director's responsibility to ensure that the fire extinguisher is in place, readily available, and meets the following requirements. The fire extinguisher must be at a minimum BC rated and legally operational.
8. No alcoholic beverage consumption or illegal drug use is permitted while a NAMBA member is operating or assisting in the operation of a model boat, whether in practice or during a contest. Use of these substances by contest officials is also strictly prohibited.
9. Reasonable and proper provisions will be made for crowd control and for the safety of other members and spectators. Model boats will not be operated when anyone is in the water, except for those members who may be in the launch area in the hot pit area to launch or retrieve a boat. R/C Combat members may be in the water under certain circumstances. See specific rules regarding this in the specific R/C Combat rules listed below.

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- a. Anyone operating a radio controlled model boat in an area designated for swimming (such as a swimming pool, wading pool, and/or public beach) when people and/or animals are in the water (except as noted above) will forfeit NAMBA membership and will be barred from rejoining NAMBA for a period of 60 months.
10. No buoys will be set on the course closer than 50 feet to any shoreline. This may be reduced to 30 feet when the adjacent shoreline is such that a boat cannot travel more than its own length out of the water. This rule does not apply to R/C Combat.
  11. A retrieve boat may not be in the water at any time when a model boat is running in the water. 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.
  12. Canopies and other sunshine prevention devices must be securely held in place. Depending upon local requirements, the members may use stakes, rope tie downs, weights, or other means to reduce the chance that canopies or other devices are blown loose.
  13. All rules, laws, ordinances, and regulations of any federal, state, county, and/or municipality will be observed at all times.

## B. BOAT/RADIO OPERATION SAFETY REGULATIONS

1. No boat which has been run aground will be permitted to re-enter the water until the driver has demonstrated to the contest officials that the boat has not been damaged to the point where it might not operate safely. This rule does not apply to R/C Combat.
2. No boats will be started on tables or in the working pits with prop attached, unless it is properly shrouded and protected from accidental contact. No boats will be started in the working pits and then carried to the launching area.
3. Method of propulsion will be of the type that functions by propeller contact with the water or air. Air prop driven boats will be limited to "1/2 A" or "A" class engines only, see Section 10 – rule A.1. Boats propelled with air props must have the prop shrouded, and must have an underwater rudder or skeg of at least one inch square. Inertia reaction devices such as rockets or jets are prohibited.
4. A positive means of engine shut-off and/or positive throttle control is required of all boats.
5. Radio on/off switches will be positioned in such a manner as to prevent accidental shut off if bumped during handling, launching, or running.

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6. Boats will have some means of positive buoyancy when open compartments are filled with water. Boats should only be retrieved by means of a retrieve boat or use of a retrieve ball. Under no circumstances should a person swim or dive to retrieve a boat. R/C Combat boats are designed to sink and must not have positive buoyancy. All other combat boats must stop and/or clear the area while a R/C Combat boat is retrieved.
7. The maximum size of boat will be 60". R/C Combat ships are not restricted in size.
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 G.
9. A frequency board will be provided if any contestant has entered an event using a frequency other than non frequency determinate radios (such as 2.4GHz radios). All frequency determinate transmitters will have the appropriate pin attached any time they are transmitting. During practice running, members are responsible for the safe operation of their radio equipment, including checking for conflicting frequencies before turning on transmitters


#### C. 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.
3. The primary (unregulated) CO<sub>2</sub>, HPA or Nitrogen supply vessel, whether refillable bottle or disposable cartridge, and any components between the CO<sub>2</sub>, HPA or Nitrogen supply and the regulator, as well as the regulator that controls the pressure from the primary CO<sub>2</sub>, 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.

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#### D. 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 RULES

1. Electric racing rules are intended as a supplement to the general racing rules of NAMBA. In the case of a conflict, the Electric racing rules will prevail.
2. A positive method of speed control must be used. On/Off micro or variable speed controls are allowed.
3. Battery Guidelines
  - a. The following battery chemistries will be considered official for electric racing in NAMBA:
    - i) Ni-chemistry: maximum of Sub-C sized cells with nominal 1.2 volt per cell.
    - ii) Li-polymer chemistry: nominal 3.7 volts per cell.
    - iii) Li-ion chemistry: nominal 3.3 volts per cell.
  - b. Racers wishing to run alternative chemistries to those listed will be required to provide data to the contest official to verify the chemistry's volts per cell and any special safety requirements. Allowing alternative chemistries will be at the discretion of the Contest Directory based on the data provided.
  - c. For the purposes of determining maximum allowances, a "pack" will be considered any number of cells in series whose min/max nominal voltage falls within the allowed nominal voltage range for the designated class.
  - d. It is recognized that the high energy potential of modern cells can pose a potential for danger to racers, fellow members, spectators, as well as to racers pit equipment. It is therefore required that each racer keep in their charging area appropriate safety equipment. This may include fire extinguishers, safe charging enclosures, sand buckets, etc. Additionally, the hosting clubs may provide additional equipment, charging procedures, and/or charging areas as they see fit.
  - e. Chargers must be used that are specifically designed for the chemistry of cell being charged, with strict adherence on charger settings that are within manufacturers specifications (charger and cells) for charge voltage, amperage and capacity. Any racer found not in compliance will be withdrawn from the class and may be banned from competition for the remainder of the event by the Contest Director.



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#### 4. Hull Measurement Guidelines

- a. When a hull minimum or maximum length measurement is specified for any class, that hull will be measured by placing two vertical straight edges at the furthest points fore and aft of the bow and transom of the hull. The distance between those two vertical straight edges will be measured. Hardware will not be included in the measurement.
  - b. The hull will be placed between those two vertical edges and situated in the same horizontal position in which the hull would ride on the water. Any flanges, “shoebox” overhangs or other parts of the hull that are part of the original manufacturing process will be included in the measurement.
  - c. A hull may be lengthened to comply, but material additions must become an integral part of the hull structure. If for instance, material is added to the transom, the entire transom must be lengthened and the addition must be blended in to the rest of the hull.
5. With the exception of boats run in the ECO Specialty Class, boats that are capable of self-righting are not eligible for competition. If the boats self-righting design can be disabled or otherwise rendered useless, then the Contest Director may allow it to compete.

#### B. OFFICIAL COURSES

##### 1. Oval

- a. Fast Electric will follow the Official Course outlined in Section 13.
- b. NAMBA Fast Electric Heat Racing records will be maintained for the N-1 Power Parameter and 1/10<sup>th</sup> Scale Crackerbox for 3 laps on an Official Course.
- c. If a host club of a sanctioned NAMBA event has a pond that cannot fit an official course, they are allowed to use a course dimension of their choice. This information shall be listed on the race flyer and heat racing shall remain 1 mile in length, unless otherwise specified in the rulebook. No records are allowed.

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d. Records

- i) OPC records can be set in the P-Limited, P and T Power Specifications.

5. ECO

- a. Purpose - to provide an “economical” electric class utilizing affordable and readily available 05 motors and economical hardware.

b. General Rules

- i) These ECO Class electric racing rules are intended as a supplement to the general and Electric racing rules of NAMBA. In the case of a conflict, ECO class rules will prevail.
- ii) This class will comply with the existing rules for electric Offshore with exceptions as specified below.

c. Hull Specifications

- i) This class will comply with the existing rules NAVIGA ECO class.
- ii) Boats must use a submerged drive with the rudder pivot forward of the transom.
- iii) There is no minimum or maximum hull length.

d. Motor Specifications

- i) A Limited Modified class utilizing any NORCA approved motor as defined by current NORCA 19T Limited Modified rules. 1-6 cells are permitted.
- ii) Any ROAR-approved stock motor as defined by current ROAR parameters. 1-6 cells are permitted.
- iii) Motors must be in accordance with current NORCA rules for 19T Limited Modified Motors, or with ROAR motor rules for stock motors. From 1 to 6 Sub-C cells only are permitted; any battery chemistry is allowed.

e. Official Courses

- i) The course size for records will be the standard electric Offshore course.
- ii) In the absence of a legal Offshore course, the host club may use any oval format desired. Records may not be set on such a course.

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- iii) The host club may elect to use a NAVIGA Triangle course as defined in current NAVIGA rules.
- iv) Straight-line racing will utilize the standard NAMBA 1/16 mile straight-line course. Straight-line records must be set using cells described above.
- v) Record Courses
  - (a) Must be a NAMBA 1/10 mile electric course.
  - (b) The left turn entrance buoy is to be located 45 feet from each turn exit buoy.
  - (c) The left turn exit buoy is to be located 45 feet from the left turn entrance buoy.

f. Race Format

- i) The length of each heat will be in two minute increments (i.e. four, six, eight, etc). When time is called, boats will race to the Start/Finish line to determine the final positions.
- ii) A flying clock start or a Le Mans type start may be used.

6. 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.)
  - (b) Diameter: 42 mm (1.654 in.)

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iii) 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.

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.6.e.i in this section.

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(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.
- (iv) Set the multimeter to “Voltage” mode and spin the motor with the drill until the reading is shown. Record the voltage.
- (v) Plug the f, p and V values into the equation provided (28.E.6.e.i). The result is the motor’s KV output.

7. ELECTRIC 1/10 SCALE UNLIMITED HYDROPLANE

a. General Rules

- i) The intent of this class is to replicate the look and competition of real unlimited hydroplane racing. Boats are 1/10-scale replicas (one inch equals 10 inches) of the real boats that have raced on the unlimited circuit. This class shall emphasize scale accuracy.
- ii) Electric 1/10 Scale Unlimited Hydroplane rules will follow the Scale Unlimited Hydroplane rules (see Section 21) with the exception of the following.
- iii) Electric 1/10 Scale Unlimited Hydroplane rules are intended as a supplement to the Electric General and Sport Hydro rules. In the case of a conflict with the Scale Unlimited Hydroplane rules (see Section 21) the Electric rules will prevail.

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b. Hull Specifications:

- i) Belly pans or blisters, if added, must be no larger than 2.5 inches wide by 4 inches long.
- ii) Air dams, if installed, must be below the deck line and unobtrusive and not extend beyond the bow.
- iii) Anhedraled left sponsons and modern style sponsons are not allowed on boats running in the vintage class.
- iv) Boats shall use a single rudder at any mounting location on the transom. The center of the rudder post shall not be located more than 1.75 inches behind the transom.

c. Drive Train

- i) Any shaft may be used provided it maintains a straight line from hull exit through the strut.
- ii) No gearbox of any configuration is allowed.
- iii) Any single propeller may be used, and a portion of the propeller must be under the transom. The drive dog is defined as not a part of the propeller

d. Motor Specifications

i) Currently approved motors

<b>Brand</b>	<b>Model</b>	<b>Description</b>
AquaCraft	AQUG7000	L36/56 7.2-18V – 6 pole brushless
Himax	HB3630	1500 brushless – 6 pole brushless
ProBoat	PRB3310	A3630-1500 – 6 pole brushless
	DYNM3835	A3630-1500kv – 6 pole brushless, water cooled, marine motor

- ii) No modifications may be made to the motor. Except for normal wear, drive flats or keys, electrical connectors and water cooling, it must be run as shipped from the manufacturer.
- iii) Power Limits: 10.1 to 15 Volts nominal, any chemistry. Maximum of 2 packs in parallel. Maximum total capacity shall be 10,000 mAh.

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e. Class Specifications

i) Vintage Class

(a) Defined as those boats conforming to NAMBA Master Hull Roster (MHR) numbers 2730 through 7008 inclusive, and MHR numbers: 7102, 7132, 7171, 7206, 7221, 7422, 7499 and 7505.

(b) Skid/turn fin shall be mounted to the inside of the left sponson and shall not extend beyond the back of the sponson. The size is limited to a maximum of 2 inches wide by 1 inch deep measured from the sponson riding surface. No hook shaped skid fins are allowed

ii) Modern Class

(a) Defined as those boats conforming to NAMBA Master Hull Roster numbers 7025, 7029, 7175, 7177, 7207, 7251, 7325, 7402, 7441, 7455, 7495, and numbers 7571 through 0717 and beyond.

(b) Follows all rules listed above except:

(c) Any shaft may be used.

(d) Sponson design shall be up to the builder as long as it does not change the outline shape of the hull.

(e) Skid/turn fin shall be similar in appearance and location to the full size boat (mounted to the back of the sponson). The size, shape and precise location shall be determined at the discretion of the owner. No hook-shaped skid fins are allowed.

f. Race Format

i) Shall be as set forth in Section 21 Rule B plus the following:

ii) All boats shall travel COUNTER-CLOCKWISE around the course turning LEFT.

iii) A one minute countdown procedure using an audio countdown clock shall be used to start each heat. The start of the race is at the initial sound of the horn/gun.

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- iv) A boat must be in the water and running at the 30-second mark. Once running, a boat must remain in constant forward motion or be assessed a one lap penalty.
- v) All boats must fully circle the right and left hand turns (in that order) before being allowed to start.

## 8. CATAMARAN

### a. General Rules

- i) Catamaran rules are intended as a supplement to the General Racing rules of NAMBA. In the case of conflict, the Electric Catamaran rules will prevail.

### b. Hull Specifications

- i) Catamarans shall be a stand-off scale version of an Offshore Catamaran style of hull, with two sponsons that normally run the full length of the hull.
- ii) Sponsons are separated and connected together by a tunnel.
- iii) Sponsons may have lateral breaks.
- iv) Inboard or outboard mounting of the motor(s) is permissible
- v) Hull length must conform to those listed in Rule D.2.a in this section for each Power Specification