

2019 UKOPRA OFFSHORE POWERBOAT RULES

SECTION 6 – CLASS 3



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# 2019 UKOPRA OFFSHORE POWERBOAT RULES

## SECTION 6 – CLASS 3

### Section 6 – Class 3

- 600 Class 3 Offshore Rules
- 601 Organisers Rules Responsibility
- 602 Class subdivisions
- 603 Engines
- 604 Hull
- 605 Propulsion
- 606 Race Numbers
- 607 National Flag
- 608 Safety Equipment to wear
- 609 Safety Equipment to be carried onboard
- 610 Crew



# 2019 UKOPRA OFFSHORE POWERBOAT RULES

## SECTION 6 – CLASS 3

### **600 – Class 3 Offshore Rules**

Changes to these rules can only be made following approval by the UKOPRA Committee.

- Such changes taking effect not less than six months after approval, unless a special decision is mentioned in the wording of the decision with its justification.
- Changes affecting safety may be made at any time, according to their necessity.

The following rules and definitions are for racing powerboats which have been designed and are suitable for racing in open and unprotected waters.



## 2019 UKOPRA OFFSHORE POWERBOAT RULES

### SECTION 6 – CLASS 3

#### **601 - Organisers Rules Responsibility**

Organisers of UKOPRA events shall not be permitted to make any additions to these rules which by their nature would affect the eligibility of any boat EXCEPT in circumstances specifically affecting safety or in respect of special laws which may apply to the particular locality of the race.

- Organisers shall seek the approval of UKOPRA to make such additions.
- Organisers shall have the right to refuse any boat which they deem to be unsuitable and/or which does not conform to the requirements of these rules.
- Organisers are free to organise prize categories for varying types, such as cabin boats, diesel engines etc., provided the craft comply with fundamental rules.
- Organisers may also organise separate races for the different classes and/or prize categories.
- The Race Committee shall cordon off, restrict and supervise the crane area. Access to this area shall be limited to authorised race officials and designated race boat crews.



2019 UKOPRA OFFSHORE POWERBOAT RULES

SECTION 6 – CLASS 3

**602 - Class subdivisions**

Class	A	B	X	X	N
<b>Power</b>					
<b>Mono Hull and Multi Hull</b>					
CC	2100	2100	4600	4600	No Limit
HP	115	115	200	300	As Declared
<b>Hull Length</b>					
<b>Mono Hull and Multi Hull</b>					
Minimum	5.75 m	5.00 m	6.00 m	6.75 m	6.75 m
Maximum	7.00 m	6.80 m	8.00 m	8.00 m	9.25 m
<b>Hull Width</b>					
<b>Mono Hull</b>					
Minimum	1.60 m		1.60 m	1.60 m	1.80 m
Maximum	2.00 m		2.40 m	2.40 m	2.80 m
<b>Cube</b>					
<b>Mono Hull and Multi Hull</b>					
<b>Length</b>					
Minimum	2.35 m	2.35 m	2.65 m	2.65 m	3.60 m
<b>Width</b>					
Minimum	1.20 m	1.20 m	1.20 m	1.20 m	1.20 m
<b>Height</b>					
Minimum	0.46 m	0.46 m	0.46 m	0.46 m	0.46 m
<b>Hull Weight (Including Crew)</b>					
<b>Mono Hull</b>					
Minimum	700 kg	655 kg	1000 kg	Add 4kg/hp > 200	4.5KG/ Declared HP
<b>Multi Hull</b>					
Minimum		730 kg	Add 20 %	N / A	Add 20 %
Add kg per m	N / A	50 kg per m	N / A	N / A	N / A
<b>Buoyancy</b>					
<b>Mono Hull GRP</b>					
Minimum	250 L	260 L	360 L	360 L	500 L
<b>Mono Hull Sandwich</b>					
Minimum	130 L	140 L	150 L	150 L	280 L
<b>Multi Hull GRP</b>					
Minimum	N / A	280 L	440 L	440 L	550 L
<b>Multi Hull Sandwich</b>					
Minimum	N / A	180 L	180 L	180 L	300 L



## 2019 UKOPRA OFFSHORE POWERBOAT RULES

### SECTION 6 – CLASS 3

Class subdivisions are established in accordance with the following:

- Non homologated engines are accepted. HP rating is as that given by the manufacturer and engines should not be modified in any form from manufacturers specifications.
- A lower rated base powerhead may be modified to bring it up to a declared horsepower that will be subjected to dyno testing if required.
- 3N requires a declaration of Horsepower to be made that will be subject to Dyno testing at the request of the scrutineer.
- Minimum buoyancy requirements are not a guarantee that a boat will not submerge. Competitors are to make their own assessment as to suitability.
- In the 3A class, only mono hulls will be accepted.



## 2019 UKOPRA OFFSHORE POWERBOAT RULES

### SECTION 6 – CLASS 3

#### **603 – Engines**

##### **Eligibility - Low Emission Outboard Engines**

Low Emission approved engines used in Class shall be strictly standard marine production engines as marketed by manufacturers to leisure boating (or touring) customers.

At time of homologation, manufacturers must certify that their motors meet the UKOPRA requirements regarding noise when fitted to an appropriate offshore powerboat.

The noise level is to be measured by means of a phonometer which conforms to the specifications laid down by IEC and ANSI, a precision sound meter using the “A” weighting and set to slow response.

The registering microphone is placed at a distance of 2 m from the boat. The boat must pass it at top speed. Measurements must be made on open water free of all obstructions over a minimum distance of 2 m in all directions.

Two measurements must be carried out, while the boat approaches and while moving away. Neither of the measurements is to exceed db (A) with a db (A) tolerance.

The only Low Emission outboard engines eligible for use in Offshore are those approved (at time of homologation application) by UKOPRA.

No. of manufactured engines up to:

000 cc = 000 units. 00 -2000 cc = 00 units. 200 cc and above = 2 0 units.

The engine being placed in water, the cooling shall be effected only by its own standard circulation pump. The intake to the circulation pump may be modified for cooling purpose only. Bearing carriers and prop shaft may be changed from original. Bearing carriers may be fixed to gear case by additional screws or clamps.

Bearing carriers and prop shafts may be changed from original.

Violation of any of the above rules will entail disqualification.



## 2019 UKOPRA OFFSHORE POWERBOAT RULES

### SECTION 6 – CLASS 3

#### Permitted Modifications - Low Emission Outboard Engines

- The propeller is free, together with its washer(s) and nut(s).
- The steering bar and brackets may be reinforced as a safety measure.
- It is also permitted to modify the standard engine cowling in order to facilitate the fitting of steering assemblies, provided that any openings are sealed so the engine cannot pull in any additional air.
- The rubber mounts of the engine may be changed or substituted.
- All external (not contained within the powerhead) studs, screws, nuts, bolts and their washers are free as well as the method of locking them, providing there is no performance advantage.
- Where two engines are fitted, the counter rotation of one underwater unit is permitted providing: - the standard underwater unit casing is retained (subject to 635.09 the final propeller to crankshaft ratio is unaltered
- The use of thrust blocks mounted on the lower unit and or on the boat is permitted. 635.06
- Power Trim: a properly engineered system for altering engine trim whilst under way is permitted.
- In the process of modification, minor optional alternatives as listed and priced by the manufacturer of the homologated engine, may be permitted provided they do not affect engine performance, but improve convenience and safety.
- The water intake may be repositioned. It must however remain on the gear case torpedo. The width and or height of the gear case torpedo must not be changed and the depth of the torpedo cross section from the aft part of the water intake and forward is not allowed deeper than measure  $H_{max} = r/2 - 5mm$ , there the measure  $r$  is taken from min width of gear case in homologation file .The length may be increased. The rear edge of the water intake opening must not be further aft than 30 % of the total length of the modified gear case torpedo.
- The original intake to the circulation pump may be filled in and faired. The front of the gearcase may have material added for cooling purposes.
- The width of the gearcase must not be increased, except where the gearcase meets the lower side of the anti- cavitation plate. The modification shall be for cooling purposes only and shall form a radius. It is also permitted to add material to the centre section exhaust housing for the purpose of reducing noise.





## 2019 UKOPRA OFFSHORE POWERBOAT RULES

### SECTION 6 – CLASS 3

- It is allowed to add material to the leading edge of the gear case skeg up to 10 mm behind a repositioned water intake. The profile of the skeg is free.
- Remote water pick-ups are not allowed.
- Transom brackets may be reinforced, this is only by adding material.
- The fuel connector in the lower cover may be removed and the fuel hose from the fuel tank connected directly to the fuel pump. The remaining void must be sealed to prevent any extra air entering the cover.
- Sacrificial anodes on gear house and transom bracket may be removed.
- Trim fin under the anti-cavitation plate may be removed or cut off.

#### **Not Permitted Modifications - Low Emission Outboard Engines**

The following modifications are expressly NOT permitted.

- Blueprinting' of the powerhead.
- Alteration or modification of any powerhead components.
- Removal of material from the powerhead for any reason other than recognised (by the manufacturer) repair.
- ECU/PCM's equipped with data memory, must not have the memory erased or modified without the prior permission of the Scrutineer.
- Any information sourced by the Scrutineer from the ECU/PCM's race data memory which does not correspond with the technical data declared by the manufacturer in the homologation file will be viewed as reason for disqualification.

Departure from the foregoing determines the need for declaration of horsepower and the costs and risk associated with confirmation of the declaration are to be borne by the competitor.

Violation of any of the above rules will entail disqualification.



# 2019 UKOPRA OFFSHORE POWERBOAT RULES

## SECTION 6 – CLASS 3

### **Inboard Engines**

Turbo and/or Supercharged petrol engines are not permitted.

When a diesel engine includes a device for supercharging or turbocharging, the nominal cylinder capacity is to be multiplied by; and the boat will pass into the class corresponding to the effective volume resulting from this multiplication.

A dynamic air inlet for ducting the atmospheric air toward the engine's air intake is not considered a supercharging device.

Turbo Compound engines and Gas Turbines are not permitted.

A Turbo Compound Engine is defined as a process in which effective power is produced not only by expansion in the working cylinders, but also in a second stage. In compound engines, the exhaust turbine, or one of the exhaust turbines, is coupled to the engine output shaft.

### **Exhaust**

The engine exhaust manifolds, pipes and exhaust driven turbines, from the engine outlet to the point of exit must be water cooled by the water jackets or shielded. The external surface of the shield must not exceed 150 C at any time. The exit must be located in such a position whereby the crew cannot be affected by exhaust fumes.

### **Shaft Guards**

Inboard propelled craft must have a protected shield to each input drive shaft which shall include at least two rings which completely encircle the shaft and a 180 degree scatter shield over each universal joint.

In the event of a failure this protection shall be capable of containing the shafts and couplings from causing damage to the hull skin, fuel tanks, any other installation and or component, and from causing any danger to the crew.

### **Compartments**

Inboard engines are to be installed in a compartment separated from the cockpit and other accommodation which is to have adequate ventilation. Vent holes in bulkheads or covers shall not be in close proximity to the drivers and crew without flame trap protection. The compartment(s) shall have rigid covers.

### **Fire Extinguishers**

For all inboard engine installations, it is mandatory to have a fully automatic fire-extinguisher system, though it is permitted to have a separate manual system.



# 2019 UKOPRA OFFSHORE POWERBOAT RULES

## SECTION 6 – CLASS 3

### **Engine Cut-Off**

- Engine cut-off switches for connection to all crew are mandatory (first man out shuts off engine). An emergency override system to restart engines shall be mandatory. The lanyards used must not exceed 20 cm between the driver and the boat. The lanyards shall be attached to all crewmembers at all times when the boat is at racing speeds.
- The lanyards must be able to support ten times the strength necessary to operate the device or to resist a load of ten kilos. Having chosen the biggest value, they must be capable of operating the device in any direction on a horizontal level.
- Lanyards are not necessary when restraint systems are used.
- If the engine is a Diesel, the action of the device should operate on the injection pump gear.

### **Engine and Fuel Compartment Bulkheads**

Bulkheads of engine and fuel tank compartments must be sealed to the hull across the bottom and have sufficient height above the bottom to prevent fuel and fumes flowing throughout the boat. The separate compartments thus formed must have provision for separate pumping out of bilges.

Fuel containment systems (tanks, cells, etc.)

All boats must have fuel filling and fuel venting capabilities outside the crew containment area. Canopied craft are to have fuel tanks contained in sealed compartments from the hull and crew area to avoid leakage of liquid or vapour being released into the area being used by the crew. Fuel filling / fillers are to be outside of the crew compartments.

Closing of the fuel flow must be done by means of a device, the control of which must be in the cockpit and within reach of every crewmember. No sleeved cables are allowed, so as to eliminate the cable being able to be bonded in a fire.

The fuel tank or tanks must be grounded to enable the discharge of static electricity. 606.4

Fuel tanks may be constructed as an integral component of the hull construction or may be fabricated material suitably secured to the hull.

Purpose designed and constructed rubberised collapsible fuel cells may be used.

Fuel may not be transferred during a race except by means of permanently installed fuel lines connected to the tanks.



# 2019 UKOPRA OFFSHORE POWERBOAT RULES

## SECTION 6 – CLASS 3

### 604 – Hull

#### Hull measurement Class 3A and 3X

- All hull measurement are to be taken while the boat is ashore.
- The length must be measured between perpendiculars of the external moulded length of the boat, taken at the extreme bow and the interface between the hull and bracket/engine.
- Hull extension beyond the transom shall be deemed to be “fixed trim tabs” and shall not be included in the measured length.
- Hull extensions added to the bow and/or any extending parts, rubbing strakes, fenders, stabilizing trim tabs and rudder assemblies are not to be included in the measured length.
- When defining “extreme bow”, any form that constitutes the bow and its construction and contributes to the performance of the boat shall be included in the measured length. Any other attachment that is added to meet a minimum length requirement shall not be included in the measured length.

Boat width: 3A

0. 0 m - 2.00 m. 3 X 1,60 m - 2.10 m

#### Minimum/maximum Lengths and Weights

The weight is ready to race dry, including all safety equipment for all classes. For control after a race, residual fuel in tanks will be included in the minimum weight.

Slings carried in the boat during the race will count as safety equipment. The boat must be empty of water.

For Class category 3B, the minimum weight mentioned is for a boat with the mentioned minimum length.

For boats longer than the minimum, the weight shall be increased according to the formula shown above.



# 2019 UKOPRA OFFSHORE POWERBOAT RULES

## SECTION 6 – CLASS 3

### **Minimum Flotation**

All boats shall contain a minimum volume of buoyancy permanently installed in the hull.

The minimum volumes measured in litres are as listed in the class table.

If a boat is constructed of wood, the wooden weight content of the boat may be accepted as buoyancy as per the following formula: Wood weight in kg x 2 = litres of buoyancy.

### **Hull Dimensions**

For mono hulls, the outer surface of the hull excluding chine-rubbers and spray rails, must contain a cube of the dimensions listed in the class table.

### **Deck**

The deck must be able to bear the weight of a standing man 100kg at any point.

### **Deck - Outboard Motor Propelled boats**

Wherever the motor is, the hull shall be fully decked to the stern, incorporating a well formation if desired.

Any holes for the passage of cables, fuel pipes, etc., shall be fitted with sealing grommets and be above the lowest point of the stern structure.

### **Guard Rails**

Rails or wires or hand holes shall be fitted which shall extend fore and aft to enable crew to proceed from the cockpit to the whole deck for the working of mooring, anchoring and towage and access to deck hatches.

No ropes can be used as rails or hand holds.

### **Mooring cleat**

All boats shall be fitted with a well secured cleat or sampson post on the fore-deck adequate for anchoring in a seaway and for towing at sea over a prolonged period.

### **Cranage**

Boats must be fitted with a minimum of three lifting eyes, either through deck or topside hull cleat type, suitably engineered to withstand lifting the boat fully equipped and fuelled with an adequate safety margin.

Each boat shall be equipped with a detachable strop assembly providing a single lifting point. The strop must be certified to carry total boat weight.



## 2019 UKOPRA OFFSHORE POWERBOAT RULES

### SECTION 6 – CLASS 3

#### **Windshield**

Windshields, if fitted, shall be strong and well supported.

All edges of plastic material and framing shall be effectively padded.

Transparent windscreens are to be made of polycarbonate material.

#### **Open Cockpits**

The cockpit opening shall provide seating positions for at least two drivers, with the following minimum dimensions; length 0.66m, width 0.53m per driver, with a round-off radius of 0.25 m.

There shall be a minimum cockpit clear depth of 0.38m everywhere, with the exception of seats, steering wheel and controls. Measurement is done from the upper part of the cockpit edge or from the top of the cockpit coming if it is substantial.

All cockpit seats must be securely fixed to the main hull structure. A seat for each crew member must be provided. The crew should be seated at all times when racing or attempting the race start.

The structure of cockpit fairings must at least equal the strength of the main deck i.e. be able to be walked on at any point.

For Class A, only the overdeck water deflectors are mandatory.

The Reinforced Water Deflector must be designed and constructed of materials of sufficient strength to provide adequate crew protection, both over and under the deck and hull.

The forward fairing on the deck must rise to a minimum height of the chin of the tallest crew member when in the normal driving position.

It is recommended that lateral protection covering be provided up to the shoulders.

The 50 mm of the Water Deflector must be at least 45 degrees from the horizontal, with a minimum 300 mm width per person measured transversely in the horizontal plane.

The Reinforced Water Deflector must be designed and constructed so as to present no hazard if the crew is thrown forward and must be so designed that it would not restrict the crew from being ejected. In all cases, the visual requirements in 615.10 must be adhered to.

Measurers and Scrutineers will examine boats with the crew in the normal driving position.

The flares described in UKOPRA Offshore Rules must be readily accessible from the deck.



## 2019 UKOPRA OFFSHORE POWERBOAT RULES

### SECTION 6 – CLASS 3

Rear of head protection is recommended. If fitted, it should be at least 300 mm wide and the height of the padding must extend at least 6 % of the height of the safety helmet as worn by the crew whilst in the normal driving position.

If a monohull has a canopy and/or restraints, it must conform to the same criteria as multihull boats as described in these rules.

Only boats with restraints and closed canopies are allowed to use orange coloured bows.

#### **Steering**

The steering arrangements shall be sited so that the safe handling of the boat shall not be prejudiced by interference to the driver's line of sight across the bow at any state of trim in calm water.



## 2019 UKOPRA OFFSHORE POWERBOAT RULES

### SECTION 6 – CLASS 3

#### **605 - Propulsion**

One hundred per cent of the propulsive effort shall be derived from the water while proceeding at racing trim in calm water.

All craft must be able to be manoeuvred ahead and astern and have neutral capability, operated by controls at the helmsman's position. This facility must be a permanent installation and able to be demonstrated as practical at any time.

Boats running two or more propulsion systems must have either an external tie bar to stabilise out drives or some other protective device that will prevent drives colliding should a failure occur.

No multi-ratio transmissions, torque converters, or variable ratio drives are permitted in Class 3.

#### **Gyros**

All moveable surfaces allowed on the boat shall be under the control of the onboard crew without any sensors in the control loop (i.e. no auto pilots, gyros, accelerometers or other attitude or acceleration sensors may be in the control system).





## 2019 UKOPRA OFFSHORE POWERBOAT RULES

### SECTION 6 – CLASS 3

#### **606 - Race Numbers**

All boats are to be allocated a race number by UKOPRA.

- These numbers shall be painted in waterproof black paint or to be made of black coloured self-adhesive materials of adequate strength.
- They shall be applied to a white or yellow background.
- No number may begin with a zero.
- All numbers shall be plain and up- right.
- On all boats the numbers shall be positioned as far forward as possible.

#### **Catamarans**

The numbers must be placed on:

- The foredeck within front / of boat.
- The tunnel underside within front / of boat.
- The outside of both sponsons within front / of boat.

#### **Mono Hulls**

The numbers must be placed on:

- The foredeck within front / of boat.
- Both sides of the hull within front / of boat.
- Those numbers displayed on the foredeck and on the underside of a tunnel must read correctly from the transom and shall be underlined by a black bar.



# 2019 UKOPRA OFFSHORE POWERBOAT RULES

## SECTION 6 – CLASS 3

### **Dimensions**

The individual numbers shall conform to the following minimum dimensions, the only exception being where the size of the boat does not allow the minimum size to be carried:

- Height 300mm
- Width 230mm
- Thickness 50mm
- Spacing 80mm

The background shall extend at least 230mm in front of and beyond the end numerals and at least 65mm above and below the numerals.

The beam numbers may also be painted on slightly curved non-vertical surfaces, provided that the whole number is within 30 degrees from the vertical position.

The height must be to the minimum height measured vertically.

The class prefix will precede the numbers and they will be separated by a dash.

The class prefix must conform with the same minimum dimensions as the race number.

### **607 - National Flag**

All boats are to fly their appropriate national flag of the designated driver as determined by the entry, with minimum dimension 450mm X 300mm throughout the race.

Alternatively, the flag must be painted, or glued, on a panel of not less than 45m X 300mm on both sides of the hull.



# 2019 UKOPRA OFFSHORE POWERBOAT RULES

## SECTION 6 – CLASS 3

### 608 – Safety Equipment to wear

#### Lifejackets

#### Lifejackets (for boats without canopies).

Each person aboard a boat must wear, during the race and practice, an efficient racing vest.

- The lifejacket shall be of full jacket type, with collar and leg straps.
- All straps shall be at least 40 mm wide and have a minimum breaking strain of 500 kg.
- The vest shall be at least 60 % orange or yellow, have lifting straps at the front or on the shoulders and have impact protection material covering the back.
- The disposition of the buoyancy must be such as to ensure that an unconscious person will float face up in the water.
- The lifejacket's ability to float and rotate the wearer face-up must be checked by each individual wearer and personally ensured it is fully operational.
- The jacket must have a minimum of 6.5 kg buoyancy.
- The choice and efficiency of a racing vest is the sole responsibility of the wearer.

#### Helmets

Any person aboard any boat partaking in races must wear an adequate helmet of orange colour throughout the race and during practice runs.

Helmets may only be removed when effecting repairs and the boat is "off plane".

- Each crew member's helmet must be identified with their boat race number.
- This number shall be placed on the top surface of the helmet and shall be read from the rear.
- The numbers shall have a minimum height of 65 mm and shall be of the same style as the boat race number.
- These numbers shall be painted in waterproof black paint or be made of black coloured self-adhesive material of adequate strength.
- The choice and efficiency of a helmet is the sole responsibility of the wearer.



## 2019 UKOPRA OFFSHORE POWERBOAT RULES

### SECTION 6 – CLASS 3

#### **Protective Clothing**

All crew members whilst racing must wear suitable protective clothing that covers the torso and all limbs to the wrists and ankles.

Protective clothing used must be durable enough to provide bodily protection and it is recommended to be fire retardant



### **609 - Safety Equipment to be carried onboard**

Whilst on the water at an event, all the relevant safety equipment, i.e., restraints, racing vests, helmets and racing suits must be worn whilst the race boat is on the plane.

The following equipment shall be carried and stowed to the satisfaction of the Race Committee.

Boats meeting the criteria of the UKOPRA rules on restraints and canopies must comply with the requirements regarding storage of safety equipment contained in those rules.

#### **Pumps**

When additional electric pumps are fitted to the fuel supply a fuel cut-off switch for the pump shall be fitted within reach of either crew member.

A manually operated bilge pump with the capability of pumping out any one of the watertight compartments.

In addition to the above minimum it is highly recommended to have any additional electric bilge pumps that appear appropriate.

#### **Fire Extinguishers**

Two (2) fire extinguishers to be immediately accessible to the crew, and must minimum of 2kg each, or of equivalent capacity.

For Classes A, B and X, there is only a requirement for one fire extinguisher of 2 kg, or of equivalent capacity.

The extinguishers must fulfil the classification ABC (eq. US: classification AB).

- American Class A Class B
- European Class A Class B Class C UNCLASSIFIED Class D
- Australian/Asian Class A Class B Class C Class E Class D Class F
- Fuel/Heat source Ordinary combustibles Flammable liquids Flammable gases  
Electrical equipment Combustible metals Cooking oil or fat Class F
- Class C Class D Class K



## 2019 UKOPRA OFFSHORE POWERBOAT RULES

### SECTION 6 – CLASS 3

#### **Class 3 boats must carry:**

- An orange flag measuring at least 600mm X 400mm and the means of hoisting it, to indicate retirement.
- One anchor, not less than 30 metres of suitable chain or warp.
- Two towing lines of sufficient strength, one twice the length of the boat.
- A fitted steering compass.
- Up-to-date charts covering the whole course of the race.
- Two red hand-held distress flares and two orange smoke flares.
- One whistle attached to each crew member.
- One compress attached to each crew member. It is strongly recommended that one hand held flare is attached to each crew member.
- A sharp knife suitable for cutting webbing, clothes or rope. The knife shall be suitably sheathed so as to protect crew members against accidental injury. It may be located in a fixed position in the cockpit adjacent to all crew members or, be separately carried on each crew member.
- One diving-mask.
- A pail or bucket with a minimum capacity of 5 litres.

Each Organiser can, in the Racing instructions, specify additional safety equipment necessary for their race.

#### **610 - Crew**

All boats will carry a minimum of two crew members with valid UKOPRA licences and of minimum 18 years of age.

Only licensed drivers are permitted to control the boat when under the jurisdiction of the race organiser.

