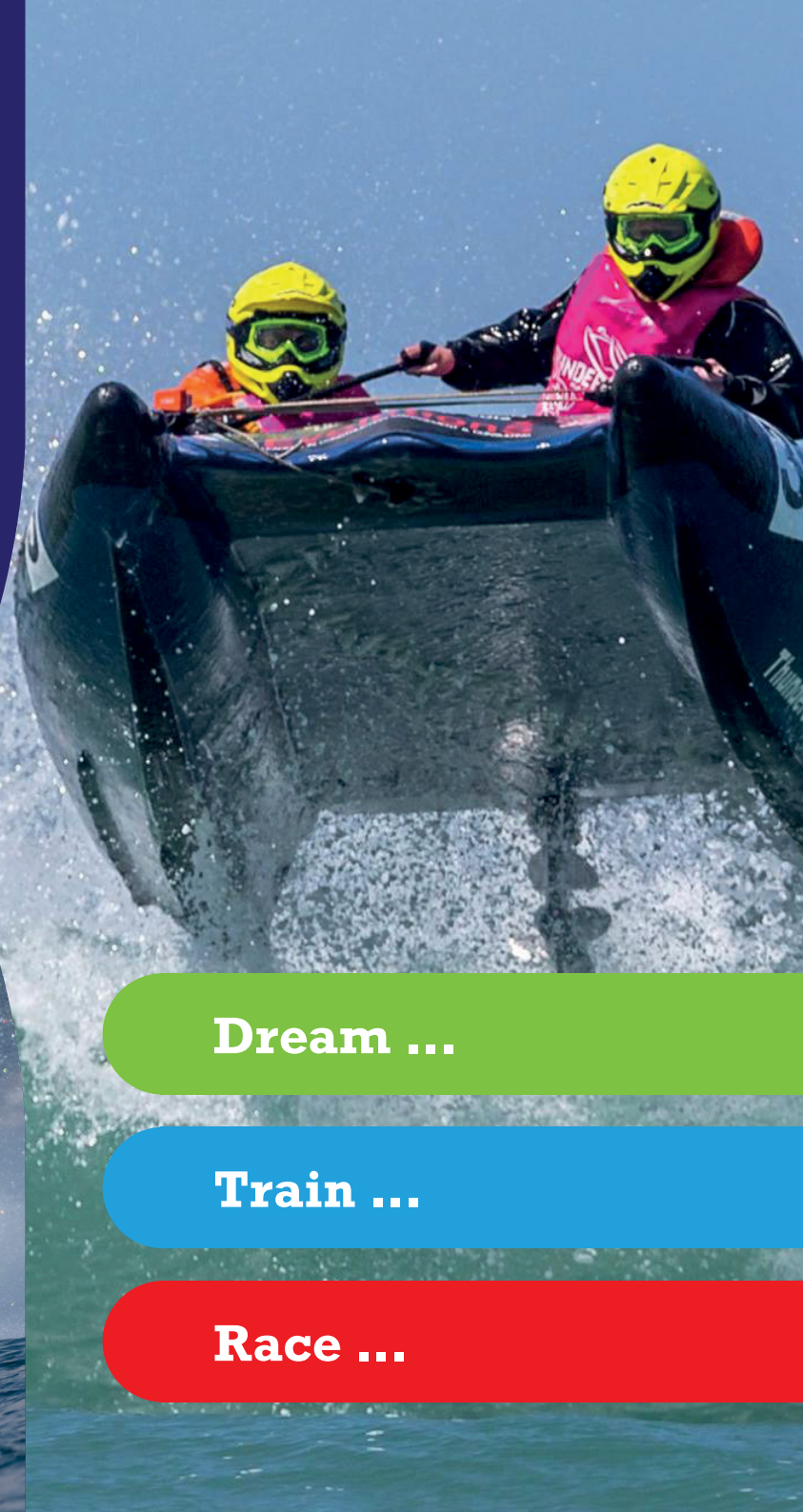


UIM Circuit and Offshore Training Manual

2020 Edition
www.UIM.sport



Dream ...

Train ...

Race ...

Dear Friends of Powerboating



Organisation
recognised by the



INTERNATIONAL
OLYMPIC
COMMITTEE

Dear Friends of Powerboating

I am delighted to present to you the third edition of the UIM Propstars training manual. This project started six years ago and has now evolved into the comprehensive training syllabus you see today. Professional training for our future generations of powerboat racing competitors and officials is one of the highest priorities of the UIM; our goal is to establish a world-wide network of training centres to ensure the success and growth of our sport.

In recent years we have seen the UIM Propstars Programme start to attract new young talents who get trained and educated with and by our National Authorities. We are proud to see this increasing interest in many different territories and we encourage our Member Federations and their Member Clubs to set up training centres where the new generation of powerboaters are guided by experts on their way from the junior UIM classes to the senior UIM classes. At the very beginning we focused on the Circuit discipline and on training with GT15 boats. Then we extended the concept to the Offshore discipline and added the P750 Class. The UIM Propstars training programme teaches competitors and officials of all ages the secrets of safe, responsible and environmentally friendly racing.

I call upon you all to support this extremely important programme by setting up a training centre in your country. Costs should not be an issue as you can use whatever boats you have available, you just need to encourage a local volunteer to take on the role of a UIM Propstars Ambassador. He/she will be prepared for this role by an expert UIM instructor and their mission can start.

I want to ensure that our Union will continue to grow and develop healthily. One of the best ways of achieving this is to build a firm foundation of training centres for our sport. I believe that we can do this, so let's build a bright future together.

Dr Raffaele Chiulli
President - Union Internationale Motonautique.



UIM Propstars Ambassadors/Instructors

UIM Propstars Ambassadors/Instructors

The UIM Youth Development Programme Propstars continues to expand and is now attracting world-wide interest. As many of you know the principal aim of the programme is to train UIM Propstars Instructors/ Ambassadors so that they can deliver the Propstars programme in their own country to a wide range of potential competitors and Race Officials.

The UIM provide training to the new trainers this Instructor Training is free, the UIM does not charge and the only costs involved to the National Authorities are those of travel and accommodation of the UIM Instructor. Once a National Authority has established a new training centre they are eligible to apply for UIM funding to help them purchase new training boats and engines, grants of up to 50% are available through the UIM Propstars Programme.

So what does it take to be a UIM Propstars Ambassador:

1. A good UIM Propstars Ambassador must be passionate about our sport and want to help others to enjoy it.
2. Some knowledge of teaching is helpful but if you are truly passionate about your sport you will find the way to deliver the programme
3. Get your trainees out on the water as soon as possible, the class room stuff is important but on the water is where the action is.
4. Encourage your local best drivers/ pilots to get involved, this will help to inspire your trainees
5. This does not have to be expensive, use what boats and equipment you have.
6. Lastly and most importantly make it fun, if you are enjoying it so will your trainees.



UIM Propstars Ambassadors/Instructors



The UIM Circuit and Offshore training Programme:

This new exciting UIM Circuit and Offshore training programme is structured into three distinct modules which are designed to cater for all levels of experience. If you are new to the sport then the Basic training programme is a must, if you then want to get into Circuit or Offshore Racing then the Advanced Level is the next step particularly as most UIM National Authorities run both National and International racing. By competing in National racing you will develop your race craft skills which will be an invaluable experience especially if you want to progress to International Racing. The Competition module helps you to understand how to compete at International level and ultimately win a UIM World Championship. So now lets have a look at the three training modules in more detail.



So who are we training:

The Propstars programme is designed to attract new young drivers into the sport but the syllabus works just as well for those of any age. Details of the key points for each module, Basic 1, Advanced 2 and Competition 3 are provided. Don't forget that this programme also can be adapted to train new race officials, Officer of the Day, Safety Officer, Race Secretary etc. In all of the modules the activities will have to be controlled and this provides an ideal opportunity to introduce enthusiastic trainee officials to the sport.

Basic Training Module 1: The Basic Powerboat Training offers an ideal introduction to those new to the sport, the instruction provided will lay the foundation stones of knowledge which will prove to be invaluable as you progress through the Advanced and Competition levels of this programme. Classroom based and on water practical instruction will be provided at each level.



Advanced Training Module 2: The Advanced course is designed to provide an introduction into powerboat racing and to teach candidates how to get started in the sport and safely compete at club and national levels.

Competition Training Module 3: As the name suggests this course is designed to familiarise the applicant with the skills necessary to compete in powerboat racing at both National and International levels. A strong emphasis will be placed on racing water awareness skills and safety and considerable time will be spent out on the water in simulated racing conditions. In addition to the on water training the theory sessions will consider the racing rules and trainees will be taught the importance of complying with the rules of the sport and working with race officials.

Basic Training

Basic Powerboat Training offers an ideal introduction to those new to the sport, the instruction provided will lay the foundation stones of knowledge which will prove to be invaluable as you progress through the Advanced and Competition levels of this programme. Classroom based and on water practical instruction will be provided at each level so let's look at how you get started.



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Introduction



REMEMBER...

Make sure you have made contact with your training centre or instructor and that you have the programme of activities and timetable for the day.

Arriving for your first training session

Make sure you have made contact with your training centre or instructor and that you have the programme of activities and timetable for the day. Part of your instruction will be theory and classroom based so don't forget to take notes during the day as the subject is large and varied. For the on water training session you will need suitable clothing for the day which will vary from venue and country to country. Soft shoes a waterproof jacket and trousers are all useful clothes to have with you and the training centre will provide you with a life jacket.

Do I have to know how to swim?

You will need to check this with your local training centre but in most cases this is not a requirement but you will be required to wear a full life jacket at all times whilst on the pontoons and out on the water. [Please do advise the centre of your ability on registration].

What is the difference between a buoyancy aid and a life jacket?

This is a common question; the simple answer is that a Life jacket is designed to turn an unconscious casualty in the water face up whereas a buoyancy aid will not. A buoyancy aid provides some buoyancy; these aids are often used by experienced swimmers who only require some additional support/buoyancy whilst in the water. Modern automatic life jackets are powered by a small gas cylinder which activates on contact with water. This type of life jacket is easy and comfortable to wear and are especially good for children or those who are not confident in the water.

Are there any age restrictions?

Again check with your local centre as some National restrictions may apply. The Basic Powerboat Training Course is suitable for children from the age of 8 years upwards, they will be taught to use small Rigid Inflatable Powerboats. These are safe and fun boats to drive and provide the ideal training platform from which to progress. A typical example of ages, boats and engine horse powers are as follows: 15HP= 8 to 11 years, 25HP= 12 to 16 years and 50HP 16 years and above.

How to get the best from your training courses?

Spend some time reading through this booklet and get to understand the terminology as well as the content and detail of the topics included at each level. Time spent in preparation at this stage will be invaluable and will help you to understand the syllabus as you proceed through the various levels.



The boats

Great boats for all levels of Propstars training!

Types of Craft used in the Basic training programme P750 UIM ThunderCat Catamaran

The P750 training boats are inflatable catamarans, which means the boat has two small hulls (also known as hijackers) either side of a flat deck forming a tunnel underneath the boat. This hull design is an extremely stable platform capable in a vast array of sea conditions with exceptional turning ability. The boats are light weight and powered by a 50hp outboard motor. Each boat consists of two crew members, a Driver and Co driver. Trainees will be taught how to participate at both roles as well as a range of general boating and seamanship skills.

The boats

GT 15 Boats are great for Advanced Propstars training



Types of Craft used in the Basic training programme Winrace GT15 UIM Training boats

GT15 training boats are single seat race boats adapted for training purposes, the boat is built in glass fibre, has a deep v configuration and is powered by a single 15hp electric start four stroke engine. The boats are light and designed for racing and trainees will be taught how to safely handle these boats in a variety of conditions as well as a range of general boating and seamanship skills.

The boats

RIBs used in UIM Formula Future are also ideal for Propstars training

Types of Craft used in the Basic training programme Rigid Inflatable Boats (RIB)

Rigid Inflatable Boats are recognised as one of the most stable and seaworthy boats available and thus provide an ideal training platform for the Basic Powerboat Training course. The stability of these boats is achieved by a combination of a deep Vee hull design and the large inflatable tubes that provide both the buoyancy and help to soften the ride in rough conditions. This type of boat is extremely popular with rescue organisations throughout the world and is frequently used in this capacity by yacht clubs and training centres. These boats are usually powered by outboard engines and we will look at how to maintain the equipment as well as how to get the best performance out of the boat, where we will consider engines, drives, control systems and maintenance.



Engines, Control systems and Maintenance



Engine Types: Four-Stroke

The latest four stroke outboard engines are definitely less noisy emit fewer fumes and offer better fuel economy. Therefore modern outboard engines now have a lot more respect for the environment than they had even ten years ago.

An unexpected benefit from the changeover to four-stroke outboard engines was a massive improvement in outboard engine reliability. The change in design standards meant that all outboard engine manufacturers had to use more sophisticated design and manufacturing techniques. This has meant there are far fewer unexpected breakdown and warranty issues now coming to light during the operation and use of modern four-stroke outboard engines.

There were however two negatives from the changeover. One is that many modern outboard engines are now too sophisticated for home servicing (except for doing the basics). Secondly is that four stroke outboards are heavier to lift than the older two stroke models. The heavier weight of four stroke outboard engines has affected the portability of some medium-sized engines.

Four-stroke outboards use an engine very similar to an automobile's. The air-fuel mixture flows into the combustion chamber through intake valves, and the exhaust leaves the engine via exhaust valves.

Because of these intake and exhaust valves (the valve train), a four-stroke outboard is usually heavier than a two-stroke outboard of the same horsepower. But, we

see that changing: four-stroke manufacturers continue to pursue new ways to lighten the engines and extract more horsepower.

A four-stroke outboard's lubrication system is like a car's, complete with oil pan and filter — and the engine needs periodic oil changes to keep things running smooth. The majority of four-stroke outboards feature sophisticated computer engine management systems and fuel injection for good performance across the power band, low emissions, and unparalleled fuel economy which make home servicing more difficult and for this reason these engines should be regularly serviced by an approved dealer.

Engines Used

In the UIM GT15 Class these engines give Smooth quiet performance, low emissions and fuel consumption; The basic specifications are given below:

Power: 351cc 11.0KW 15hp

Cylinders: Two Cylinder

Shaft: Short

Weight: 52kg

Steering: Remote

Starting: Electric

Fuel Tank: External 12LT

Engines, Control systems and Maintenance



Engine Types: Two-Stroke

Traditional two stroke engines are noisy, burn more fuel and are less friendly to the environment.

In a two-stroke engine, the fuel-air mixture enters the combustion chamber via an opening in the side of the cylinder. The exhaust exits through another port in the cylinder.

Initially, two-stroke engines used carburetors to control the fuel-air mixture. But carburetted outboards aren't particularly efficient. They also use a lot of fuel, and tend to be unreliable.

Typically, a two-stroke outboard is lighter than a similar-sized four-stroke engine because the two-stroke's method of operation doesn't require a valve train — camshafts, valves, belts or chains. Since the two-stroke isn't encumbered with a valve train, the engine has fewer moving parts. Thus, it has less rotating mass. A two-stroke outboard can often accelerate faster than the same horsepower four-stroke.

The engine's internal components receive lubrication from oil mixed into the fuel.

Engines Used

In the UIM P750 Class for training are Tohatsu 50hp two strokes.

These engines are very robust used in the most extreme conditions yet very simple to maintain.

Power: 750cc 36.8KW 50HP

Cylinders: Three Cylinder

Shaft: Short

Weight: 72kg

Steering: Tiller handle

Starting: Manual Pull

Fuel Tank: External 25LT

Engines, Control systems and Maintenance



Engine Mounting

Outboard engines are mounted on the transom of the boat, smaller engines usually up to 15hp are secured by means of a simple bracket which is attached to the transom by two hand tightened adjustable screws. Clearly it is very important that these fixings are securely tightened at all times, it is not uncommon for an engine to work loose during the course of a seasons use or especially following a race particularly if the conditions have been rough. For the larger motors such as the 50hp P750 motor, a set of 4 bolts will secure through the transom.

The fixing height of the engine is also very important, the general rule is that the higher the engine is mounted the less drag there will be on the underwater profile and therefore the faster the boat will go. Two key factors must however be remembered, the higher the engine is mounted the more unstable the boat will handle and more importantly under no circumstances must the engine be raised above the coolant water pickup point as this will result in the engine overheating and seizing up.

Engine Operation

Outboard engines consist of the powerhead (engine) the drive train and gearbox, the whole unit is cooled by water which is picked up near the gearbox and pumped around the engine by the water pump and then ejected usually through the central hub of the propeller. A water tell-tale is also provided above the water line so that you can immediately see if the engine is being cooled, if this tell-tale stops whilst the engine is running you must stop the engine immediately, a warning buzzer and light usually will warn you of this but it is advisable to check periodically to ensure all is in order.

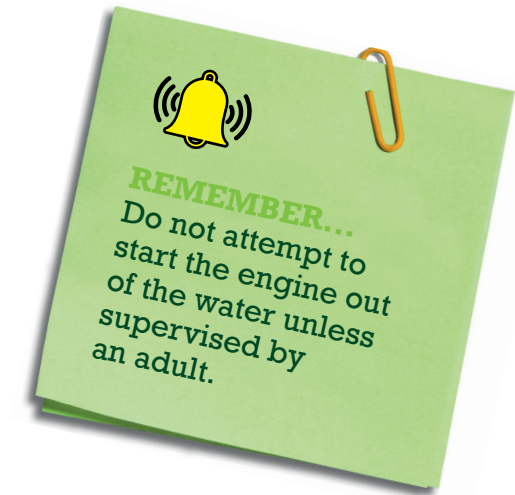
Engines, Control systems and Maintenance

Engine Starting

On the traditional 2 stroke engines it is likely that you will have a hand start mechanism, the following procedure should be followed in order to start the engine:

1. Connect the fuel line to the engine.
2. Release the air bleed screw on the fuel tank, if the fuel tank is located on the engine the air bleed valve will be located on the top of the tank filler.
3. On some engines there is a separate fuel on/off control, ensure this is on.
4. Prime the fuel system by pumping the fuel bulb in the fuel line until hard.
5. Check that the Kill Cord is connected to the engine and secured to you.
6. Ensure that the engine is fully trimmed down.
7. On most two stroke engines the starter cord is located and retained on the fly wheel, before attempting to start however CHECK that the engine is in neutral, the throttle is partially opened and if the engine is cold or has not been started for some time use a small amount of choke.
8. Ensure you are in a safe and stable position before starting, pull the starting cord firmly, if the engine starts close the choke and apply sufficient power to ensure the engine runs smoothly whilst warming up.
9. If the engine fails to start repeat the above procedure, an engine should start after 6-8 attempts, you may hear the engine fire during this process which is a good sign it will start however if it sounds lifeless and does not start DO NOT continue to pull the starting cord. The engine may be flooded by over choking.

10. If the engine fails to start the following checks can be made:
 - Ensure a good clean supply of fuel is present.
 - Remove spark plugs, clean and dry and check gap settings.
 - Check that a spark is present, pull start cord with plug removed.
11. **Engine Starting – Four Stroke engines.**
12. Follow the same procedure as above but additionally check that the oil reservoir is full. On engines fitted with electric start follow the same procedures but additionally check that the battery is connected and that there is power.



Engines, Control systems and Maintenance

Electric Start

Before starting ensure that the fuel line is attached and that the small air bleed on top of the fuel tank has been loosened, once this has been done pump the fuel priming bulb on the fuel line until the bulb is hard, this will ensure that there are no air bubbles in the system. Check that the gear shift control is in neutral.

Press the start button and the engine should fire into life, if you have to continuously turn the engine over on the electric motor something is wrong, check the following:

- Fuel line connected, and no apparent leaks.
- Air bleed screw on fuel tank loosened.
- Fuel line primed and fuel bulb hard.
- Sufficient fuel in tank.
- Kill cord connected (see more details on this below).
- Engine controls in neutral (See more details on this below).
- If all of the above checks fail to solve the problem consult the manual or your local dealer.

Once the engine has started check that water is circulating and flowing out of the at the side of the engine.

DO NOT ATTEMPT TO START THE ENGINE OUT OF THE WATER UNLESS SUPERVISED BY AN ADULT.

NEVER START THE ENGINE OUT OF THE WATER WITH THE PROPELLER ATTACHED AS SERIOUS INJURY CAN BE CAUSED.

Engine Stopping – The engine is stopped

If the engine is a manual start/stop, press the kill cord button or remove the kill cord. If a start/stop button is fitted press the button to stop the engine. Do not stop the engine until you are securely tied up or anchored safely, also remember to be careful to avoid mooring lines or crew members fouling the engine control systems whilst the engine is running in neutral, the driver should remain at the controls until the boat is secured and the engine switched off.

Engine Maintenance

It is extremely important to ensure that your engine is maintained to a very high standard at all times, most small boats only have one engine and poor maintenance can literally endanger your life particularly if you are cruising or racing in busy commercial waters. The following actions should be carried out on a regular basis.



REMEMBER...
Never start the engine out of the water with the propeller attached as serious injury can be caused.



Engines, Control systems and Maintenance

Daily Checks

- If using a two stroke engine check that the fuel oil mix is correct in the main fuel tank.
- If using a four stroke engine check oil levels using the dip stick located under the engine cowling .
- All other checks to remain as listed.
- Check oil levels daily and visually inspect the engine for any obvious defects.
- Check engine oil level and also you have spare oil for the next time, the oil dip stick is located under the engine cowling.
- If the engine has been used in salt water it is essential to fully flush the engine through with fresh water once you have finished for the day, this can be done ashore by means of a hose pipe and a special engine attachment.
- Remove the engine cowling, clean off any salt or water deposits, and lightly spray the engine with protection oil such as WD40 or similar. Wipe off the excess fluid and replace the engine cover after checking that the control systems and cables are fully greased and operational.
- Remove the propeller and store safely, grease the drive shaft and cover for complete protection, a small piece of plastic piping is ideal for this purpose.
- Remove engine kill cord and store in a safe place.

Annual Checks

Engine

- Carry out annual maintenance services.
- In accordance with manufacturers recommendations.
- Replace spark plugs.
- Check condition of water impeller and replace if necessary.
- Check all coolant hoses and replace where necessary.
- Remove propeller and check for any damage or wear and replace where necessary.
- Grease drive shaft and cover with protective sleeving.

- Disconnect battery, check electrolyte levels (if appropriate), clean battery terminals and grease, regularly place battery on trickle charge during winter.
- Winterise engine (best done by authorised dealer) store in clean and dry environment.
- Replace all external anodes and internal engine anodes. Anodes are sacrificial plates or pencils usually made of zinc that protect the engine and drive system from electrolysis. These must be replaced annually otherwise serious damage may be caused. If in doubt consult your dealer.
- DO NOT just leave the engine out in the open unserviced and untouched since the last time you used it, if you do it probably won't start or worse it may be seriously damaged.



Boat

- Fully wash down the boat inside and out and polish with a protective wax Store boat undercover or use a full winter cover for outside storage.
- Remove bung and store in a safe place.
- Keep the inflatable tubes inflated during the non use months to reduce strain on the rest of the boat.
- Remove all safety items, check for wear and replace or renew as necessary.
- Remove paddles and re paint or varnish as necessary.
- Remove all mooring lines clean and store in a dry place.
- Check hull for any damage and repair as necessary.

Trailer

- Fully clean trailer and check for any damage or wear.
- Check operation of trailer brakes if fitted and leave with brakes in the off position.
- Check conditions of tyres and replace as necessary.
- If the trailer has been used in sea water check condition of wheel bearings and replace as necessary, refer to authorized dealer.
- Grease towing hitch and ensure fully operational.
- If the dolly launching trailer is being used a number of the above checks will not be necessary.

Engines, Control systems and Maintenance

Steering

Steering systems fall into two categories, cable or tiller steering generally found on smaller less powerful boats often used in training such as the UIM GT15 Class and hydraulic steering as used on larger more powerful race boats. Unique to the P750 boat is a 50hp engine on a tiller handle, with the assistance of a hydraulic dampener the steering becomes a lot more manageable at low and high speeds. Cable steering as fitted to the GT15 UIM Training Boats is very direct and will give the driver an immediate feel of what is happening to the boat in all conditions. The steering should be fairly light and easy to turn but the wheel should not spin.

Good maintenance is crucial and steering should be checked regularly to ensure there are no signs of wear to the throttle cables this should also form part of the daily checks especially before racing.



Engines, Control systems and Maintenance

Gear shifts (no brakes)

Most boats only have two gears, forward and reverse, like cars it is extremely important not to engage a gear unless the power (throttle) is in idle. Changing gear is very simple, engage gear and slowly accelerate, if you then want to slow the boat down reduce power change gear into neutral and then change into reverse and again slowly accelerate. Remember that if you are travelling forwards and engage reverse gear the boat will not stop immediately, also bear in mind that the boat will be affected by the strength of the wind and flow of water, these effects are described more fully in the section on boat handling.

On many outboards the gear shift control is located on the side of the engine. It should be in neutral to start and moves forward or backward, simply move the lever forwards to go forwards or back to go backwards. Once the gear has engaged use the twist grip throttle control to accelerate. DO NOT increase throttle and then engage gear as you will seriously damage the gear box.



Throttle

The throttle is the control system for speed, this control can come in a number of different forms so let's look at some of the alternatives:

- **Tiller control twist grip:** This control is similar to that found on a motorcycle, twist the control clockwise to accelerate and anti clockwise to slow down. This is fairly easy to use and just takes a little practice.
- **Hand lever control:** This is a simple lever mounted on the side of the cockpit, this control is also the gear shift. The move forwards push the lever slowly until it clicks, this is slow ahead, then simply continue to push it forwards to accelerate. To slow down pull the lever back until you reach the slow ahead position, pull back further until you disengage forward gear. DO NOT push the control forwards to full ahead without pausing as you go from neutral to slow ahead and similarly in reverse as you will damage the gear box in the process.
- **Foot throttles:** These controls can be found on GT15 type boats and other similar race boats, once you have moved from neutral to slow ahead simply push the foot throttle down and the faster you will go. A problem associated with foot throttles is that in a rough sea it is sometimes difficult to maintain a steady pressure as you are thrown around in your seat. As always practice makes perfect.

The ThunderCat boats all come with a handle throttle situated at the end of the tiller handle, similar to that of a motorbike. The operation of this will be fully explained during the course modules. Don't forget that boats don't have brakes so when applying power always think about how you might stop.



Engines, Control systems and Maintenance

Engine Trim

The horizontal trim of the engine is the way in which you control the angle of attack of the propeller to the water. This angle is adjusted by trimming the engine out or trimming the engine in. This function can only be carried out with the boat out of the water therefore set up for the conditions of the day is very important. The most important point to remember is that the further you trim out the faster you will go but critically the more unstable the boat will become. Engines can also be adjusted vertically by raising or lowering the unit and this will also change the performance of the boat, this will be covered in Advanced Powerboat Training of this training programme.



Kill cords

KILL CORDS MUST BE WORN AND ATTACHED AT ALL TIMES

The function of the kill cord is to stop the engine should the driver/pilot be thrown out of the boat. There are several different methods of attachment, on some boats the kill cord switch is located on the instrument pane, see picture below. On many other boats such as P750 the kill cord is fitted directly to a button on the outboard engine.

Kill cords are an essential part of the on board safety equipment the driver must always ensure the kill cord is securely attached to his/her person and under no circumstances should a boat be operated unless the kill cord is attached. If the driver is thrown out of the boat the kill cord should immediately detach from the ignition switch and stop the engine. Your co-driver in a ThunderCat boat should also carry a spare kill cord should they remain in the boat and the driver falls out, so that they can restart the engine and move the boat out of danger. The rescue services will then recover the man over board.



**KILL CORDS
MUST BE WORN
AND ATTACHED
AT ALL TIMES**

Trailing and Launching

Q: Can anyone tow a boat?

A: No, you must be licenced to tow

Instructions for parents

Trailing and launching a boat present a number of challenges so under this section we will look at some of the common problems encountered and how best to avoid them.

Towing Rules

Trailing a boat requires that you comply with a number of statutory requirements. The boat must be matched to the trailer so as to conform to the local traffic regulations particularly with regard to width of boat trailer and overall weight. Strict rules apply in Europe and failure to comply with these can result in heavy fines being incurred. Although many of the rules below have a UK bias they generally apply worldwide.

- When towing a trailer you are generally restricted to a maximum speed .
- If you tow a small trailer without brakes, the weight of the trailer is limited to 50% of the kerb weight of the car or 750kg, whichever is less.
- When towing larger trailers that have brakes fitted, the weight of the vehicle should not (as a rule of thumb) exceed 85% of the kerb weight of the towing vehicle. If brakes are fitted they must work whether they are a legal requirement or not.
- Most vehicle manufacturers state the maximum towing limit in their hand books, but you must bear in mind the total weight including passengers and luggage.
- You must be licensed to tow.
- Whilst towing you must have third party cover for your trailer as well as for the tow car.

- If you are towing a boat with an outboard motor you must use a reinforced plastic bag or bucket to cover the propeller. Similarly there must be no sharp edges which could cause injury.
- The light board should be no more than 1.5m from the ground or 2.1m if the structure of the vehicle makes it impracticable. Indicators must flash in unison with those of the tow car and a dashboard warning light or buzzer must be fitted.
- The number plate on the trailer must be identical in shape, and colour to that on the tow car.
- Please refer to your local statutory regulation regarding towing and licensing.



REMEMBER...

When towing a trailer you are restricted to a maximum speed of 50mph on single carriageway roads, and 60mph on dual carriageways and motorways, provided no lower limit is in force.

Trailing and Launching

Trailer Maintenance

- Make sure your trailer is regularly serviced and maintained. It is not wise to leave your trailer unused for the majority of the year before taking it out on the road without checking it for serviceability, brakes and tyres in particular.
- If your trailer has brakes, a common problem that may occur is that brake cables and linkages could seize. This may cause the brakes to bind, over heating the wheel bearings. This may result in the wheel, complete with the hub assembly, parting company with the trailer
- Check all lights are working and that electrical cables do not drag on the road.
- Many problems associated with towing a trailer are caused by incorrect loading. Try to put all heavy items over the axle and make sure they are secured to prevent movement when cornering or braking. If possible, put heavier items in the car and larger lighter items in the trailer.
- The trailer should be level.
- If towing in France it is recommended that a complete set of replacement light bulbs and a warning triangle is carried in the car. You are also required to carry a high visibility jacket in many European countries.
- As long as the trailer is evenly loaded, nose weight is correct and the whole outfit sits level on the road you are unlikely to experience a problem with snaking
- A stabiliser will reduce snaking by increasing the turning friction between towing vehicle and trailer. However a stabiliser will not compensate for bad loading, weight distribution.
- Ensure that you carry a spare wheel for the trailer and that this is in good condition.



Securing your boat for trailing

The best method of safely securing a boat to a trailer is by using ratchet straps, these should be of suitable size for the rig and attached to strong points on the hull such as towing eyes on the transom or bow. Remember that most boats sit on a roller coaster type trailer that is designed to assist in launching, the boat can move on these rollers during towing so it is extremely important to ensure the boat is firmly attached to the trailer and that no forward or backward movement is possible.

Trailing and Launching



Beach Launching P750 ThunderCat Boat

- Detach the Trailer from the vehicle towing the boat
- Tilt the motor up to the half way or full position and slide the entire boat back on the trailer so it is overhanging the trailer.
- Tilt the trailer up to that both are now nearly vertical, the bottom of the boat should be touching the ground. (Not the engine).
- A second person then holds the front of the boat in the air whilst the trailer is pulled away.

Slipway Launching (If not using a launching dolly)

- Practice reversing your rig before you go to the slipway, this is not an easy task and the only way to master the skill is to practice.
- Reverse slowly down the slipway under the guidance of another person particularly if the slipway is busy with other users, boats and people.
- If the slipway is steep and slippery lower your trailer down the ramp by means of a long rope attached to the car so that your vehicle stays well above the slippery areas, failure to do this can result in boat, trailer and car ending up in the water.
- Once the transom of the boat is in the water lower and start the engine. Check that the coolant water is circulating and that the engine is running smoothly
- Continue to reverse the trailer into the water until the wheel hubs are just above the water and the boat starts to float.
- Finally either reverse the boat off the trailer using the engine, or push the boat off with the assistance of a crew member. It is also possible to reverse the boat into the water, then hit the brakes and the boat will slide off the rollers or bunk pads of the trailer.

Slipway Recovery (If not using a launching dolly)

- Reverse the trailer into the water as for launching, drive the boat onto the trailer and attach the winch strop to the boat.
- Avoid recovery with strong cross tides or winds where possible.
- If strong tides or winds are present several controlled attempts may be necessary. Best method is to start up tide or up wind of the trailer and drift down and control your final approach by use of the throttle.
- Winch the boat onto the trailer, raise the engine and drive off the slipway.
- Water awareness skills start with an understanding of the dangers associated with activities both on and off the water. Basic Powerboat Training of this programme will consider the following topics:

Trailing and Launching



Land based risks

- Pontoons and jetties: slippery surfaces, rope and general obstructions can increase the risk of tripping and falling to the water. These hazards can become life threatening if the casualty falls into the water between a moored boat and a jetty or pontoon. The dangers are significantly increased if the waters are subject to strong tides or currents.
- Slipways and hard standing areas: As we have seen slipways pose a number of dangers particularly if they are located in tidal waters with a large rise and fall of tide. Care must also be taken regarding parked trailers and boat movements particularly if boats are being moved by cranes or travel hoists.

Water based risks

- Inadvertently falling into the water can lead to death, hypothermia or serious injury, this is one of the simplest risks to avoid and a few simple precautions will help you to minimise the risk which in turn will enhance your confidence. A simple rule to follow is to always wear a life jacket and to ensure that you that you keep a firm hold of the boat at all times. This rule is important when training but applies equally when racing.
- Dangers associated with collisions, either between boats or obstructions can nearly always be avoided, a

clear set of guidelines is provided in the International Regulations for the Prevention of Collisions at Sea (IRPCS), this is a water based version of the Highway Code. Further rules apply when racing but these will be explained in the Advanced and Competition Levels of this program.

Surf based risks

- In addition to the water-based risks, surf venues carry further dangers that all participants should be aware of:
- Launching your boat into breaking waves needs to be carried out with great caution. Launching should be carried out in shallower waters where the power of the waves is reduced.
- Once launched turn your boat to face directly into the oncoming waves.
- DO NOT stand in front or behind the boat when manoeuvring as a large wave may throw the boat into the crew and cause serious injury.
- When recovering it is important to return to the beach with caution ensuring you are clear on your landing location and that no other boats are too close. Be aware of waves following behind which may carry the boat forward and can result in the driver losing control of the boats direction.

- Every surf venue will be different so make yourself aware of any known dangers such as rocks, riptides and even wildlife! These can normally be obtained from your race committee otherwise ask the local lifeguard or port authorities.
- Most likely if there is surf you will find surfers, windsurfers and paddle boarders, although your safety teams will deal with these, teams should keep a watchful eye and report any sightings to the OOD.



REMEMBER...
Inadvertently falling into the water can lead to death, hypothermia or serious injury, this is one of the simplest risks to avoid and a few simple precautions will help you to minimise the risk.

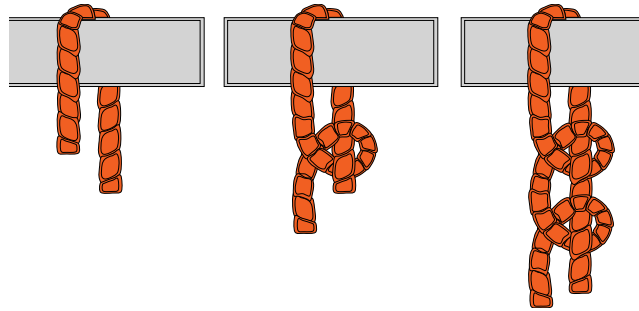
Water awareness skills on land and water

Rope Work

This section of the course is dedicated to understanding the right knots to use in different circumstances, a good knowledge of rope work is very important. Your instructor will help you to tie all of the different knots listed below and also help you to understand the different circumstances in which they should be used. It is very important to master these skills as good rope work will ensure your boat is safely secured at all times and that the knots don't jam which can be very dangerous.

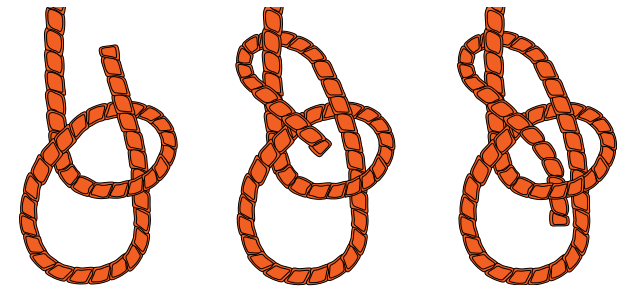
Round Turn and Two Half Hitches

Easy to tie and can be undone whilst under load. Used to tie to handrails, rings, mooring bollards etc.



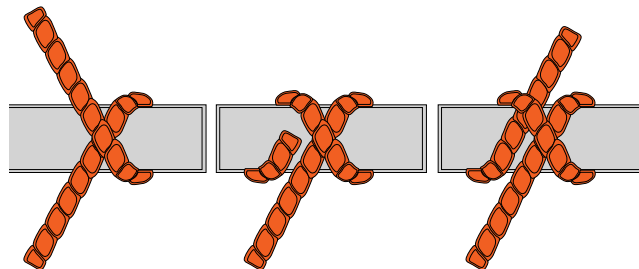
Bowline

More difficult to tie but is one of the most useful knots in boating. This knot will take extreme loads and can still be released. Only disadvantage is that the knot cannot be undone whilst under load. Typically used when mooring boats or towing.



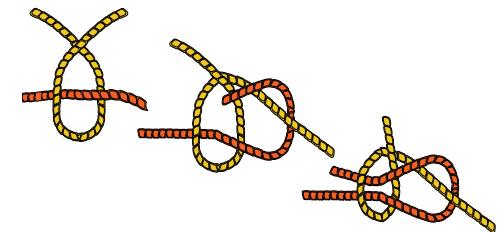
Clove Hitch

Easy to tie but can work loose, typically used to tie fenders.



Sheet Bend

Easy to tie, used for joining two lines. Can only be undone when load released.

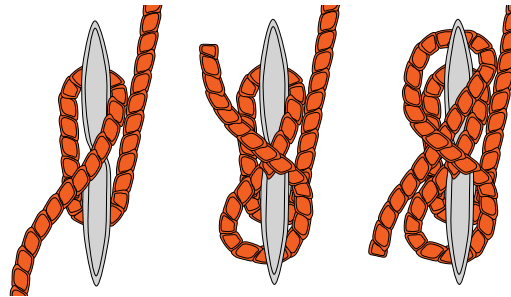


Water awareness skills on land and water



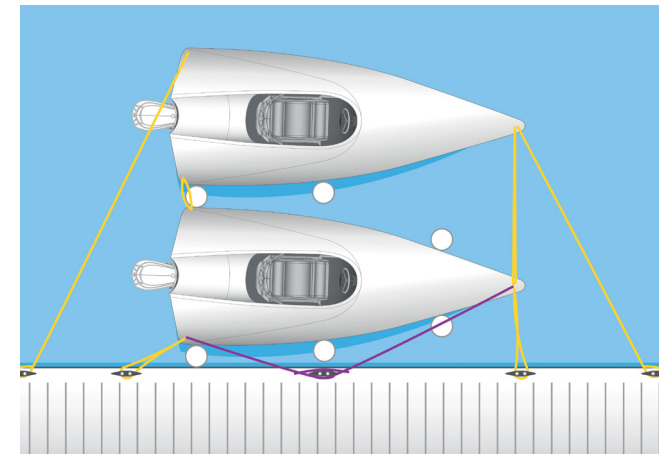
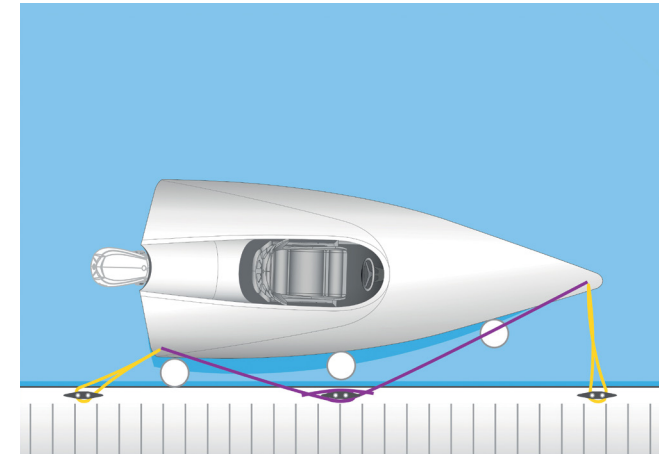
Securing to a cleat

Quick and Easy to tie, two turns around cleat followed by figure of eight turns and complete with full turn. Do not cleat off as the knot can jam.



How to moor a boat

A boat should always be secured with a forward line sometimes called a bow line and an aft line sometimes called a stern line. To prevent forward and aft movement two secondary lines should be used, a fwd spring and an aft spring. These lines are often used if the boat is moored close to other vessels or if moored in tidal waters. If a boat is moored next to other boats on a long trot it may be necessary to use additional shore lines to stabilise the whole raft of boats.

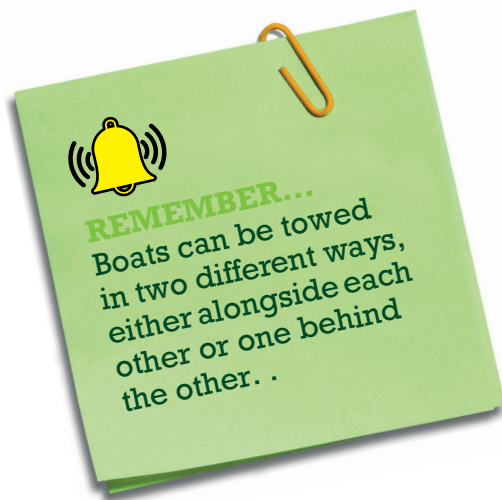
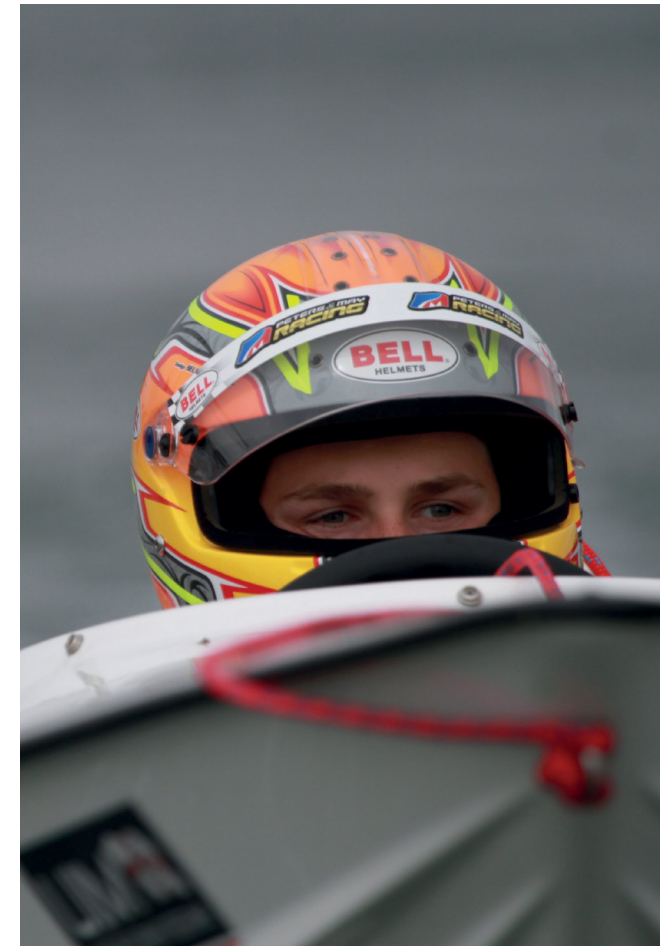
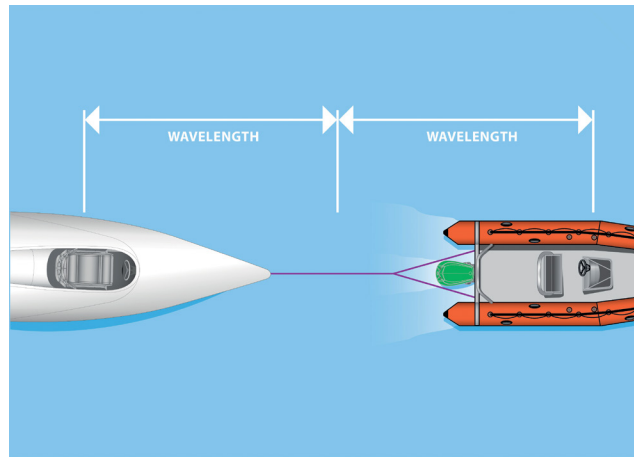
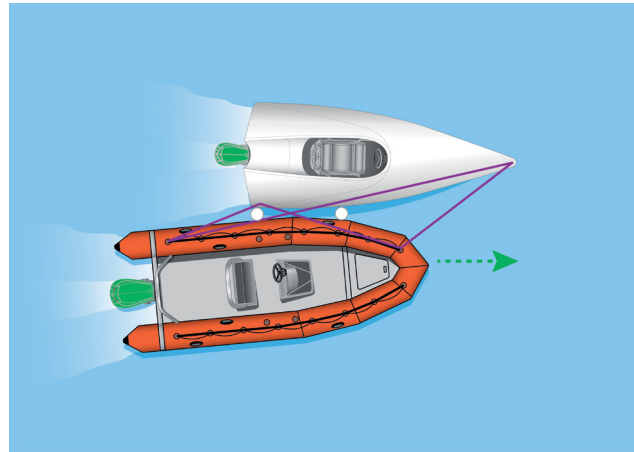


Water awareness skills on land and water

Tow lines, bridles and towing

Boats can be towed in two different ways, either alongside each other or one behind the other. Towing alongside is recommended in sheltered waters and when there is a relatively short distance to tow. In open waters this is not practical and it will be necessary to tow one boat behind the other, the rougher the sea conditions the longer the tow rope must be. It is advisable to keep the middle of the tow line in the water as this will act as a shock absorber in rough conditions.

The tow boat should rig a bridle line attached to mooring cleats on port and starboard stern quarter; the tow line should then be attached to the bridle by means of a bowline. The towed boat should rig a bridle to the mooring cleats either side of the bow and again the tow rope should be secured to the bridle by means of a bowline.



Water awareness skills on land and water

Boat Handling

The most important skill to develop in good boat handling is the art of making a boat stand still in all conditions. One of the most common mistakes is to apply too much power in order to achieve this. The most important factors to take into consideration are the momentum of the boat, the effects of the wind, tide or stream, and how the propeller effects the handling. It is also important to understand where the pivot point of the boat is as this will be important in close quarters boat handling. Before you attempt to carry out any boat handling manoeuvre you must know how the direction of the wind or tide will affect your boat. Most powerboats have a high windage factor, that is to say that even in light winds they can be blown across the water easily.

Propeller effect

Boats continue to move even after the power has been removed, this is the same as cars but boats don't have brakes so the only way you can stop or slow down is to apply reverse drive. In single engine boats the prop effect will pull the stern of the boat in the direction in which the propeller is turning and this will change the boat angle of approach as it slows down.

Water awareness skills on land and water

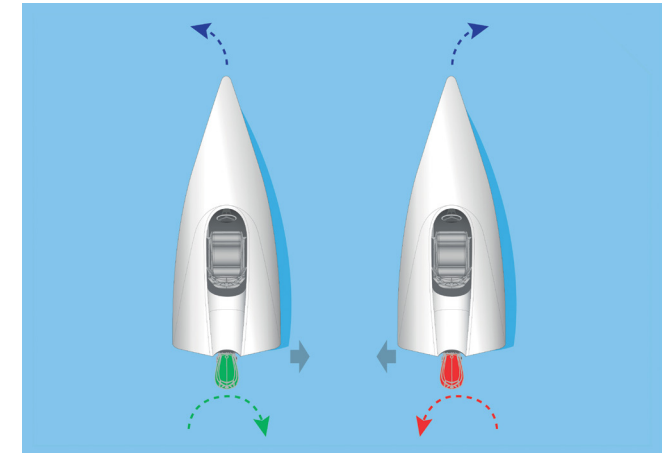
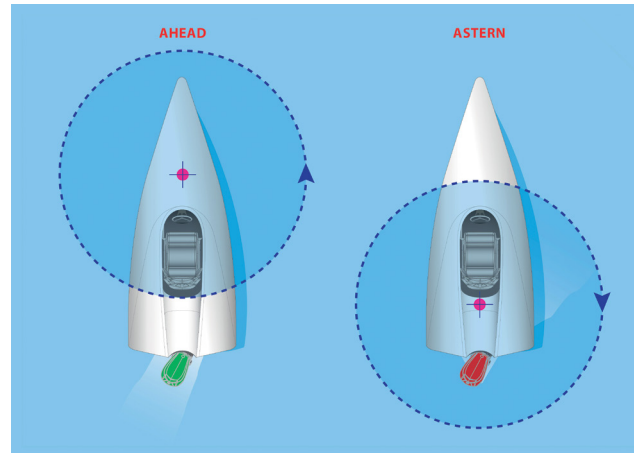
Pivot Points, thrust, and directional control:

It is important to understand how Pivot Points on boats change when forwards and reverse drive are engaged as this will help you to manoeuvre a boat easily in restricted areas.

When the steering is put hard to starboard or port and slow ahead is engaged the boat will pivot in a tight circle around a "Pivot Point" This Pivot Point will be forwards of the mid ships position.

When the steering is put hard to port or starboard and reverse gear is engaged the boat will pivot in a tight circle around a Pivot Point. The Pivot Point this time will be behind the mid ships position.

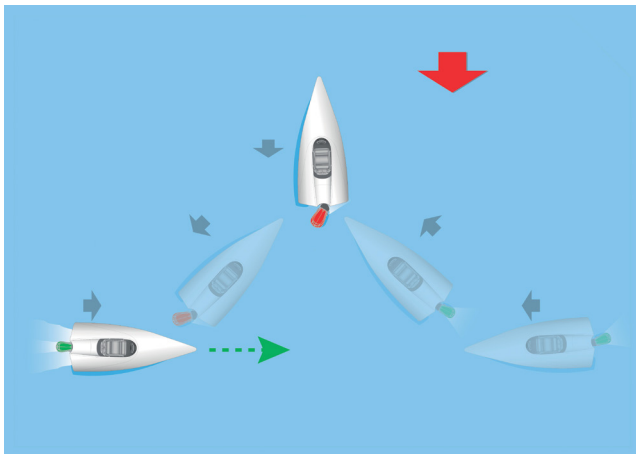
Understanding this is important as you need to develop an understanding of how the boat will swing and turn in a tight circle as this will help you to avoid hitting other craft in restricted areas.



Water awareness skills on land and water

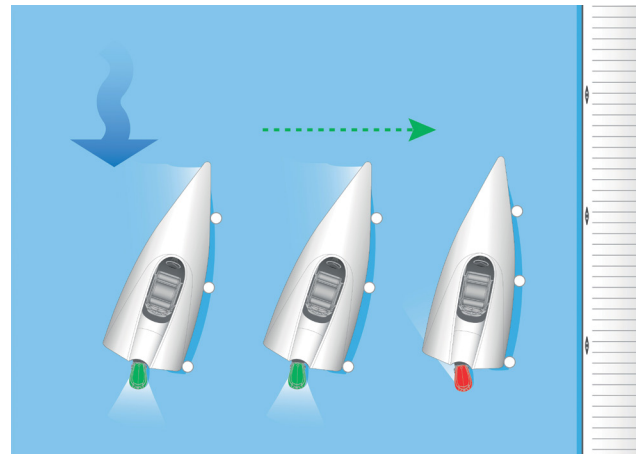
Steering and effects of thrust from outboard engine

As we are only looking at boats fitted with outboard engines a simple rule applies: When using forwards drive turn the engine in the direction you want to go and apply a short burst of power, when using reverse drive look behind you and turn the engine in the direction you want to go and apply a short burst of power. In both situations you must turn the engine first and before you apply the power. This is a fundamental principal and one that can be used in all of the following boat handling manoeuvres. Remember that you should only use sufficient power to overcome the natural forces of wind and tide.



Mooring to pontoon

Head to tide – first identify the direction in which the tide is flowing, approach the pontoon head to tide, prepare bow and stern lines and suitable fenders. Point the boat across the tide as per diagram, maintain sufficient forwards momentum to overcome the tide, as you close the pontoon engage reverse drive with the engine pointing at the pontoon, this will both slow the boat and straighten the angle of attack. Secure bow and then stern lines.



REMEMBER...

When using forwards drive turn the engine in the direction you want to go and apply a short burst of power.



REMEMBER...

When using reverse drive look behind you and turn the engine in the direction you want to go and apply a short burst of power.

Water awareness skills on land and water

Wind off

This is a more difficult manoeuvre and requires a different approach, firstly identify the direction of the tide and point the boat into the tide, next increase the angle of attack to the pontoon, sometimes this can mean you are pointing at right angles to the mooring, as you approach the pontoon secure the bow with a mooring line, then turn the engine towards the pontoon and engage reverse drive. The boat will swing in towards the pontoon, secure the stern line as it comes alongside.

Wind on

Approach the pontoon as in the example above but this time do not use such an acute angle of attack as the wind will do the job for you. If you hold the boat stationary against the tide the wind will simply blow you onto the pontoon.

Turning in a restricted area

This manoeuvre requires careful hand and eye coordination remember where the pivot points are and don't engage gear until the engine is pointing in the direction in which you want the boat to go. Small applied amounts of power are ideal which will result in the boat turning with minimum forwards or backwards momentum. A useful saying to remember is steer then gear!

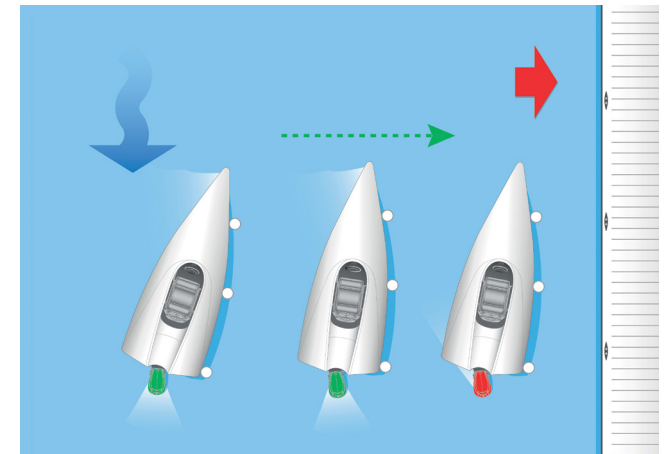
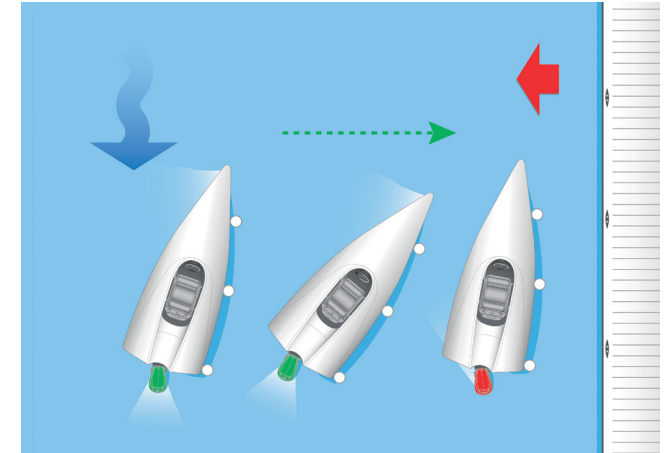
Ferry glide technique

We have already touched on this in the head to tide manoeuvre, this term is used to describe the way in which a boat glides sideways across the water with no forwards momentum. It is achieved by holding the boat against the wind or tide and applying small amounts of power with the steering set to achieve the angle of attack necessary to create the effect.

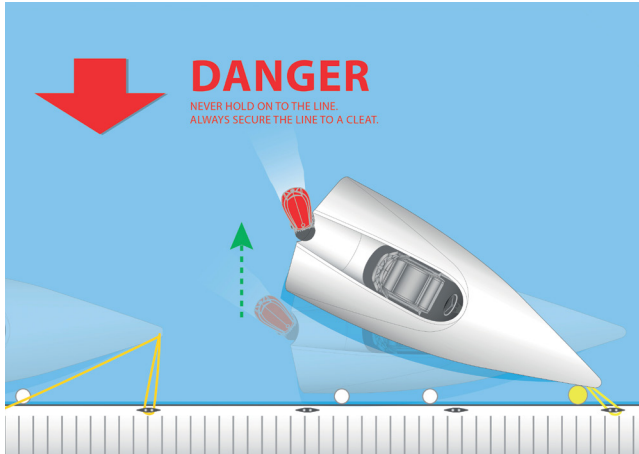
Leaving a mooring

When tide and wind conditions do not affect the boat it is possible to simply drive off the berth. If this is done using forward drive take care not to side swipe the berth as you leave. If too much port helm is applied as in the example below the back of the boat will hit the berth.

It is often better to reverse off a mooring as this method avoids the danger above. To execute this manoeuvre turn the helm towards the berth, apply a small amount of forward drive, just enough to start the stern of the boat to swing away from the berth. Turn the helm to port and engage reverse drive and reverse of the mooring.



Water awareness skills on land and water

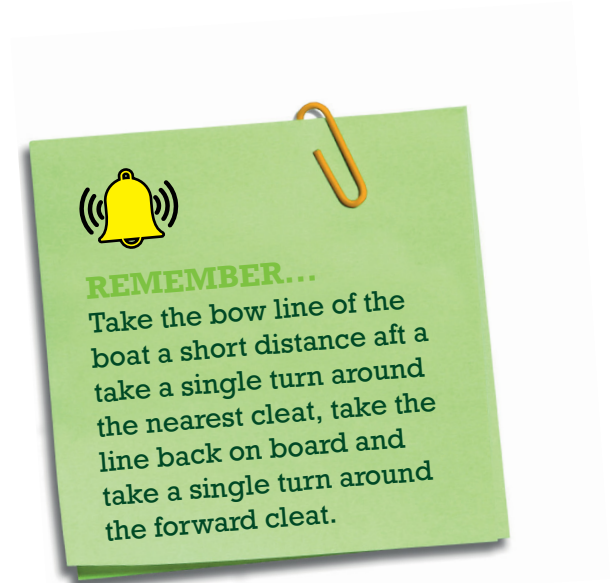


Departing a restricted mooring

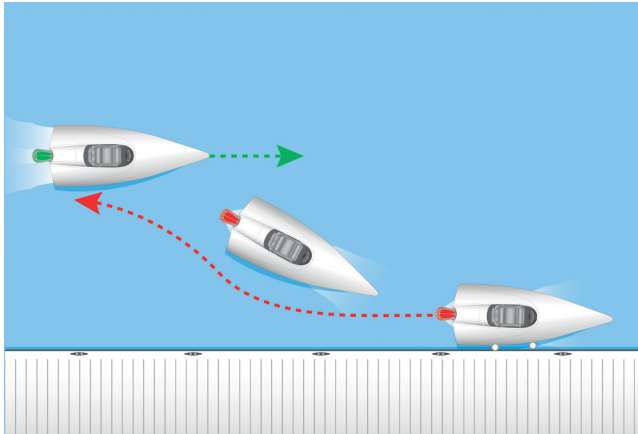
In some cases it is not possible to simply drive off a mooring, there may be restrictions such as other moored boats or there may be a strong on shore breeze that holds the boat against the mooring. In such circumstances there are two possible means of safely leaving the berth which are described below.

Using a bow spring

Take the bow line of the boat a short distance aft a take a single turn around the nearest cleat, take the line back on board and take a single turn around the forward cleat. Place a fender forward between the boat and the berth, release the stern line and with the helm turned towards the berth apply a small amount of forward drive. The stern of the boat will swing away from the berth and when the boat is safely clear promptly take out of forward gear, release the bow line and then engage reverse gear and motor away from the berth.

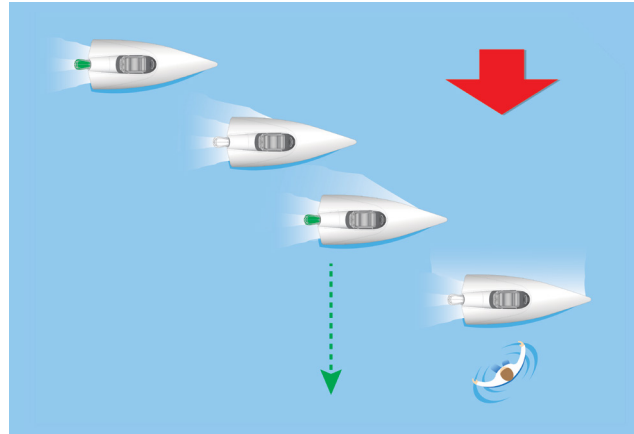


Water awareness skills on land and water



Reversing off a mooring using bow line

An alternative method to the above is to reverse the boat against the bow line which will cause the stern to swing off the berth, once this has been achieved release the bow line and reverse off the mooring.



Marina berthing

When mooring in a marina it is important to consider a number of key factors, first identify your allocated mooring, check the speed and direction of both the wind and tide and determine where the danger areas are on your approach to the berth. Only use sufficient power to maintain steering and never try to accelerate out of trouble. If you are unsure of your ability to manoeuvre the boat into a berth moor up and seek additional assistance.



Man overboard

In all UIM and National Racing it is the responsibility of the Rescue services to provide the required assistance to any casualties in the water and all competitors must observe the rules and regulations as described by the race organisers and the Officer of the Day.

If you are thrown into the water you should do everything possible to ensure other boats can see you and then follow the instructions of the event rescue. At most UIM and National events a wet driver rule applies which means that the OOD will stop the race if a competitor is thrown into the water.

Don't forget that your life jacket may save your life, make sure it fits and is tightly secured at all times.

Water awareness skills on land and water

Collision Avoidance Regulations

The International Rules for the prevention of collisions at Sea apply to all vessels however special racing rules apply during races and between racing boats. In this section we will look at the International Rules which you must comply with at any time when you are not racing.

If you apply simple common sense you will avoid most problems, for example you must maintain a good look out at all times, maintain a safe speed to suit the sea, weather conditions and traffic density. Ascertain if you think a risk of collision exists and if so know what action to take to avoid it. As a skipper of a small power craft it is your

responsibility to give way to all other craft. Some of the key rules are as follows:

- Overtaking, do not impede the vessel you are overtaking.
- Head to Head situations, Both vessels must alter course to starboard.
- Crossing situations, give way to traffic from your right.

Narrow Channels do not impede the passage of commercial or deep draft vessels who may need to be in the centre of the channel.

- Sailing Vessels, understand the rules governing sailing vessels.
- Give way vessels, must take early and clear action.
- Stand On vessels maintain your course and speed but be prepared to give way.
- Important to note that no vessel has the automatic right of way.

The rules of racing will be fully described in the Advanced and Competition sections of this manual.



Q: Where can I find a full explanation of the racing rules?

A: In the advanced and competition sections of this manual

Collision avoidance

Rules of the Road

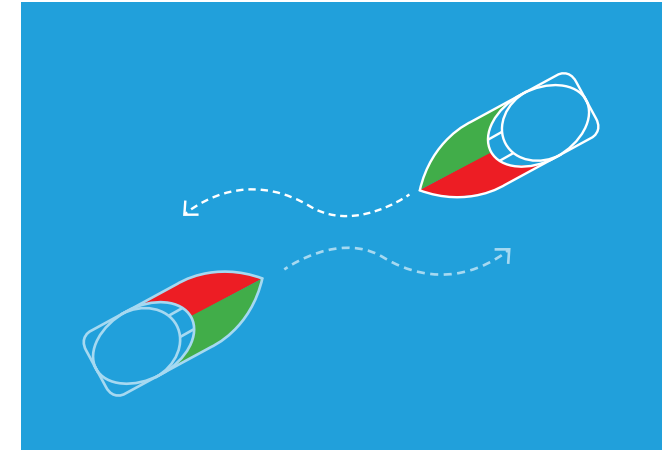
Collision avoidance Rules of the Road

Just like travelling on the road safely driving at sea is controlled by a number of simple rules. If you know and understand these rules you will avoid problems, if you ignore them you could have a serious collision for which you may be held responsible and subsequently prosecuted. One of the most important things to remember is that it is your responsibility to avoid a collision and you must take whatever measures necessary to do so, you should also remember that the other riders may not know the rules or worse never heard of them so don't take their ability for granted.

The most important rule is to maintain a proper lookout at all times:

- Don't suddenly change course at high speed without looking who may be behind you.
- Don't rely on your mirrors, look behind you
- Anticipate what other people may do on the water
- Always cruise at a safe speed with particular reference to sea conditions, density of traffic and visibility

Let's now look at some of the basic rules and what you should do:



Head on

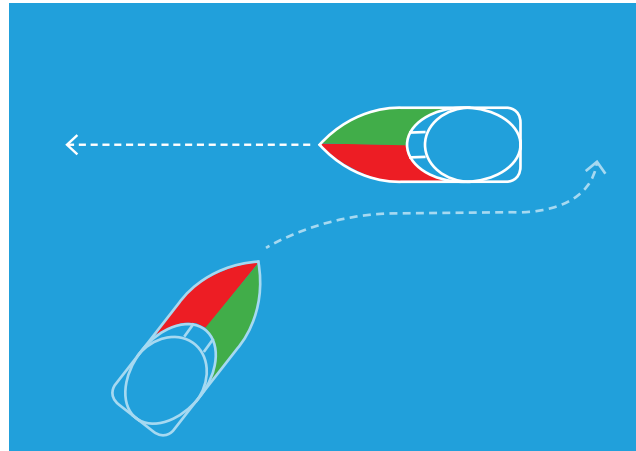
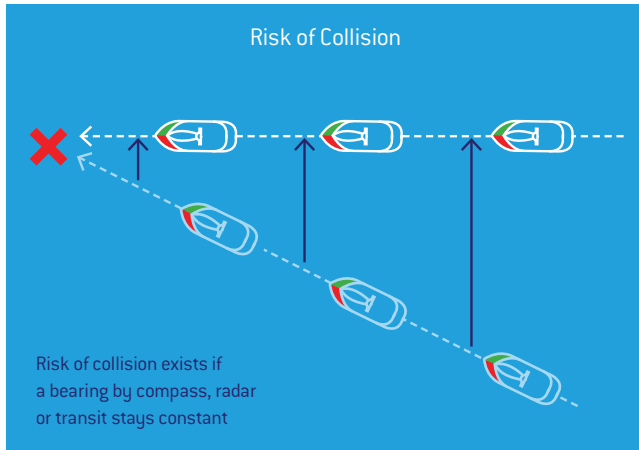
i.e. two craft travelling towards each other

Turn to the right (Starboard) make sure your turn is made early enough so that your intentions are clear to the other vessel. If there is no room to turn slow down or stop.

In this situation both craft alter course to the right (starboard) and pass left to left i.e. port to port. You should avoid crossing ahead of an oncoming boat as it is difficult to estimate their speed.

Collision avoidance

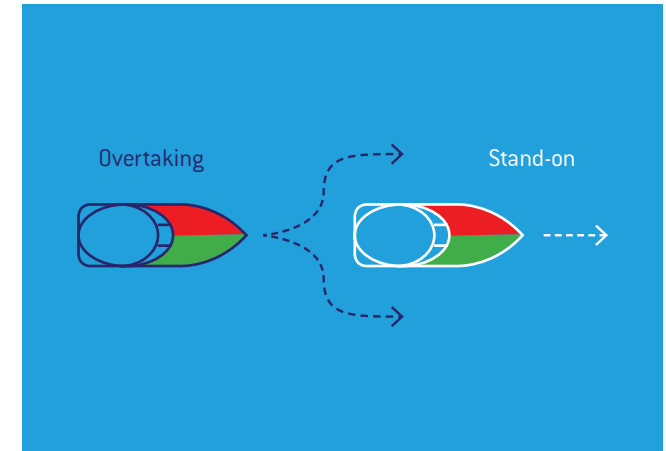
Rules of the Road



Crossing other craft

If a danger of collision exists in other words the relative bearing between the two craft remains constant YOU MUST ACT. In this case turn to the right to pass behind the other vessel.

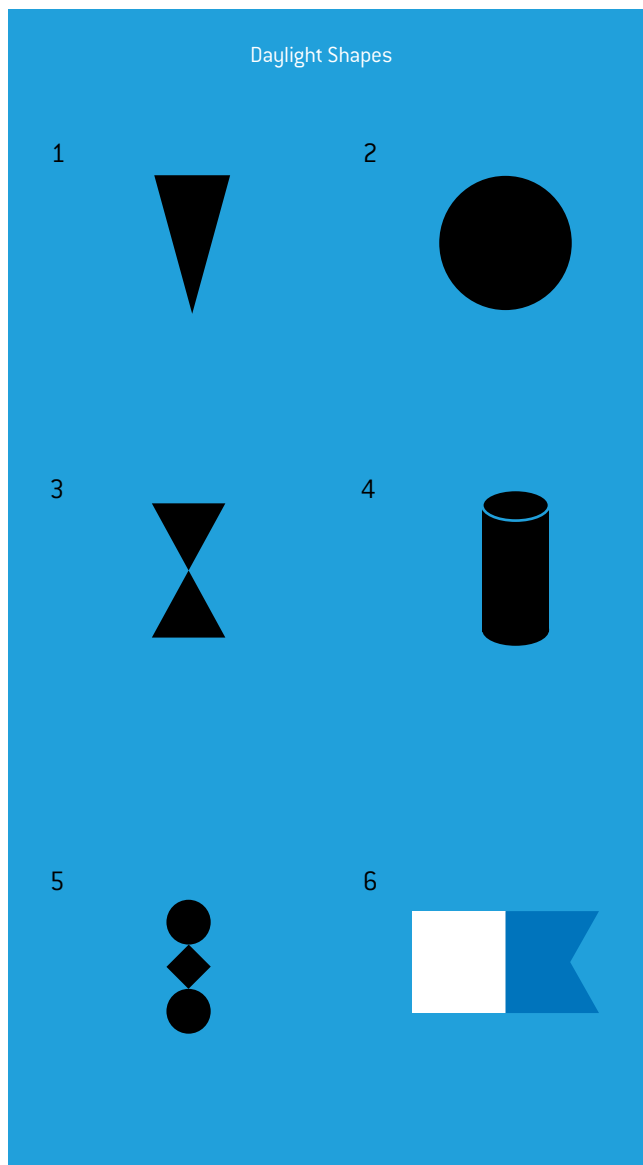
If another vessel is approaching you from your left and the relative bearing is constant that vessel should give way to you and pass behind you. Keep a sharp lookout in this situation and if the other vessel fails to alter course be prepared to take avoiding action, best to turn to the right and pass behind the other vessel.



Overtaking

If you are overtaking another vessel it is your responsibility to keep clear, you can pass on either side so choose the one that is safest.

Basic Navigation



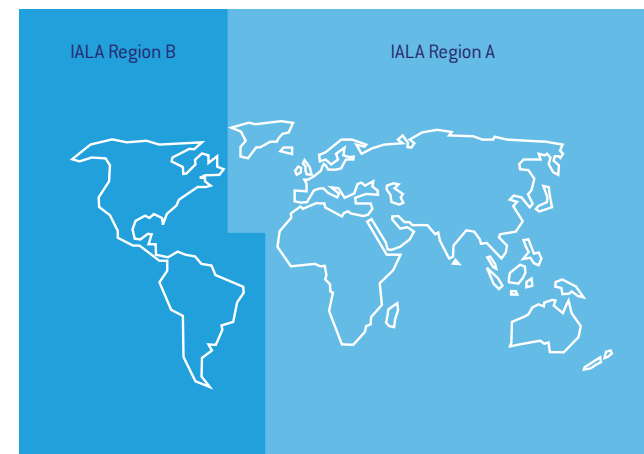
General Rules

As you are a power driven craft you must keep out of the way of sailing vessels and all vessels which are restricted in their ability to manoeuvre such as: fishing boats, canoes, kayaks, wind surfers and dive boats. There are very detailed rules which describe numerous other types of vessel that you must keep out of the way of and details of these can be found in publications entitled "International Regulations for the Prevention of Collisions at Sea." Pay particular attention to the following signals:

1. Vessel under sail and power
2. Vessel at anchor
3. Vessel engaged in fishing or trawling, also restricted in its ability to manoeuvre
4. Vessel concentrated by it's draught
5. Vessel restricted in it's ability too manoeuvre
6. Vessel engaged in diving operations

In addition to the International Rules of the Road many harbours and Port Authorities impose local regulations so it is important that you research this before you go to a particular location.

When racing in National or International events these are generally held on closed waters and the Racing Rules apply, if however part of the race takes you into open and uncontrolled waters the International Rules for the Prevention of Collisions applies at all times.



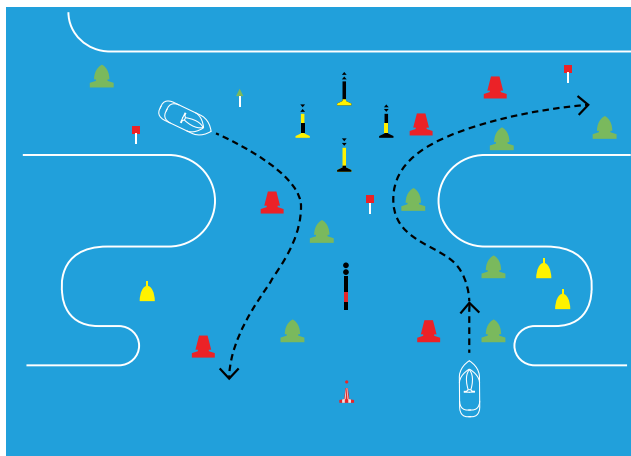
International Buoyage System

In order to safely navigate at sea and avoid dangers and obstructions a system of Buoyage is used. This falls into two categories. IALA region A and IALA region B. The diagram below shows where the two systems apply.

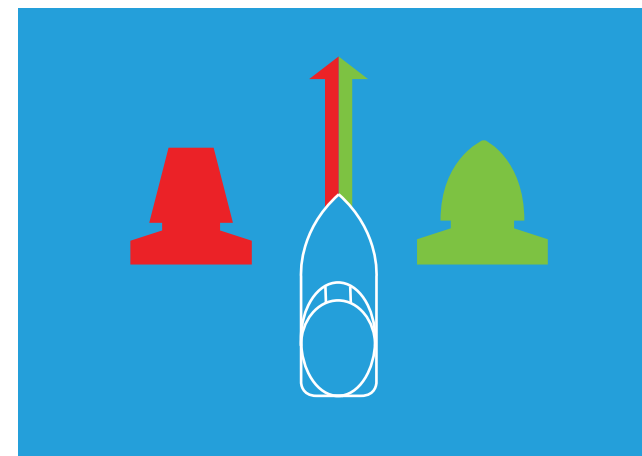
Basic Navigation

IALA Region A

The most important point to remember when using this system is that Port hand buoys are can shaped and Red and when entering a port from seaward they must be left on your left side.



From Sea into port

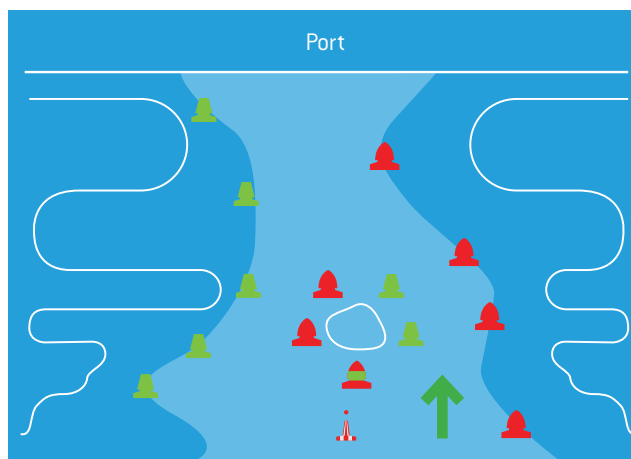


IALA Region B

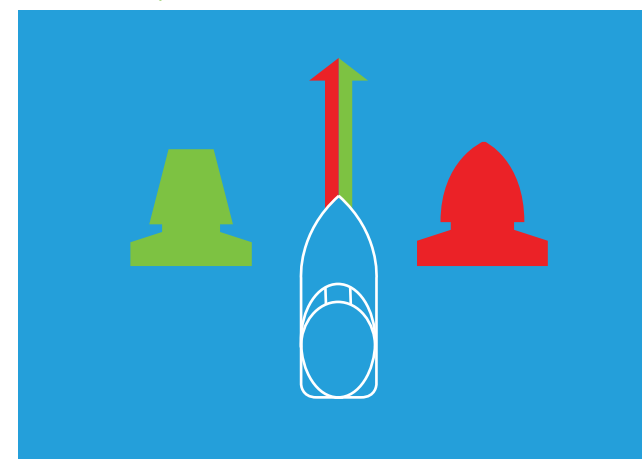
In the IALA B region you must leave the Green Can shaped buoys to Port and the Red Cone shaped buoys to Starboard when entering a port from the sea.

As we can see from the diagrams above the buoys act like road signs and they will guide you into safe water, the Red and Green buoys in both systems are called Lateral Marks.

There is one other primary type of navigation mark used in both systems:

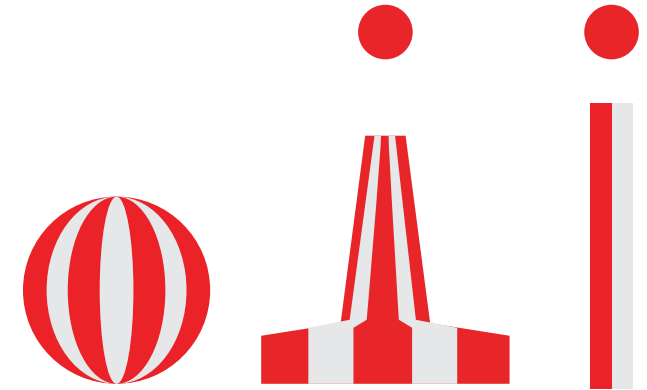
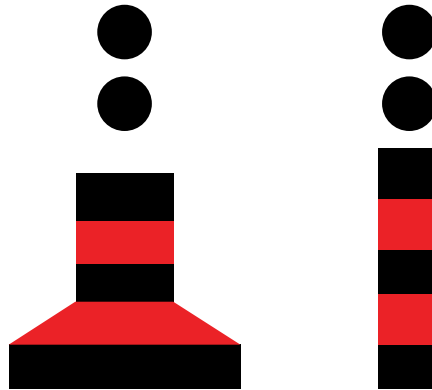
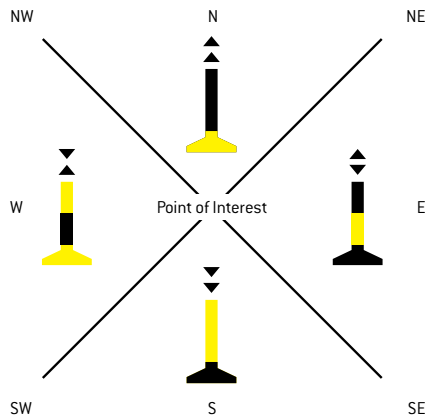


From Sea to port



Collision avoidance

Rules of the Road



Cardinal Marks

Each of the Cardinal Marks shown above direct you to the safe water, in other words the Northerly cardinal tells you to pass to the north of it and the Southerly to the South, the East to the East and the West to the west. As you can see each of the buoys has a distinctive yellow and black colour as well as a specific shaped top mark, they also have different light sequences so they can be identified in the dark but that will be further covered in your training modules.

Isolated Danger Marks

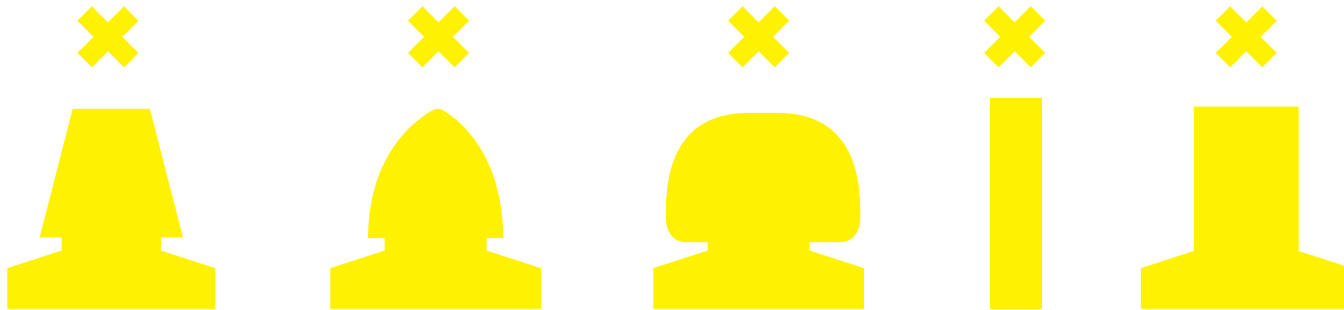
As the name suggests this buoy marks an isolated danger with safe water around it. Check your navigation chart to see the extent of the danger.

Safe Water Mark

These navigation marks often called land fall buoys indicate safe water and are normally used to mark the start of a channel or port entry.

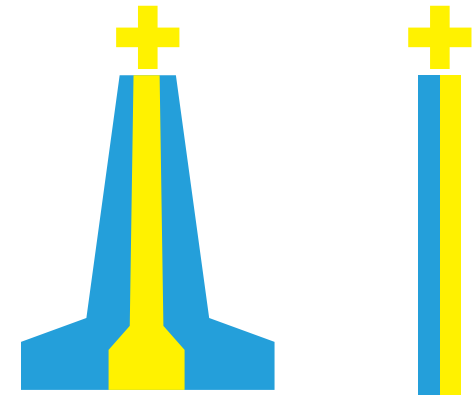
Collision avoidance

Rules of the Road



Special Marks

These special marks are used for a variety of reasons but frequently mark areas such as swimming water skiing etc. Again check your chart for more information.



Emergency Wreck Marks

These buoys are used to temporarily mark a wreck, so particular care and attention is required.

As we can see from all of the diagrams above the buoys act like road signs and they will guide you into safe water, but as with all navigation understanding how to use this system must be done in conjunction with reading and understanding a marine navigation chart.

Tides and tidal streams

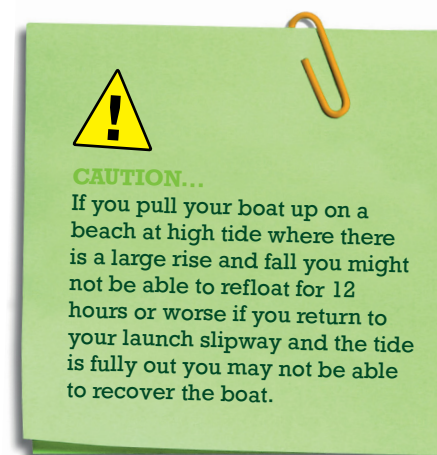
Tides and tidal streams

Tides and tidal streams are primarily driven by the effect of the gravitational force of the moon and the sun. This force effectively pulls the water in the Oceans from one place to another which in turn causes the rise and fall of the tide. The tide rises and falls once every 12 hours, six hours to come in and six hours to go out. In some places around the world such as the Baltic and the Mediterranean there is very little tidal flow and almost no rise or fall but in other places the rise and fall can be as much as 12m and the tidal flows in some places can exceed 10 knots.

WHY DO WE NEED TO KNOW THIS, WELL CLEARLY IF YOU PULL YOUR BOAT UP ON A BEACH AT HIGH TIDE WHERE THERE IS A LARGE RISE AND FALL YOU MIGHT NOT BE ABLE TO REFLOAT FOR 12 HOURS OR WORSE IF YOU RETURN TO YOUR LAUNCH SLIPWAY AND THE TIDE IS FULLY OUT YOU MAY NOT BE ABLE TO RECOVER THE BOAT.

Another important factor regarding tides is that generally where there is a strong tidal stream the sea will be rougher especially if the tide is flowing over an uneven sea bed. This is made considerably worse if a strong wind is blowing against the direction of flow of the tide in which case rough or very rough conditions may be found. It is therefore very important to plan your trip with care taking into account tides and wind conditions.

Tide tables are available for locations all around the world so as part of your pre planning you should always check to see if the tidal heights and flows will affect you. Tide tables can be found in most nautical almanacs as well as most local port, marina and harbour booklets.



Tides and tidal streams

Tide tables - A closer look





Daily Layout			
Date	Time	Height	
22	00.36	4.7	High Water
	07.14	1.6	Low Water
Day MO	13.31	4.6	High Water
	19.44	1.7	Low Water

Range

The Range of tide is the difference between the Height of a Low Tide and Heights of the subsequent on proceeding High Tide.

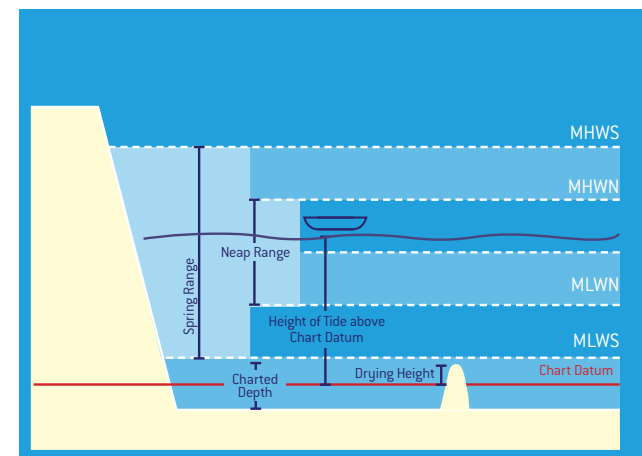
On the afternoon of the 22nd the Height of the High Water is 4.6m, the next Low Water is 1.7m. The range is therefor 2.9m.

Phases of the Moon

	New Moon
	First Quarter
	Full Moon
	Last Quarter

20 SU	04.34	1.7
	10.53	4.4
	17.04	2.0
	23.13	4.7
21 MO	05.55	1.8
	12.43	4.4
	18.30	1.9
22 TU	00.36	4.7
	07.14	1.6
	13.31	4.6
	19.44	1.7
23 WE	01.52	4.8
	06.26	1.3
	14.34	4.8
	20.46	1.4
24 TH	02.54	5.2
	09.18	8.9
	15.29	5.2
	21.43	1.0
25 FR	03.50	5.2
	10.51	8.9
	16.20	5.2
	22.35	1.0
26 SA	04.42	5.2
	11.01	8.8
	17.07	5.3
	21.23	0.8
27 SU	05.30	5.3
	11.47	6.8
	17.50	5.4

Neap Tides



The range of the tide is the difference between the height of high tide and the next low tide and the rate at which this changes can be roughly calculated using the rule of twelfths. As can be seen in the table below the tidal range changes at different rates during the six hour cycle.

The Rule of Twelfths

Hour	Tidal Range
6	1/12 of tidal range
5	2/12 of tidal range
4	3/12 of tidal range
3	3/12 of tidal range
2	2/12 of tidal range
1	1/12 of tidal range

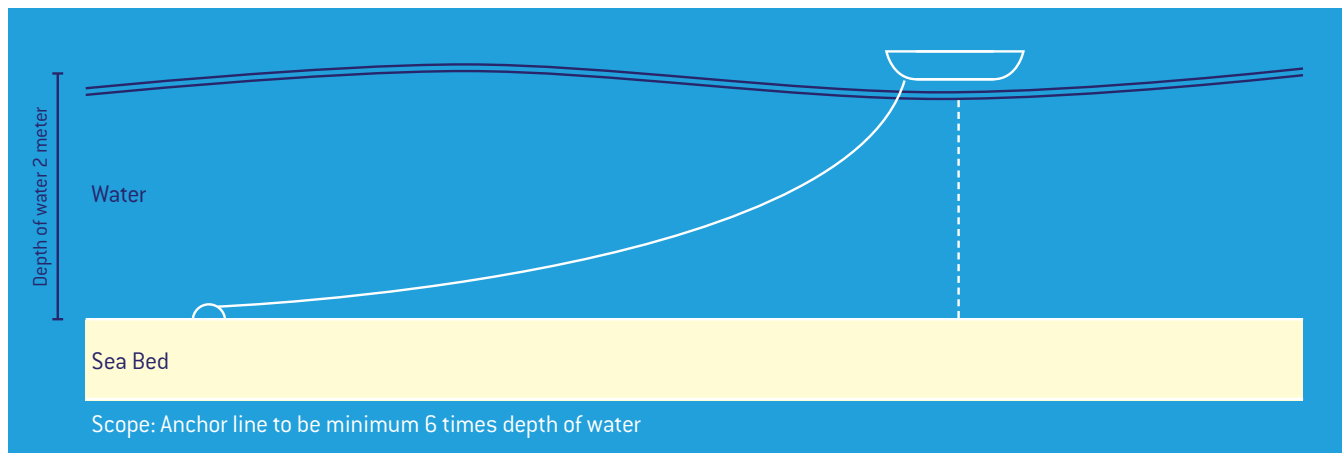
Spring Tides

Anchoring

Anchoring

Anchoring is a very simple exercise providing some basic principles are applied, most anchors are fold up grappling style anchors which are both easy to stow and light weight. Choose your anchorage bearing in mind that you don't want to be anchoring on a rocky bottom as the anchor will just drag and the boat is likely to float up out at sea! Best holding ground is sand or mud, you can check this out prior to departure by a simple look at your navigation chart. The chart will also give you the minimum depth of water so don't forget to allow for the rise of the tide if applicable and determine the depth of water you are likely to have when you arrive.

The general rule is that you would use 6X maximum depth of water to determine the amount of line to use. Now that you are ready to anchor drive into the wind and bring the boat to a stop and drop your anchor, carefully engage reverse drive and pay out the anchor line until it is fully deployed. Tie the anchor line off securely with a round turn and two half hitches. Spend a few moments to check that the anchor has secured and that the boat is not dragging.



Anchoring is both a very useful practical way of securing your boat for a short stay and also can be a lot of fun; some typical examples of when you might anchor are given below.

Some anchoring do's!

- Anchoring for a short stay off a slipway whilst you secure your trailer following launching
- Anchoring for a short stay whilst you collect your trailer for recovery
- Anchoring for lunch, or off beach for a swim.
- Anchoring due to a mechanical problem

Some anchoring don'ts!

- Don't anchor on a rocky or weedy bottom
- Don't anchor in rough conditions unless it is an emergency
- Don't anchor off a rocky beach with a strong on shore wind
- Don't leave your ski unattended for long periods of time

Weather

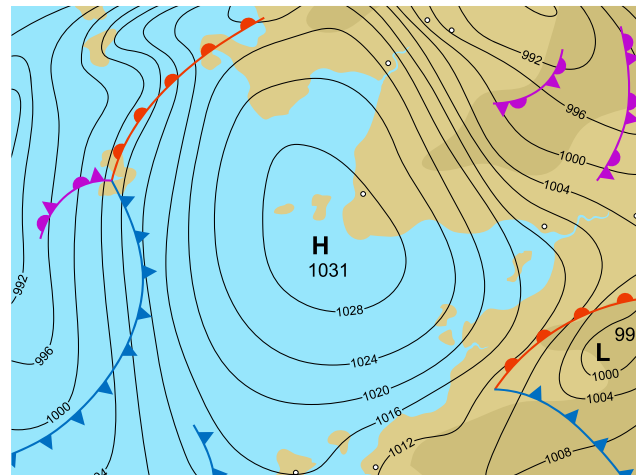
Weather

As we have previously mentioned it is very important that you understand what the weather is doing as you don't want to be caught out in rough conditions a long way from home. Some simple steps as listed below will help you to avoid this:

1. Check your local weather forecast before you leave, there are numerous ways of doing this from on line, TV, local radio to checking with the harbour master at your local marina.
2. Don't just be concerned about the strength of the wind as it is very important to know its direction. Wind directions are given in the direction from which they are blowing i.e. blowing from the North or South East. Direction is important for as we have already considered if the wind is blowing against a strong tide conditions may be very rough and dangerous.
3. Remember if you are travelling with the wind behind you it may seem very comfortable but if you have to go back against the wind it may be much harder. Stop, turn around and just check to see if you are comfortable with the conditions.
4. The strength of the wind is given by what is known as the Beaufort scale, details of this are explained below. As a rough rule if you multiply the Beaufort number i.e. Force 3 by 5 and then deduct 5 you will get the average wind speed for that Force. It is interesting to note that at almost every level the strength of the wind doubles for every increase in force, in other words the strength of a Force 3 is double the strength of a Force 2. This is very important as often the forecast will say Wind SE Force 2-3 increasing to Force 4 later. You must take this into account when planning your day.

Beaufort Scale

Beaufort Force	Wind Description	Min kts	Max kts	Min km/h	Max km/h	Sea State	Height of Waves [Meters]
0	Calm	0-1	0-1	0-1	0-1	Mirror Like	-
1	Very Light	1	3	1	5	Ripples on surface	0.1
2	Light Breeze	4	6	6	11	Small wavelets smooth crest	0.2 – 0.3
3	Gentle Breeze	7	10	12	19	Large wavelets breaking crest	0.6 – 1.0
4	Moderate Breeze	11	16	20	28	Large waves begin to form with white crests	1.0 – 1.5
5	Fresh Breeze	17	21	29	38	Moderate waves with many white crests	2.0 – 2.5
6	Strong Breeze	22	27	39	49	Large longer waves with white crests	3.0 – 4.0



Safety Reminders

Safety Reminders

As with many other sports the safest way to go to sea is in company with other boats, this is also a lot more fun. A second boat can assist with a tow, or help in a more serious emergency. Let's just remind ourselves of some of the most important things you need to do when going to sea:

- Always use your kill cord
- Always wear a suitable life jacket or buoyancy aid
- Carry a marine VHF Radio or mobile phone
- If you use a VHF make sure you know how to use it and have a licence
- Carry emergency flares and know how to use them
- Don't forget Red flares and Red smoke signals at sea signify DISTRESS
- Carry an anchor







Basic Training

CERTIFICATE OF COMPLETION



This is to certify that

.....
Has completed the Basic Training course of the UIM Propstars Youth Development programme

PROPSTARS ASSESSOR



FORMULA FUTURE



Formula Future

UIM Formula Future is an International competition designed to encourage children, between the ages of 8-18 to compete on the water and demonstrate their competency in basic water awareness skills, safety on the water and environmental awareness. Teams from UIM National Authorities, consisting of both girls and boys are trained by their National coaches in the skills required.

Each year these International teams come together and compete in a UIM World Championships. Over the past few years the competition has gone from strength to strength with typically 10-15 Nations from all over the world joining the competition annually. Suitable locations are agreed by the UIM to promote cultural exchange between different nations which ensures a diverse mix of nationalities and competitors.



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Introduction



Introduction

This dynamic programme was first staged in 2000 and since its inception many thousands of young people have been trained which each year culminates in some 100 plus young people coming together to compete in a relaxed and educational International sporting event.

How to get involved

In the Basic Powerboat Training Course much of the emphasis was placed

There are six different classes within Formula Future catering for all age groups, these are split up as follows:

Class Dolphin	ages 6 – 7 years
Class 1	ages 8 - 9 years
Class 2	ages 10 - 11 years
Class 3	ages 12 - 13 years
Class 4	ages 14 - 15 years
Class 5	ages 16 - 18 years

Drivers and co-drivers must be able to swim and must wear sports clothes and flat-heeled shoes in order to be allowed to start. A co-driver is mandatory for Classes Dolphin, 1,2 and 3. Teams set up by educational institutions, sports clubs and other organisations can take part in the competitions. Each team includes a maximum of two drivers from each age group.

At all events, each national authority may be represented by one team only. Each team must have an official adult representative, a team manager and must nominate a captain. Each team member must wear clothing so as to be identified as a team member during event and competition. The responsibility of a captain is to provide management and guidance as well as to ensure the proper behaviour of his young team mates.

All drivers, official representatives of the teams and all race officials must be familiar with the UIM Formula Future rules.

Boats, Engines and Equipment

Boats Engines and Equipment

Boats used in UIM Formula Future are Rigid Inflatable boats (RIBs), they must have a maximum length of 3.6m and a width between 1.3m and 1.7m.

Boats in Classes Dolphin, 1, 2 and 3 shall be RIB type boats powered by an outboard engine with a minimum power of 5hp. (3.7 kW) and a maximum power of 8hp. (6kW) for two stroke engines. If Four stroke engines are used the maximum power allowed is 10 hp. (7.4kW)

Engines must be provided with manual engine steering (tiller arm), if possible with automatic reverse. All boats in these classes must be equipped with two separate kill-switches, or alternatively with two separate connections to one kill-switch in order to allow the driver and/or the co-driver to stop the engine immediately. The driver may start only after the kill-switches of driver and co-driver have been properly attached to their bodies or to any part of their equipment (for example life jacket).

Boats in Classes 4 - 5 shall be RIB type boats, powered by an outboard engine with a minimum power of 10hp. (7.3 kW) and a maximum power of 15hp. (11.2kW). The boats must be equipped with a steering wheel, a jockey seat for the driver with the speed lever on the starboard/right side and a kill-switch. The driver is allowed to start only after his kill-switch has been properly attached to his body or to any part of his equipment (for example life jacket).



Race Procedure

Race stages:

Each race includes 3 stages: - 1st stage: Free practice - 2nd stage: Manoeuvring, 3rd stage: Parallel slalom with final races. In all stages the racing is against the clock and only one boat is allowed on the course at the same time. Two courses are laid in Parallel slalom, these are separated by a safe distance and one boat is allowed on each course racing against each other and the clock.

In all of the above Classes drivers must follow the set UIM courses as detailed in the Formula Future section of the Circuit Rule Book and described on pages 56 and 57 of this manual.

In classes Dolphin, 1,2 and 3 the drivers sit or kneel in the boat, the drivers in classes 4 and 5 sit on the jockey seat and it is permitted to hold the sides of the boat to increase stability and safety.

After passing the finishing line a boat must smoothly come alongside the pontoon within the designated area.

Free practice is mandatory for every driver. The manoeuvring racecourse is laid out for the practice on the water. The driver must practice both circuits, manoeuvring and slalom, according to the race schedule.

Manoeuvring:

The manoeuvring part of the competition consists of: - Tying knots and driving on the racecourse Every driver must show his skill in tying the following knots:

Reef knot; Bowline; Half-hitch; and Clove-hitch. The maximum time limit for tying each knot is 60 seconds, beyond which the knot will be considered as improperly done. The driver must raise his arm, after each attempt, when he considers the knot is done.

Every driver runs the manoeuvring course relevant for his class (see detailed course drawings). Each driver is allowed 2 attempts to run consecutively. Both attempts will be performed on the same course, with the same boat and engine - within each class. Only the better attempt will be considered for the results (except of dead-heat situations).

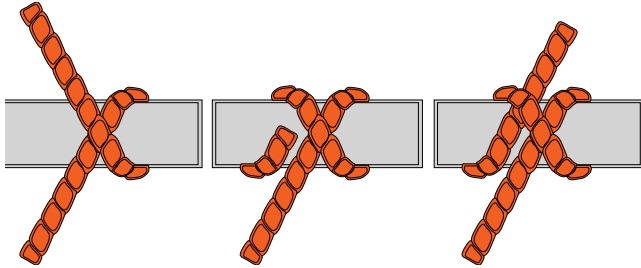
Additionally drivers in classes 4 and 5 must perform a man-over-board manoeuvre. The boat must approach the mark with its left side, must be completely stopped by using reverse gear, any backwards movement of the boat is not allowed. After the boat has come to a complete stop the driver raises a lifebuoy (or similar) over his head with both hands and puts it down on the designated mark without throwing it or dropping it down and then continues the course.

The Parallel slalom part of the competition is run on the course as shown in the drawings. Two drivers from the same class shall start at the same time, each running on a separate racecourse. Each driver shall have two attempts - the drivers shall change boats and courses for the second attempt. Times from both attempts are counted up, adding penalty seconds (if any) and the driver is awarded UIM points. The four drivers having the highest score in each class shall participate in the semi-finals and finals. Pair setting for the semi-finals is according to the personal number of the drivers. Each semi-final participant shall again have two attempts. The drivers shall change boats and courses for the second attempt. The semi-final results are determined as mentioned above and the pair setting for the finals is as follows: - Drivers with 1st and 2nd highest scores in the semi-finals compete for the 1st and 2nd place; - Drivers with 3rd and 4th highest scores in the semi-finals compete for the 3rd and 4th place.

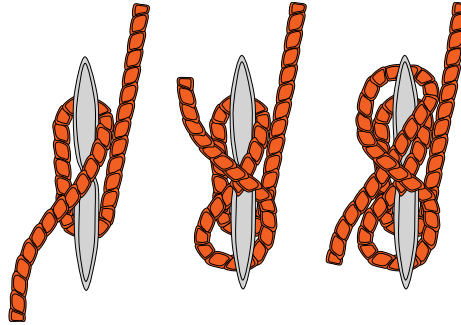
For more detailed information on the UIM Formula Future activities you should go to www.UIM.sport

Knot Illustrations

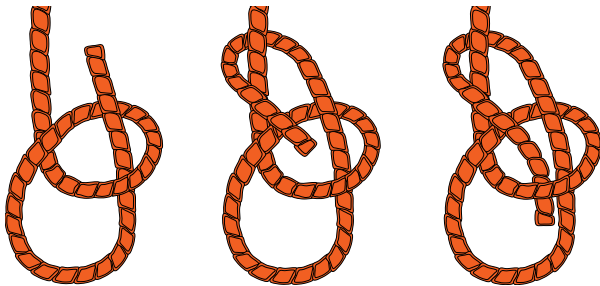
Clove hitch



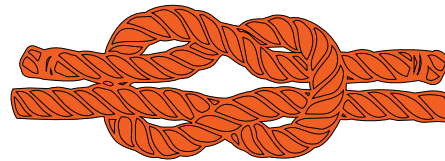
Half hitch



Bowline



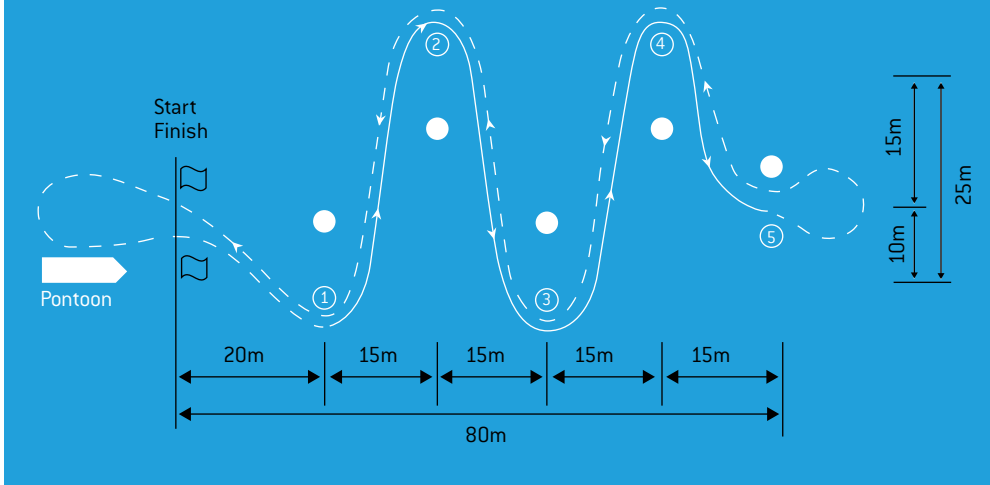
Reef knot



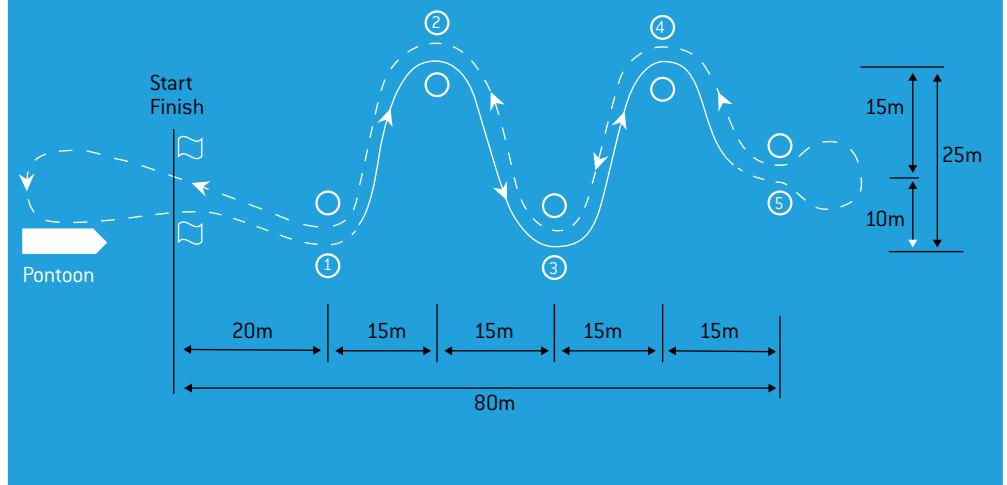


Race Courses

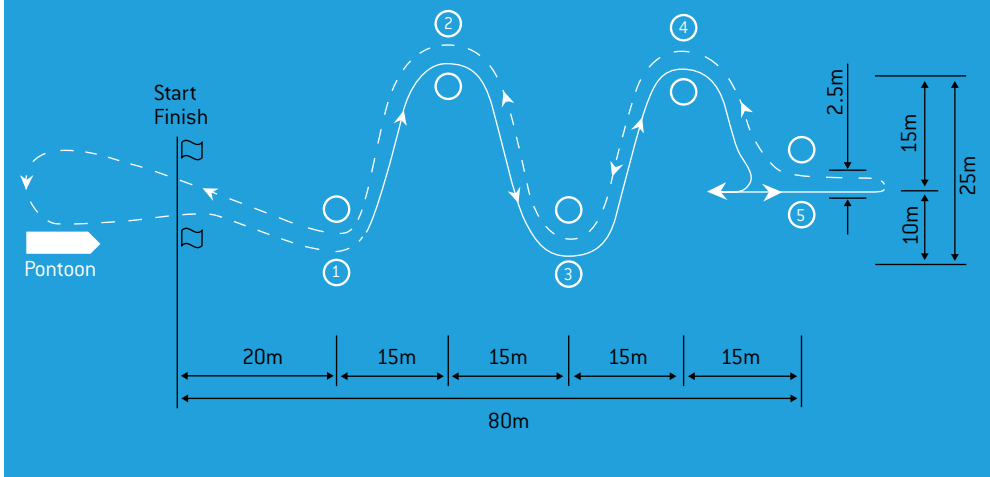
CLASS DOLPHIN



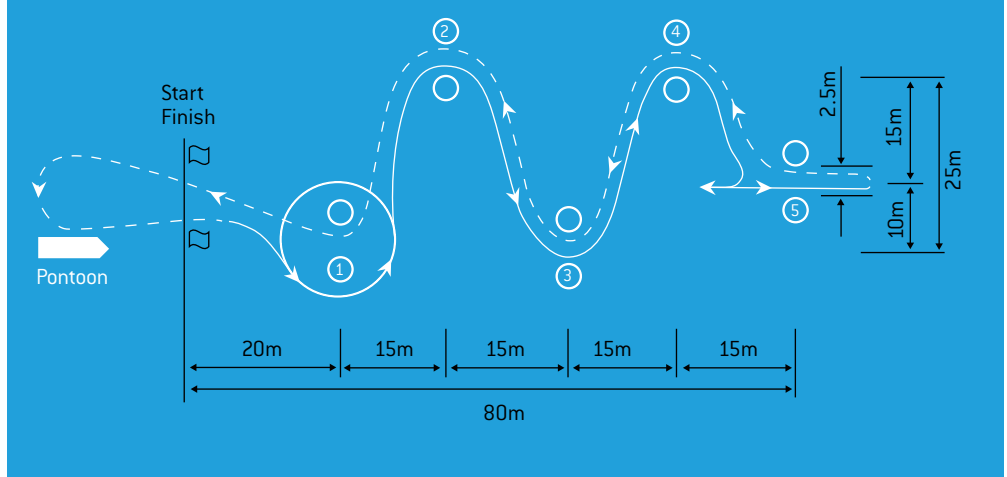
CLASS 1



CLASS 2

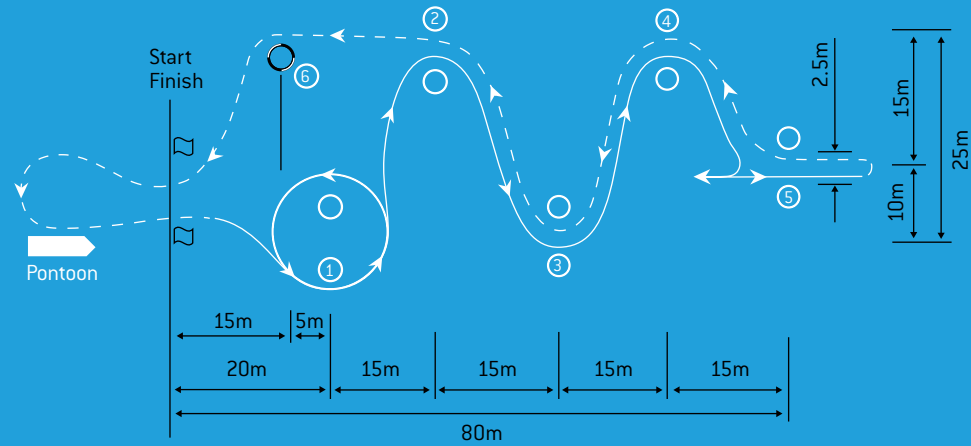


CLASS 3

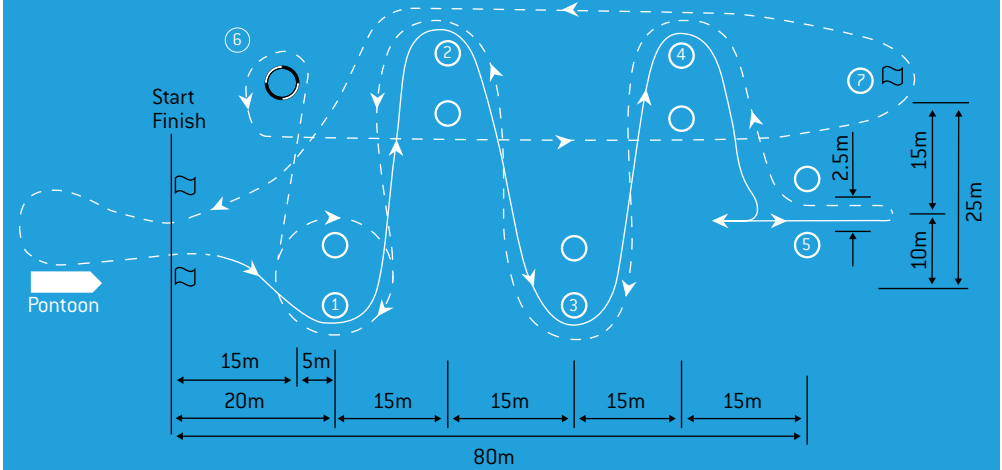


Race Courses

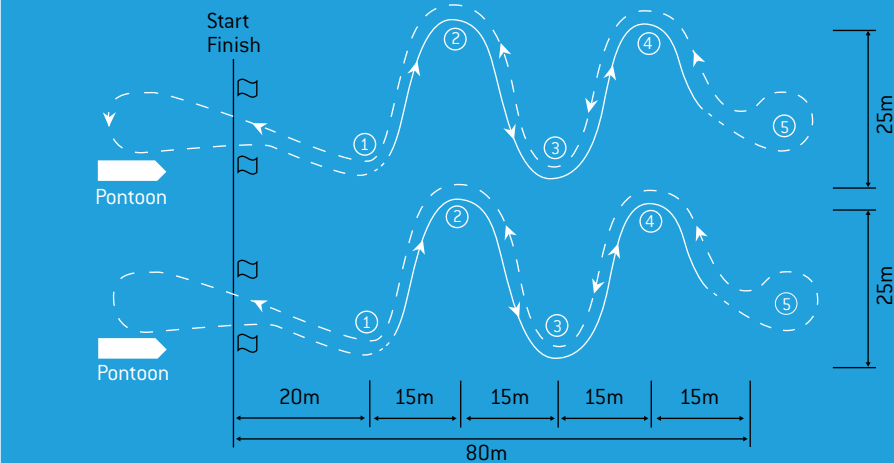
CLASS 4



CLASS 5



PARALLEL SLALOM







FORMULA FUTURE



Formula Future

CERTIFICATE OF COMPLETION

This is to certify that

.....
Has completed the Formula Future Training Course of the UIM Propstars Youth Development programme

PROPSTARS ASSESSOR





Advanced Training ...

Candidates attending the Advanced Training course must have first attended the Basic Training course and completed the syllabus to the satisfaction of the instructor.

Direct entry to the Advanced training module may be possible if the applicant can prove past boating experience. This may require the applicant to take a short assessment examination before being accepted on the course. The Advanced course is designed to provide an introduction into powerboat racing and to teach candidates how to get started in the sport and safely compete at club and national levels.

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- Typical Race Organisation

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- Time Keepers/Lap Counters
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- Types of course

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- Overlap
- Overtaking
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Introduction

What to expect from this Advanced course

In the Basic Powerboat Training Course much of the emphasis was placed on introducing the candidate to basic water awareness skills, in this advanced module the emphasis will be to improve your depth of knowledge in all areas but also to introduce you to the skills necessary to safely race at club and national levels. All of the practical on water training will be done using suitable race training boats such as UIM P750 ThunderCat training boat UIM GT15 training boat and UIM Formula Future.

Short resume of key points covered in the Basic Training Course, check ability and competence of those attending

To demonstrate ability to safely start and stop the engine
To perform a series of basic boat handling manoeuvres including mooring along side, reversing and driving at speed around a pre set course.



Race administration, race officials and rules

How to start racing, licences and medicals

Like any motor racing sport powerboat racing is governed by both National and International Authorities. Powerboat racing licences are issued by the National Authority of your country however before you can apply for a licence you will need to take a medical examination and a powerboat race training course. The Advanced training course set out in this module will cover all aspects of racing and on satisfactory completion of this course you will be able to apply for a provisional racing licence from your National Authority. This provisional licence will enable you to participate in Club and National events during which your competence to race will be further assessed by the Officer of the Day.

In addition to your racing licence you will be required to provide a log book/measurement certificate for your boat, this book provides details of ownership, measurement and weight of the vessel and details of the engine.



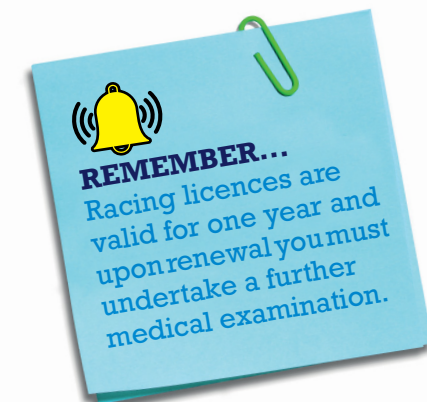
The role of the racing officials - The Officer of the Day (OOD)

The Officer of the Day is the principal official at any race and he/she is responsible for running the event in accordance with the rules of the national Authority and in the case of International races the rules of the UIM. The OOD is a key member of the Race Committee. He/she gives the Drivers' Briefings, ascertains that all safety assets are available, maintains order on the course, and ensures that all activities are conducted in accordance with the Racing Rules. He/she verifies any decisions to stop or curtail the race. He/she analyses the written reports of the Officials and Timekeepers and any other documents that will enable the results to be compiled. The OOD is not allowed to sit on the Jury. The OOD can also apply penalties to competitors if they are found to be in contravention of the rules.



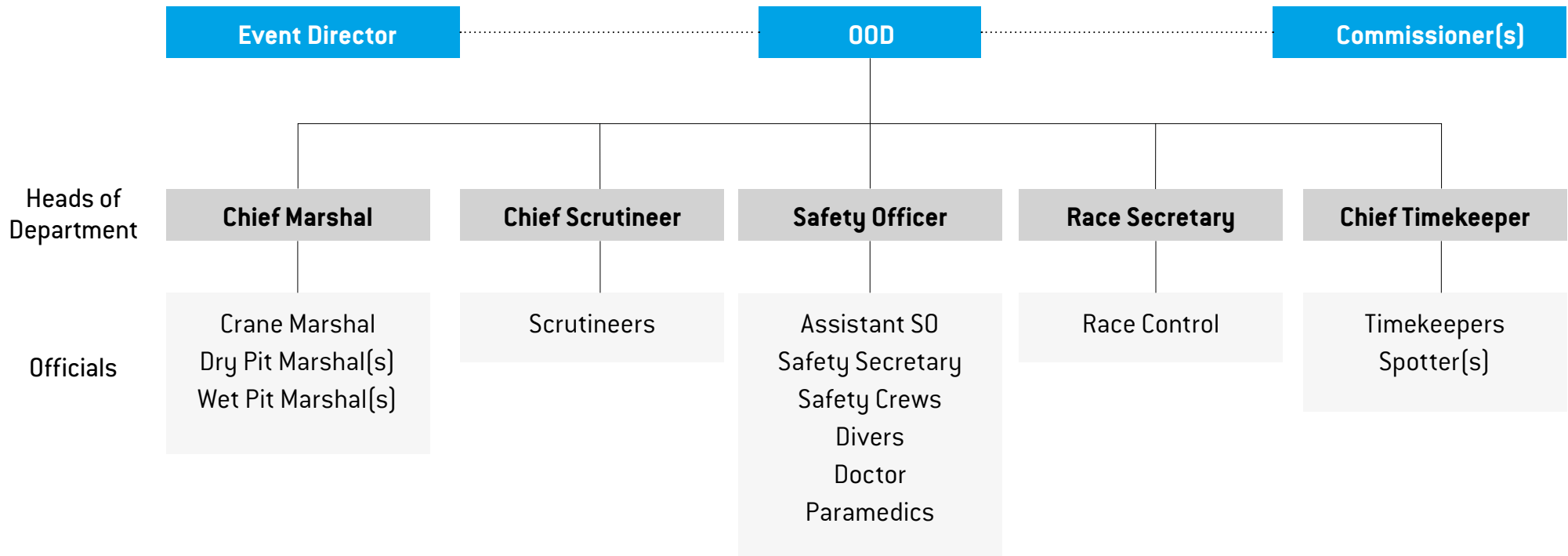
The Safety Officer (SO)

Is the deputy to the Officer of the Day. He/she coordinates the safety services on shore, on the water. The primary duty of the Safety Officer is to ensure that all safety related activities are coordinated and that an adequate response to any situation is promptly delivered. The Safety Officer must also ensure that event risk assessments are created and planned in advance.



Race administration, race officials and rules

Typical Race Organisation



Personnel and Documentation



Race Secretary

The race secretary is likely to be the first contact you have with the organisational team, the role of the race secretary is to record your presence at the meeting and to ensure that you comply with all of the administrative requirements as described in the rules. In addition to this the race secretary will post the results of the races and also issue important race bulletins which you must read. These bulletins may contain very important safety information or time table changes to the event.

Commissioners

Usually appointed by the National Authority, their task is to prepare a detailed report on the event so that the performance of the organising club can be evaluated. A Commissioner will sit on the race jury, they can assist the OOD and SO with the running of the event as well as talking to and discussing concerns with competitors. Commissioners are appointed by the UIM [the International Governing body] at all International events.

Timekeepers/Lapcounters

Official timekeepers will record all of the race times and this information will then be posted on the race bulletin board by the race secretary. Don't forget that if you wish to protest the results you must lodge your protest within the time limits described in the rules, this is normally 30 minutes from the time of the official results being posted.



Race documentation

Before you can go racing you will be required to complete a number of forms which are listed below: A completed race entry form together with payment must be sent to the organisers before the event. Upon arrival at the race site you will be required to provide your racing licence and your boat log book or measurement certificate. Providing this is in order you will then be required to sign the competitors signing on sheet and to provide contact details of next of kin in the event of an accident. By signing the competitors signing on form you are then bound by the rules of the event, National Authority and or UIM and you must comply with these at all times. Failure to do so may result in disqualification. You are then also covered against Third Party Public Liability claims whilst racing but you should check with the race organisers the extent of this cover as it can vary from country to country. It is worth noting that this cover does NOT cover you for personal accident or damage to your boat whilst racing. You MUST ensure you have this personal cover in place.

Don't forget that at the end of each days racing you are required to sign off within one hour of the race finish.

Race Instructions, Numbers and Briefing



Racing Instructions

This is an extremely important document which will be sent to you before the event. This provides detailed information concerning the general running of the event and it is a requirement of the racing rules that you read this and fully understand the information given. Pay particular attention to the following areas:

- The racing risk statement and competitors responsibility.
- Timetable of events.
- Pit areas, parking and special conditions.
- Course details, marks of the course, dangers, distances and restrictions at corners.
- Contact details of Officials.

Race Numbers

Race numbers are allocated to every driver by their own National Authority. Full details of the requirements for International competition can be found in the UIM Rule books.

Mandatory equipment

Full details of the mandatory equipment you will require for racing is contained in the UIM Rule books for both Circuit and Offshore racing. National Authorities may also provide lists of equipment required for National racing which may differ from UIM requirements. Rules are updated annually so make sure you have a current rule book and are familiar with the requirements of the Class that you are racing in. The two most important pieces of equipment you have are your protective helmet and your life jacket or racing vest, these may just save your life so you must ensure they are in perfect condition and that they provide the best possible fit.

Drivers Briefing

A drivers briefing is mandatory at all race meetings, sometimes more than one briefing will be given, all competitors must attend these briefings, failure to do so will result in immediate disqualification. Details of the times of briefings will be given in race instructions. The drivers briefing provides detailed information concerning the race course, the safety cover, the start and finish procedures, what to do in the event of an accident. It is recommended that all competitors take notes of key points of information especially any changes to the course or communication procedures. A detailed weather forecast will also be given by the Safety Officer, this information is very important and can also be used to help competitors decide on boat set up for the race.

Q: Who allocates race numbers?

A: Each driver's national authority

Briefing Template

(*) If Applicable

Key

- OOD
- Safety Officer
- Harbour Master
- Event director

01. Welcome Competitors – VIPs – Harbour Authority – Sponsors Accommodate non-English speakers (*)	02. Introductions Self – then official Top Table	03. Attendance Check Signing In sheet for absentees. Only use roll-call if all else fails. Confirm crews are all wearing medical wristband ID	04. RI's Confirm everyone has received copy / is currently in possession of / has read / understood Race Instructions	05. Race Bulletin/s Confirm everyone has received / understood	06. Protests Are there any protests against eligibility?
07. Weather Report Invite Safety Officer to deliver report	08. Timetable Running to timings Highlight delays to changes (*) Highlight practice times (*)	09. Launching Highlight timings & any tidal issues Highlight windows for individual classes (*) Highlight hard hats in crane area Slipway procedure	10. Start Details Detail Muster area & Penalty area Distance between wet Pits & Muster area. Convoy or parade procedure. Highlight start delay procedures Highlight any local harbour regulations Detail finishing procedures & flag location Highlight signalling flag procedures	11. Start Boat Describe with Picture if possible Highlight position during the start	12. Course Details Highlight any alterations to RI's (*)
13. Safety Coverage Safety network of boats / medics / divers / helicopter Emergency recovery procedures Highlight 'stop & assist' protocol Highlight retirement procedures / penalties Detail active radio channels / call signs Detail mobile telephone numbers Highlight safety flag procedures	14. Finish Finish/curtailment flags and their location	15. Recovery Highlight waiting area(s) & recovery priorities	16. Signing off Explain location(s) Highlight penalties for non-compliance	17. Special Instructions Highlight issues encountered in previous races (*) Highlight any local regulations Highlight any local hazards	18. Questions on topics covered thus far.
19. Introduce Harbour Master If required / relevant / appropriate. [Comments restricted to local concerns]	20. Introduce Event Director Highlight priority administrative details Highlight outstanding social details Prizegiving time / place / mode of dress	21. Questions Final Sweep	22. (Time Check)	23. Conclusion Thanks to all & 'safe racing' message	24. Novices Extra advice session

Equipment



Protective Helmet

Protective helmets must be worn at all times when you are on board the boat and under the direction of the OOD. In some countries it is mandatory to wear a helmet made to a minimum standard to include Snell M2000, or M2005 or Snell SA2000 or SA2005. Helmets must have temple protection and must be coloured “orange” or an equivalent bright colour acceptable to the organising body. A correctly fitting helmet is essential, seek advice from your supplier but be aware that if there is excessive movement in the fit or you can pull your helmet off from behind it is useless. Look after your helmet at all times, it is a vital piece of safety equipment, if you drop your helmet onto a hard surface it is extremely likely that it will be irrevocably damaged.

Racing vests and life jackets

Racing Vests must be worn at all times when you are on board the boat and under the direction of the OOD. The efficiency of a racing vest is the responsibility of the wearer so above all make sure that all straps and zips are done up tightly before racing. Failure to do this could result in the racing vest pulling up over your head which will render it useless. Lacing ties and/or straps shall be adequate and in good condition. All straps shall be at least 40mm wide and have a minimum breaking strain of 500kg. There must be lifting straps at the front or on the shoulders. Zips are not permitted as the sole means of fastening a racing vest. Where zips are used as an ancillary means of closure they must be in working order. Tears or rips or bad repairs through which buoyancy material may leak out are not permitted.

Vests must be at least 70% orange or have red or yellow panels. Vests must have a lifting eye or strap attached to the main harness. Vests must not be able to ride up over the wearer’s head, and must be secure to the body. The disposition of the solid buoyancy must be such as to

ensure that an unconscious person will float face up in the water. The vest must have impact protection material covering the back. If it doesn’t then additional back protection must be worn. Please contact your National Authority for additional information if you are unsure of the type of product that is acceptable. It is also advisable for when competing a rash vest similar to that in the picture is worn over the top or your racing vest this will ensure in the result of a team member falling out the racing vest will not snag on any other equipment on the boat.

Protective clothing

For UIM International races competitors are required to wear cut resistant clothing with the equivalent properties to Kevlar 29 fabric. All limbs of the driver must be covered and a one piece overall suit must be worn. These requirements may change for club and national races organized by National Authorities but it is strongly recommended that protective clothing be worn at all times when racing or in practice.

Dry Pits, Wet Pits, and Crane Areas

Dry Pits

At all race meetings a shoreside area close to the launching site is allocated as the Dry Pits Area. This is where the race boats are stored and worked on during the event, in much the same way as at a motor racing circuit. This area is strictly controlled by the race marshals, access to the dry and wet pit areas is controlled by the use of event passes and security, public access is restricted and a no smoking rule is enforced at all times. As part of the UIM Environmental requirements race teams are required to use oil absorbent mats on the ground under the engines to prevent environmental damage. Cleaning and washing down of boats is carried out in a dedicated area, the use of detergents is forbidden, only environmentally friendly cleaning materials can be used. The pollution of ground water is also strictly forbidden.

Located within the dry pits area are the emergency fire services, an on-site ambulance and a dedicated First Aid centre. A dedicated de fuelling area is frequently located in the dry pits area, this is used to deal with damaged boats possibly leaking fuel. Sand bags, pumps and emergency services are all used in this process. The crane launching area is also often located close to the dry pits area.



Good points:

- Keep pit areas tidy and dispose of all rubbish
- No trip hazards
- No Smoking
- Store propellers safely and do not fit until launching
- Store race clothing correctly, keep dry and tidy
- Store helmets safely, once dropped they are useless

Bad points:

- Starting engines with Propellers fitted
- Unnecessary engine noise
- Moving boats in dry pit area with propellers fitted and not protected

Dry Pits, Wet Pits, and Crane Areas



Wet Pits

Like the Dry Pits a dedicated area known as the wet pits is located close to the launching area. Once boats have been scrutineered and are cleared to launch by the marshals, boats will proceed to this area. This is the holding area prior to the start of the race, again restricted access to the wet pits is strictly enforced. Boats may only leave this area once cleared by the OOD and the wet pits marshals, this process is often controlled by flags, Red Flag indicates race track closed no departures from the Wet Pits, Green Flag indicates race track open, departures permitted on a controlled boat by boat basis. Also located in the wet pits area are pumps to be used in the event of damaged and sinking boats returning and oil protective booms/mats to prevent oil or fuel pollution of the water and surrounding areas. Notice the use of hard hats, helmets and life jackets by those working in these areas.

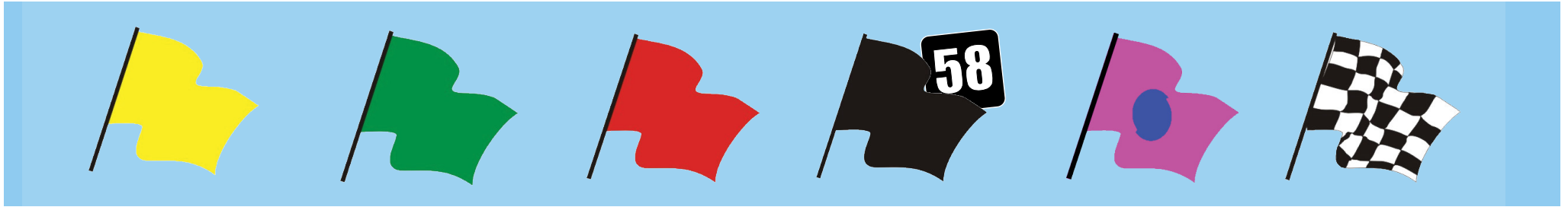


Crane Areas

At many race meetings cranes are used to launch the boats, a dedicated crane area is provided which like the wet and dry pits is strictly controlled. Boats are moved from the dry or wet pits to the crane area where they are lifted on and off their trailers. No public access is allowed to these areas during lifting and all staff involved in this process must wear hard hats/helmets and use high visibility jackets. Suitable lifting strops must be provided by all race teams these must be date stamped and approved by a certifying body.



Race flags



Safety and Flag Procedures

As in other motor sports races are controlled by flags, you must obey the meaning of these at all times; failure to do this will result in disqualification or worse.

Q: What is used to control races?

A: As in motor racing, powerboat races are controlled by flags

Yellow Flag

These are used by rescue and marshal boats to indicate a hazard on the course, on seeing a yellow flag you must acknowledge the signal, slow down to a safe speed and do not overtake. Once clear of the flag you may resume racing. In some cases yellow flags are deployed around the entire course, if this happens you must slow down and follow the boat ahead. Do not overtake.

Red Flag

Red Flags mean race stopped, you must immediately slow down stop racing and look for the muster flag and await further instructions or as described in race instructions. Red Flag from start boat means Start Aborted. Red Flags flown in the wet pits indicates race course closed.

Black Flag and Race boat number

Boat disqualified.

Green Flag

Used to signify the start of the race.

Chequered Flag

At finish line - race finished.

Chequered and Red Flag

At finish - race curtailed.

Muster Flag

A pink flag with blue spot in the centre, this is your muster point and usually on board a safety vessel, in the result of a race stopped all boats must head at slow speed to the muster flag.

Scrutineering



Primary duty of race scrutineers

The primary duty of the race scrutineer is to check that boats and equipment comply with current racing rules. Competitors will be required to present their boat and its equipment for scrutineering prior to every race. Particular attention will be paid to the condition of all safety equipment, a full inspection of the boats control systems, general seaworthiness and integrity will also be carried out. Competitors should present all of their equipment in an orderly fashion, neatly laid out close to the boat so that these important checks can be made.

A: You won't be going racing!

Q: What happens if my boat fails scrutineering?

Scrutineering



Boats and Safety equipment

As we have already mentioned at every event your boat, its equipment and your personal safety equipment will be checked by the race scrutineers. You must ensure that this is in good order, fit for purpose and complies with the class rules. Particular attention will be paid to safety equipment, don't forget that if your helmet is damaged or more than two years old it may not pass scrutineering. Scrutineering is sometimes required post race where checks are made for any damage incurred during the race; details of any such damage found will be recorded in the boats log book/ measurement certificate. At some events you may be given a signed card by the scrutineers confirming that your boat has passed scrutineering, you may be required to take this to race administration where you will be given a cleared to launch sticker, check this process at race administration when you sign on to the event.

**ALL EQUIPMENT MUST BE READY AND LAID OUT
READY FOR THE SCRUTINEER TO CHECK.**

UIM P750

Start Procedures



Jetty Starts

The positions of boats on a jetty start for the first heat are determined by the draw taken at drivers briefing. The pole position is the most direct line from the jetty to the first turn mark. All other boat positions for the remaining heats will be determined by the results of the previous race. The final race grid positions are given based on the total number of points gained during the heats.

The start procedure is controlled by the OOD or starter, the race is started under their direction. Red start lights are used to control the start and when these are turned off the race starts.

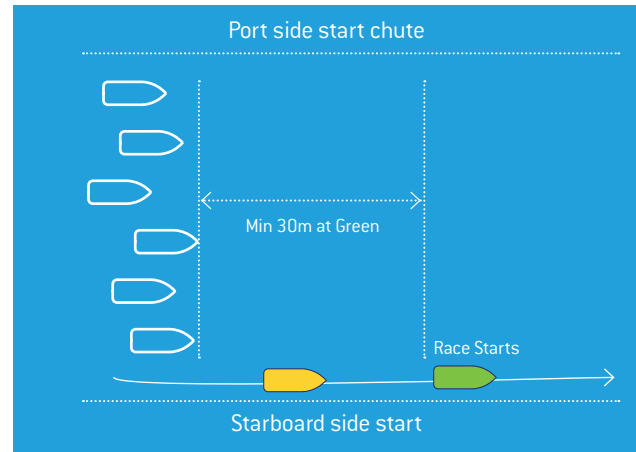
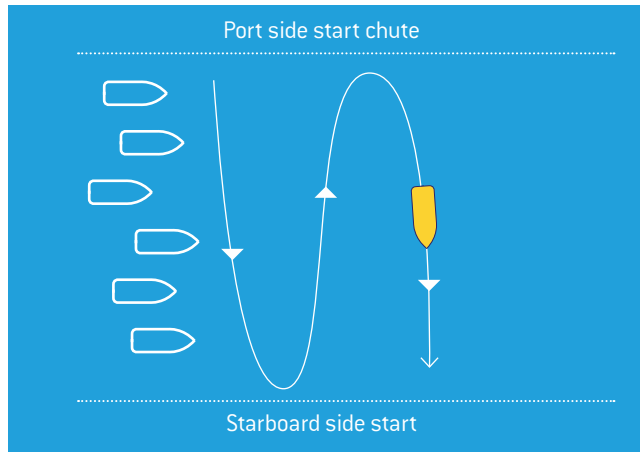
Once the boats have all safely lined up and are under to control of their pit crews the OOD or official starter will commence the start procedure, details of which are given below:

1. The OOD may at any time cancel the start if it is necessary to do so and this will be done by showing the red flag.
2. All drivers will be asked if they are ready to proceed with the start and must be acknowledged by raising their hand. All engine must be switched off at this point.
3. On satisfaction two flags will be raised; a green and yellow.
4. The first to drop is the yellow, this means 'get ready' drivers can start their engine at this point but must not engage gear.
5. Then the green flag will drop to signal the start. Drivers can then engage gear or start their engine in gear and proceed.
6. All drivers must keep to their allocated positions or lanes and must not cut in front of each other. Details of this requirement will be fully explained at drivers briefing.



UIM P750

Start Procedures



Beach Starts

1. Both Driver and Co-Driver will be out of their boat
2. The kill switch plugged in and the engine off.
3. Both hands of the Driver and Co-Driver must be on the anti-hogging rope.
4. Both feet of the Driver and Co-Driver must remain on the ground at all times up to the green flag dropping.
5. On the drop of the starter's green flag, the race will start.
6. The Driver and Co-Driver must have both feet on the floorboard of their boat before the driver can start his engine.
7. Failure to abide by any of these rules will result in a 2 point penalty deducted and being moved to the end of the grid.
8. In the event of a boat not starting, the boat must withdraw from the water before the lead boat of the starting boats complete a full lap.

Rolling Starts

1. Muster area will be defined either in race instructions or explained at the Drivers Briefing.
2. Two minutes before the start of the race the start boat will raise and continue to display a 'Yellow Flag'.
3. The boats must proceed to line up side by side.
4. The start boat will then proceed across in front of the fleet and then returns back across the front of the fleet.
5. When the Start boat has crossed the fleet for the second time it will turn to face the racing line.
6. At the start the boats must keep 30m behind.
7. The yellow flag will go down and the green raised. This will indicate the start of the race.



UIM P750 Courses



Marks of the course

The marks of the course are any objects (boat, buoy) that are specifically designated as such in the racing instructions. The objects that are not designated specifically as such are to be considered as obstacles.

The buoys can come in a range of sizes or sizes, dependent on the conditions.

Types of Courses

M-shape

Within the P750 ThunderCat Racing courses will consist of an M-shape course made up of 7 turn marks, used primarily in surf conditions or areas with restricted water.

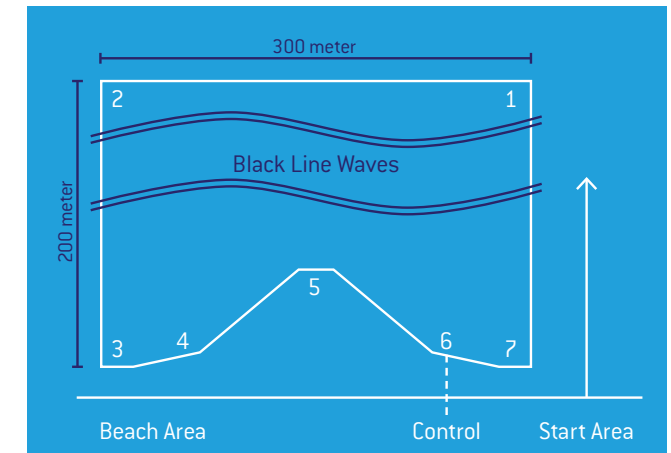
Circuit

Where speed begins; this is a larger course approx. 500m x 500m used on inland waterways in calm conditions.

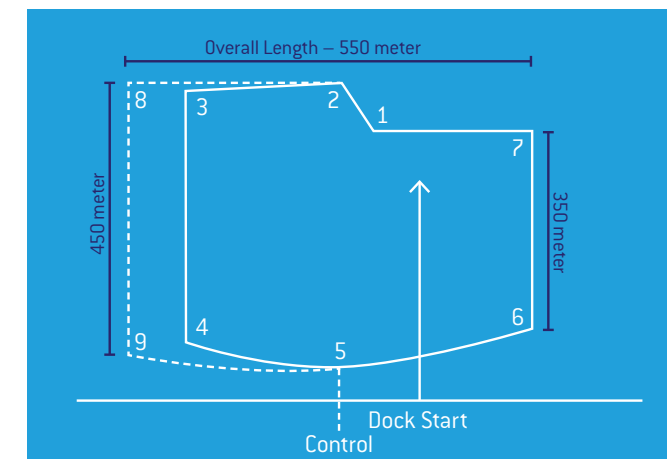
Longhaul/Enduro

Generally over a distance of 100km, teams will be sent off down the coast to a specific locations, then required to take a pit stop. If there reduced safety boats for this a larger circuit course can be used over the same distance.

Guide to M-shape Race Course



Guide to Circuit Race Course



UIM

Typical Offshore Courses:

Typical Offshore Courses

The course diagrams on the following pages show a typical offshore course layout, they also provide information on the position of the timing line, Pole Position and Milling areas. The start diagram shows the direction of the start and the location of the first turn mark, notice how the course design provides for a soft left turn at the first turn mark.

This is extremely important as the race boats will be close and bunched up at the start of the race and it is important that a soft turn is provided at this point. A start chute is also identified, this is designed to separate the fastest boats from the slower ones, the boat on pole position will take up position on the red course line closest to the first turn mark. The slower boats are then required to pass around the outer marks.

The course layout also shows the positions of Emergency First Aid boats, dive boats, and marshals.

Figure 1. 2019 UIM XCAT World Championship
Stresa Grand Prix of Italy Course

Figure 2. With Safety + Rescue deployment legend

Figure 3. With Start chutes

Figure 4. In & Out procedure



Figure 1. 2019 UIM XCAT World Championship
Stresa Grand Prix of Italy Course

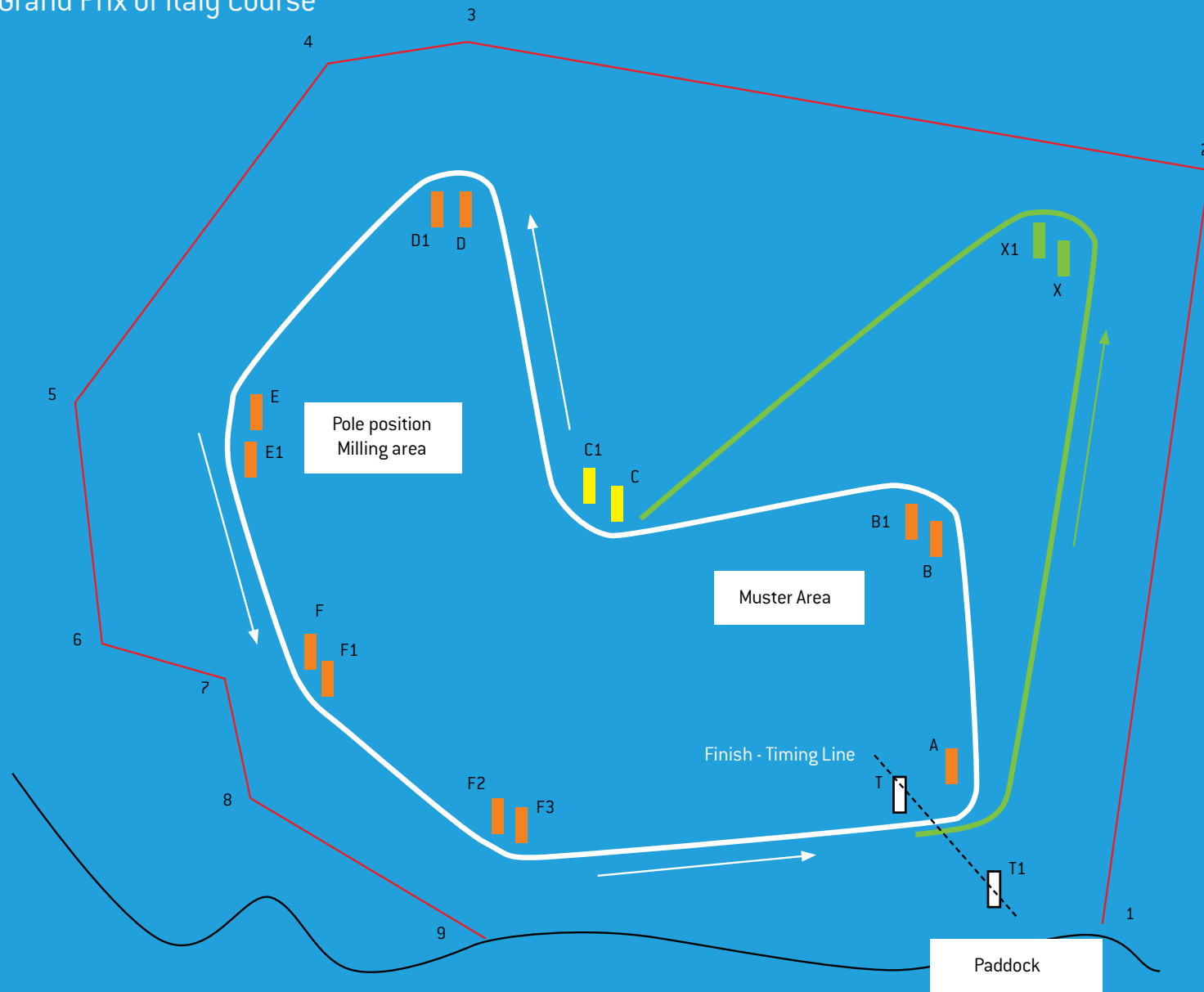






Figure 2. 2019 Grand Prix (Italy)
Safety and Rescue Deployment

Legend

-  Rescue Boat
-  Tow Boat
-  Buoy Observer Boat
-  Patrol Boat

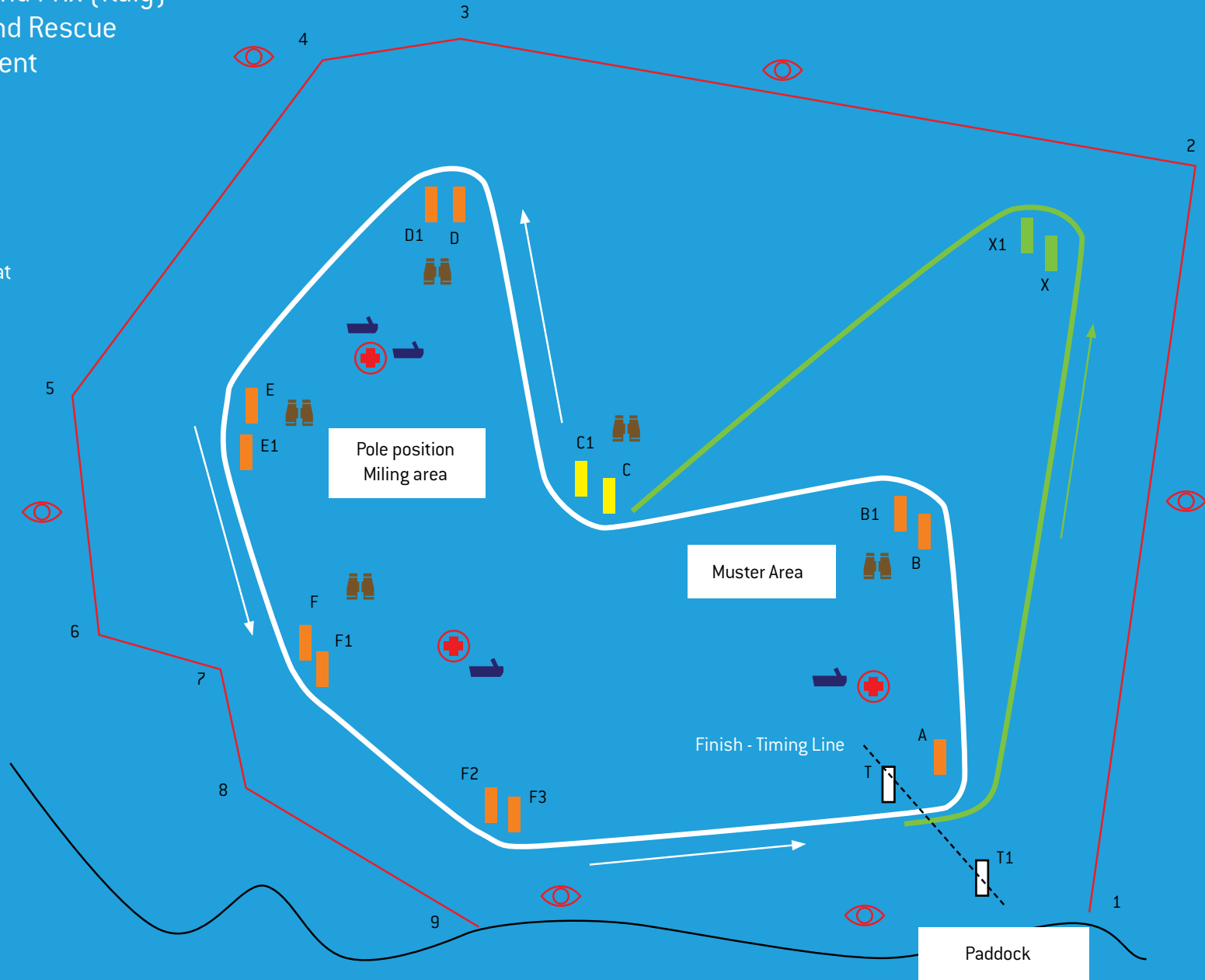


Figure 2. 2019 Grand Prix (Italy)
Start Chutes

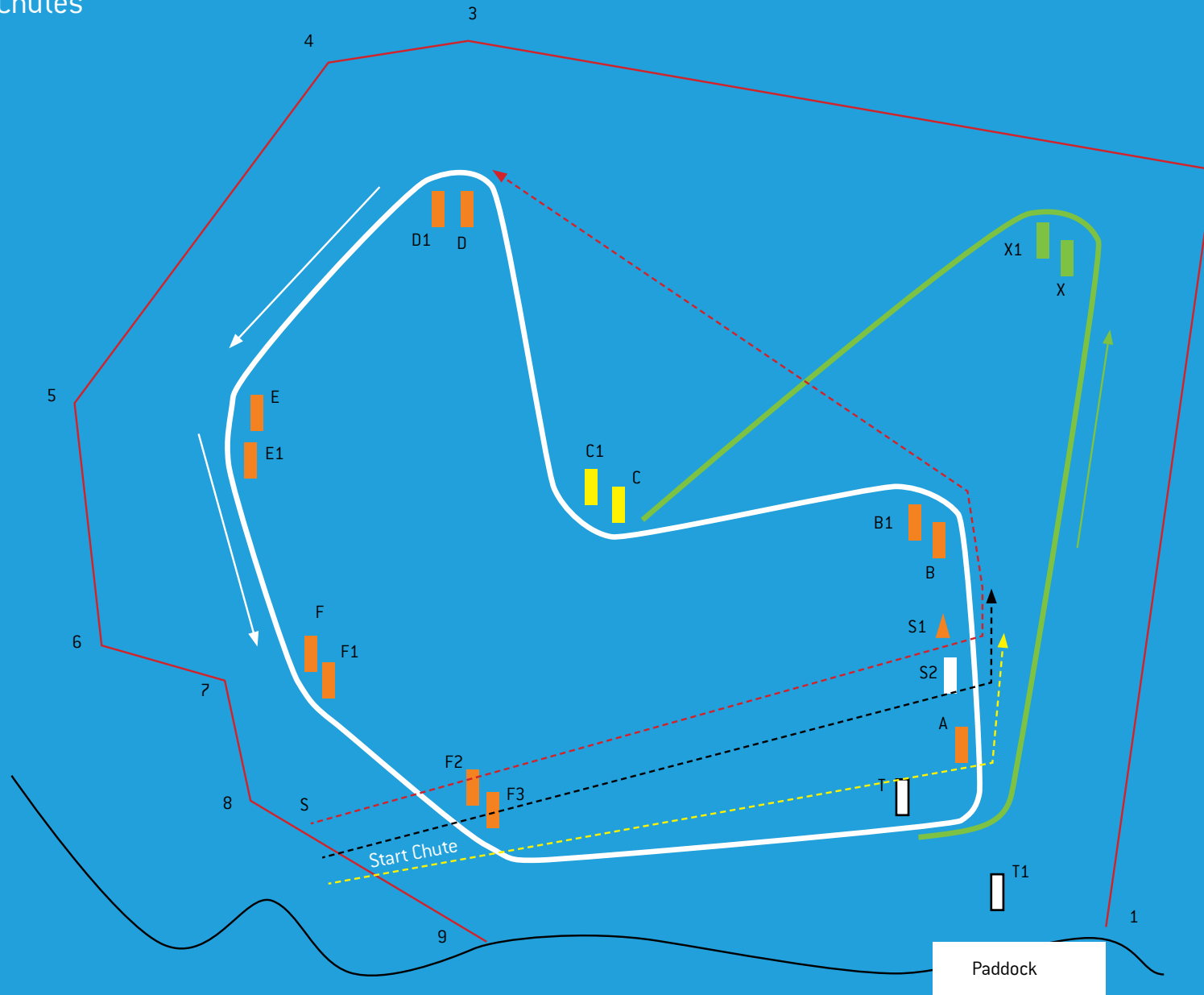
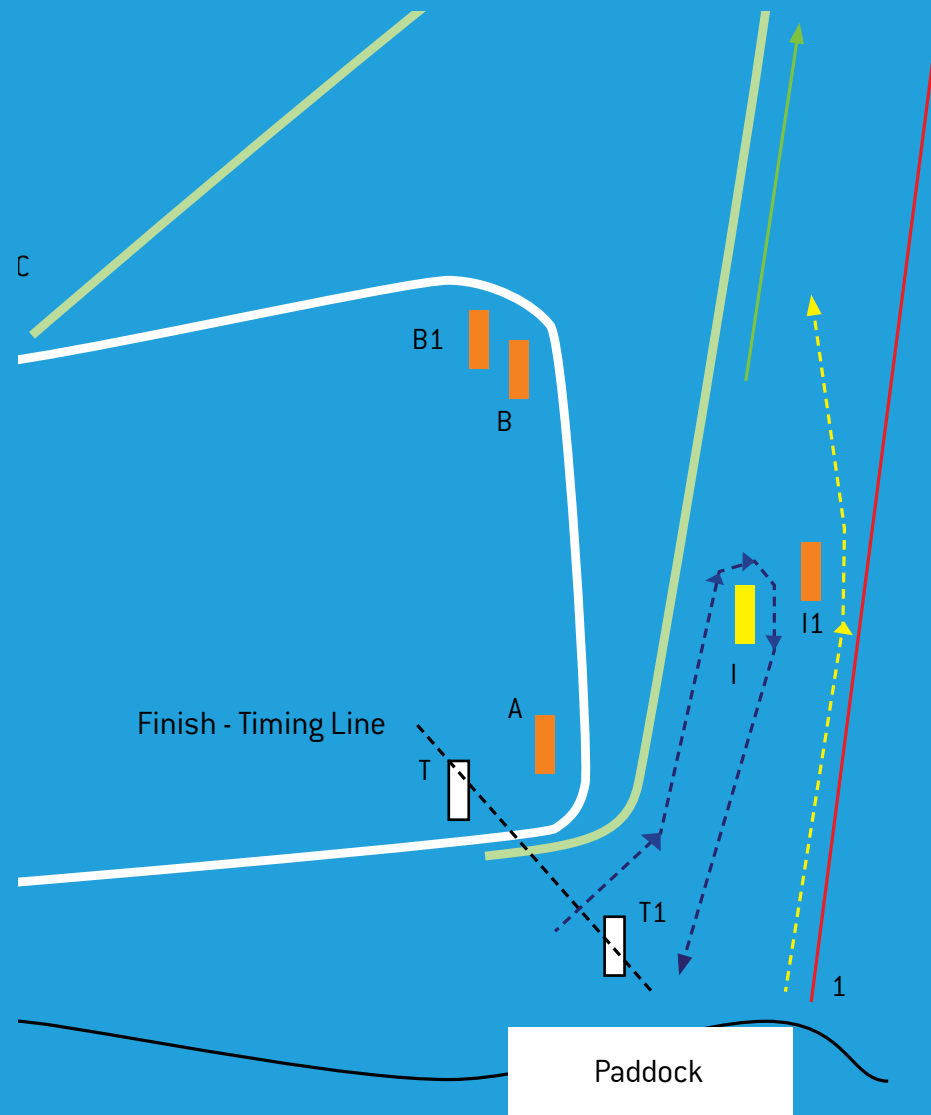


Figure 2. 2019 Grand Prix (Italy)
In & Out Procedure



UIM P750

Rules and Requirements

Overtaking and overlap Rules

Understanding the overtaking rules is essential to competitive safe racing, powerboat racing is a non-contact sport and it is the responsibility of each driver to drive within their limits and to avoid contact. It is important to understand that the racing rules apply between race boats but that the IRPCS rules also apply between race boats and other non-racing boats. Just because you are racing does not give you the right to get in the way of other traffic.

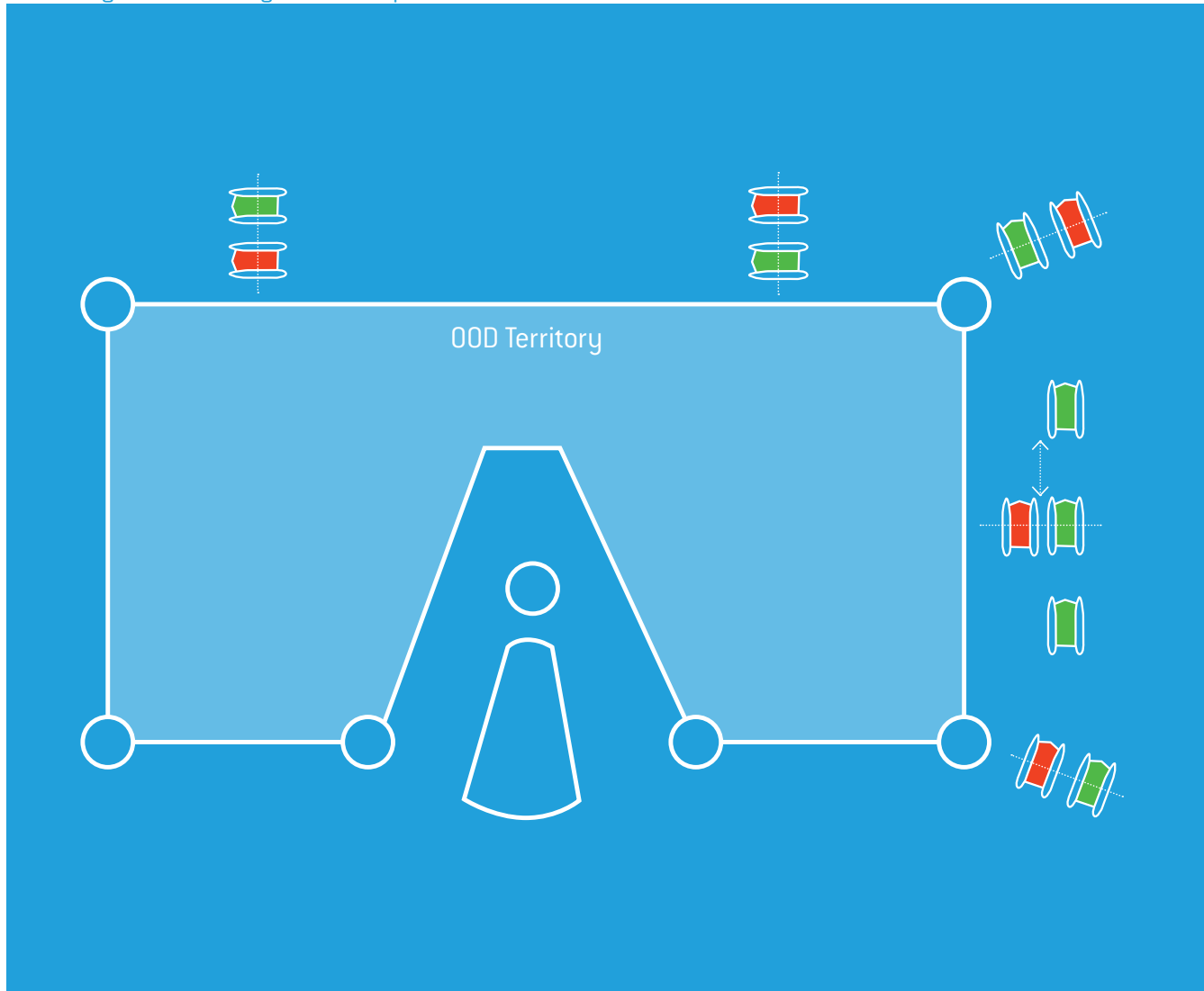
Strict overtaking rules apply whilst racing and you must comply with these at all times. It is your responsibility to ensure that your boat is driven safely and does not compromise the safety of other competitors or any spectators. Powerboat racing is a non-contact sport and you may be penalised if contact occurs. Race boats are allowed to enter into the OOD territory, however when racing, the boat entering the OOD area does not have any right of way.



UIM P750

Rules and Requirements

Overtaking Boat shown in green - Overlap scenarios



Overlap

An overlap may only be established when two boats are approximately on the same course and the entire boat, if passing on the inside is level with the overtaken boat. When overtaking from the outside, an overlap is established when the overtaking boat has passed the overtaken boat by one boat length.

When trying to overtake a boat on the inside the driver must anticipate the possible direction of the boat it is trying to overtake and must take all necessary action to avoid a collision.

Overtaking

An overtaking boat shall keep clear of the boat which is being overtaken.

When overtaking the following rules must be observed:

- The leading boat has right of way until an overlap is established.
- A safe overlap and overtaking manoeuvre is the responsibility of the overtaking boat.
- After an overlap manoeuvre, the overtaken boat must give the overtaking boat room to negotiate turn buoys
- The overtaking boat cannot force an overlap situation once the lead boat has started the turning manoeuvre.
- An overlap can be attempted from either side of the leading boat.

UIM P750

Rules and Requirements



Passing Marks

All marks must be on the left side of the boat unless otherwise stipulated in the advance programme and repeated during the drivers briefing.

When trying to overtake a boat on the inside, the driver must anticipate the possible direction of the boat being overtaken and must take all necessary action to avoid a collision.

When passing a turn buoy and an overlap has been established, both boats must maintain a safe distance from each other and from the turn buoy.

Missed marks and aborting a race

If a Driver misses a buoy, he can re-take it if he has not crossed the racing line on the inside of the course. The boat in question does not have the right of way when re-entering the race course and must give-way to any competitor already on the correct course.

Finishing a race and signing off

The finish of a race is shown to the driver by waving a black and white chequered flag.

A driver who finishes a race must withdraw from the course without hindering the boats that are still in the race.

A driver who finishes a race and then cuts across the course will be disqualified in that race or heat and get zero points.

The OOD will brief the finishing procedure at drivers briefing, you should pay particular attention to this as failure to comply may result in disqualification. It is worth noting that finish procedures may differ from venue to venue, sometimes it will be possible to turn immediately into the centre of the course after passing the chequered flag and sometimes you will be required to pass the next turn mark before turning into the centre of the course. Make sure you follow the procedure as briefed by the OOD; you don't want to win the race only to be disqualified at the finish.



GT15

Start Procedures

Jetty Starts

In some classes such as GT15 the following starting procedure is used: The positions of boats on a jetty start are determined by the results of the official practice, the fastest boat in practice will be allocated pole position on the jetty. The pole position is the most direct line from the jetty to the first turn mark. All other boats will be subsequently allocated positions in descending order according to their practice results.

The start procedure is controlled by the OOD or starter, the race is started under their direction. Red start lights are used to control the start and when these are turned off the race starts.

Once the boats have all safely lined up and are under the control of their pit crews the OOD or official starter will commence the start procedure, details of which are given below:

1. The OOD may at any time cancel the start if it is necessary to do so and this will be done by showing the red flag.
2. All drivers will be shown a two or three minute board indicating the time remaining to the start, (this will be confirmed in drivers briefing).
3. One minute before the red lights are switched off a one minute board will be shown.
4. 30 seconds before the red lights are switched off a 30 second board is shown. Engines must not be run after this signal.
5. All drivers must keep to their allocated positions or lanes and must not cut in front of each other. Details of this requirement will be fully explained at drivers briefing.
6. After 5-12 seconds the red lights are switched off, this is the signal to start.
7. All drivers must keep to their allocated positions or lanes and must not cut in front of each other. Details of this requirement will be fully explained at drivers briefing.

JETTY STARTS ARE NORMALLY USED BUT OTHER METHODS OF STARTING WHICH INCLUDE CLOCK STARTS AND ROLLING STARTS MAY BE USED, FULL DETAILS OF THESE WILL BE GIVEN BY YOUR INSTRUCTOR.



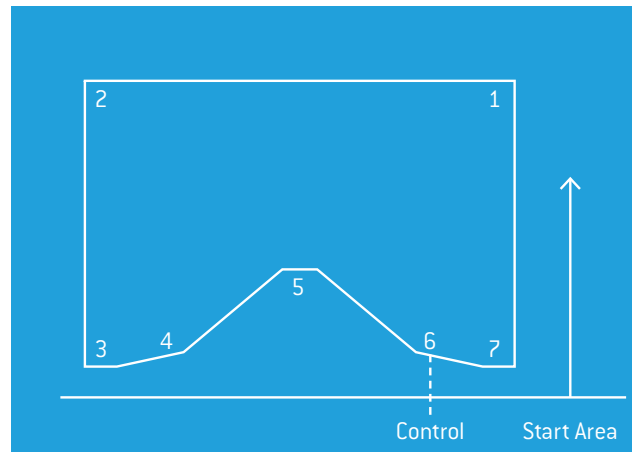
GT15 Courses



Marks of the course

The marks of the course are any objects (boat, buoy) that are specifically designated as such in the racing instructions. The objects that are not designated specifically as such are to be considered as obstacles.

Guide to M-shape Race Course



Types of Courses

M-shape

A typical M-shape course will consist of up of 7 turn marks, left hand turn marks coloured orange, right hand turn marks coloured yellow. Other course configuration are possible depending on the local conditions. Course designs will be fully explained in race instructions.



GT15

Rules and Requirements



Overtaking and overlap Rules

Understanding the overtaking rules is essential to competitive safe racing, powerboat racing is a non-contact sport and it is the responsibility of each driver to drive within their limits and to avoid contact. It is important to understand that the racing rules apply between race boats but that the IRPCS rules also apply between race boats and other non-racing boats. Just because you are racing does not give you the right to get in the way of other traffic.

Strict overtaking rules apply whilst racing and you must comply with these at all times. It is your responsibility to ensure that your boat is driven safely and does not compromise the safety of other competitors or any spectators. Powerboat racing is a non-contact sport and you may be penalised if contact occurs.

Overlap

An overlap may only be established when two boats are approximately on the same course and the cockpit of the overtaking boat, if passing on the inside is level with the overtaken boat.

When overtaking from the outside, an overlap is established when the overtaking boat has passed the overtaken boat sufficiently to alter course without contact.

When trying to overtake a boat on the inside the driver must anticipate the possible direction of the boat it is trying to overtake and must take all necessary action to avoid a collision.

Overtaking

An overtaking boat shall keep clear of the boat which is being overtaken

When overtaking the following rules must be observed:

- The leading boat has right of way until an overlap is established.
- A safe overlap and overtaking manoeuvre is the responsibility of the overtaking boat.
- After an overlap manoeuvre, the overtaken boat must give the overtaking boat room to negotiate turn buoys.
- The overtaking boat cannot force an overlap situation once the lead boat has started the turning manoeuvre.
- An overlap can be attempted from either side of the leading boat.

GT15

Rules and Requirements

Passing Marks

All marks must be on the left side of the boat unless otherwise stipulated in the advance programme and repeated during the drivers briefing.

When trying to overtake a boat on the inside, the driver must anticipate the possible direction of the boat being overtaken and must take all necessary action to avoid a collision.

When passing a turn buoy and an overlap has been established, both boats must maintain a safe distance from each other and from the turn buoy.

On circuits with both left and right hand turns, orange turn buoys mark left hand turns and yellow buoys mark right hand turns.

Missed marks and aborting a race

It is not permitted to return to a race mark under any circumstances, serious penalties will be applied if you do. A missed mark penalty time will be applied to your final result, details of these time penalties will be found in race instructions. If you have to abort a race follow the instructions given at drivers briefing, this frequently requires you to turn into the centre of the course and await the assistance of the event rescue.

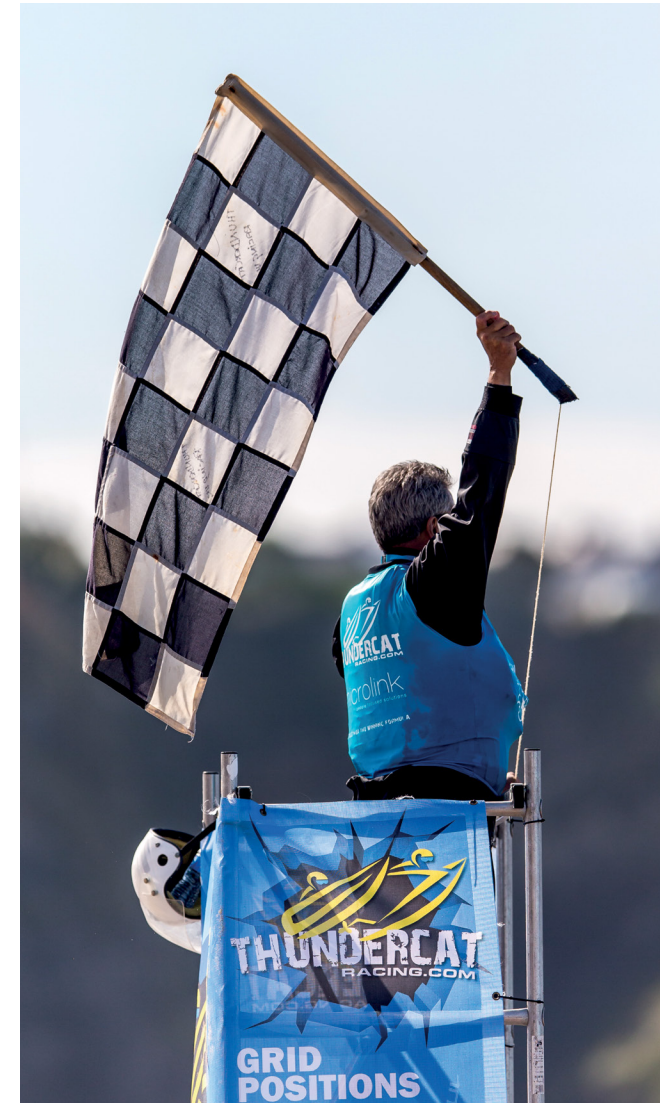
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A driver who finishes a race must withdraw from the course without hindering the boats that are still in the race.

A driver who finishes a race and then cuts across the course will be disqualified in that race or heat and get zero points.

The OOD will brief the finishing procedure at drivers briefing, you should pay particular attention to this as failure to comply may result in disqualification. It is worth noting that finish procedures may differ from venue to venue, sometimes it will be possible to turn immediately into the centre of the course after passing the chequered flag and sometimes you will be required to pass the next turn mark before turning into the centre of the course. Make sure you follow the procedure as briefed by the OOD; you don't want to win the race only to be disqualified at the finish.



Safety and Support boats



On water safety fleet

The on water safety fleet is usually made up of a number of different craft with different roles which are explained in more detail below. The Safety Officer and the Officer of the Day coordinate the actions of these boats in order to provide the safety cover for the event.

The event safety fleet should consist of the following assets, fast response Safety Medical support vessels with on board paramedics and divers. Safety marshals, tow boats and observer boats. All on water safety assets must be equipped with VHF Radio and given a designated call sign. All such boats must be identified by a distinctive safety identification flag or if Jet bikes are used the riders must wear high visibility safety bibs. It is mandatory for crews of all such vessels to attend the Safety Briefing prior to the event.

All competitors must understand that at some venues the safety and marshal fleet may not be able to prevent spectators, leisure craft, or commercial vessels from getting onto the course. It is your responsibility to take avoiding action and to comply with the IRPCS rules at all times.



Safety medical boats

The role of the safety medical boats is to provide a fast response to any racing incident on the water, if a casualty has to be recovered from the water the race will be red flagged until this has been achieved. Safety medical boats should be comprehensively equipped with medical support facilities and be manned by at least one Professional Paramedic. The event Safety Officer may also decide to place swimmers on board these vessels.

The required numbers of the fast response Safety Boats and their deployment is agreed between the Safety Officer and the OOD; these numbers will vary depending on the lengths of the race courses and the local conditions at the venue. A qualified Safety Boat driver must be used at all times. Under no circumstances should minors be allowed to join Safety Boat crews at any time.



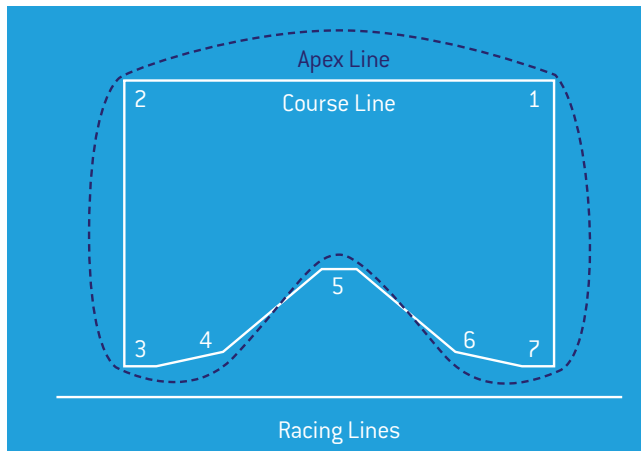
Marshal boats

The role of the marshal boat is to control the race course, to prevent where possible spectator boats from crossing the course and to warn race boats of dangers on the course in their immediate vicinity by waving the yellow flag. Competitors should note the distinctive identification flag that the marshal boats will use and to also maintain a sharp look out for any flag signals flown from these boats during the race. Competitors must avoid passing close to marshal boats at all times. The required numbers of volunteer marshal boats will vary from venue to venue and details of their positions around the course will be given to competitors at the drivers briefing.

Tow boats

The role of the tow boat is to tow race boats off the race course and into safety as quickly as possible. The numbers of safety boats required at each race will also vary depending on the course but a minimum of two tow boats must be available at all times.

Racing Lines and Cornering



Racing lines

In all racing it is extremely important to take the fastest possible racing line around the course so that you keep up your average speed. Carefully check the design of the course before you go out on the water, note the best possible route which sometimes may include taking a single sweep around two marks. Also known as the Apex line, see diagram below.

Take advantage of the practice session before the race to fully familiarize yourself with the race course.

The key to fast cornering is to smoothly execute the turn so that you can maintain the maximum power possible. Some course designs require you to “pin turn” at the mark, this is a different technique but can be extremely effective if executed well. Learn to anticipate the racing lines that your fellow competitors may take; you may be able to take advantage of their driving style and gain valuable positions by their mistakes. Remember that your boat will be at its fastest when you are correctly trimmed, and travelling flat, speed will be lost by cornering too tightly or especially when airborne. During any race it may be necessary to drive defensively to protect your position, this may require you to follow a different racing line so you will need to balance possible loss of speed against protecting your position, this comes with experience and is part of what will be taught during the Competition module of this course.



Cornering left and right hand turns

On all Propstars training boats the propellers turn in a clockwise direction when in forward drive. This means that the boats corner easier in left hand turns and the turns can be taken tighter.

When using P750 training boats the co-driver may need to shift their weight forward and lean on the pontoon to create drag to assist with a tight turn.

Cornering in right hand turns can be more difficult as you are fighting the torque of the propeller. A softer approach to a right hand turn may help as this will reduce the counter effect of the propeller and improve the handling of the boat.



Practical on water training



Practical on water training

The following practical exercises will be covered in this Advanced module. In each of these exercises you will be required to demonstrate good boat handling, safe cornering and maintaining your racing lines. During these exercises your performance may be timed and filmed for discussing after the session.

- Safe launch & recovery of boat on trailer at slipway
- Proper control at Low Speed
- Proper control at High Speed
 - Close manoeuvres with other boats
 - Racing lines
 - Rounding Marks
- Communication & teamwork between Driver & Navigator
- Overtaking (if possible)
- Emergency situations & procedures including man overboard – Red Flag Procedure
 - Capsize procedure and safety elements
- Holding the line on the start run, correct finish procedure & response to flags
- Start Procedures & Muster Area

1. Driving at speed round the race course
2. Cornering at speed
3. Practice jetty starts
4. Racing lines

One of the key aspects of on water race training is to assess your ability and race awareness skills and to be aware of what other boats in the race are doing and how you should avoid them. You will also be assessed on your knowledge of the overtaking and overlap rules throughout this activity.



Advanced Training

CERTIFICATE OF COMPLETION



This is to certify that

.....
Has completed the Advanced Training course of the UIM Propstars Youth Development programme

PROPSTARS ASSESSOR





Competition Training ...

Candidates attending the Competition Training must have satisfactorily completed the Advanced Powerboat Training. Direct entry to the Competition training module may be possible if the candidate has past powerboat racing experience. This may require the applicant to take a short assessment examination before being accepted on the course.

On satisfactory completion of this course the candidate will be eligible to apply for a Provisional Powerboat Racing licence from their National Authority and to race in the Class in which they have been trained.

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Introduction

Arriving for your first training session

Make sure you have made contact with your training centre or instructor and that you have the programme of activities and timetable for the day. Part of your instruction will be theory and classroom based so don't forget to take notes during the day as the subject is large and varied. For the on water training session you will need suitable clothing for the day which will vary from venue to venue and country to country. Soft shoes a waterproof jacket and trousers are all useful clothes to have with you and the training centre will provide you with a life jacket.

What to expect from this Competition Training module

As the name suggests this course is designed to familiarise the applicant with the skills necessary to compete in powerboat racing at both National and International levels. A strong emphasis will be placed on racing water awareness skills and safety and considerable time will be spent out on the water in simulated racing conditions. All training in this course will be carried out in suitable UIM Race Training boats. In addition to the on water training the theory sessions will consider the racing rules and trainees will be taught the importance of complying with the rules of the sport and working with race officials.

Short resume of key points covered in the Competition Powerboat Training course

Theory revision

To include the following key topics:

- An understanding of how to start racing, licences, medicals and required paperwork
- The roles and responsibilities of the race officials
- What is covered in race instructions
- To identify the principal safety equipment required
- What information is given at driver briefing
- How to prepare for scrutineering
- Race Flag meanings
- How to start a race from a jetty start
- Overtaking and Overlap procedures
- To identify the roles of the on water safety fleet

Practical re assessment

Following the revision of theory all candidates will be required to drive on in a suitable UIM Race Training boat around a course and to carry out a series of basic boat handling manoeuvres. The ability of all trainees will be assessed prior to being accepted on the competition course. Particular attention will be given to the following:

- Mooring alongside and general boat handling ability
- Driving at speed around the race course, control of boat and water awareness skills
- Understanding racing lines and cornering in both left and right hand turns

Summary of what will be covered in this Competition Training course

- A combination of theory and practical on water training however the:
 - Emphasis will focus on training the candidate to race safely and competitively at National and International levels.
 - Competition training will improve your racing techniques for club, national and international racing.

Racing Preparation

Racing Preparation

Good preparation for a race starts months before the event, you should make sure that your boat and its equipment are all in top condition and well prepared for the race. Ensure that your personal protective clothing, protective helmet and racing vest all fit comfortably.

Know how much fuel your boat uses in different conditions, calculate the minimum fuel load you require for the race but don't forget to allow a small margin for unforeseen circumstances such as race delays or changing conditions.

Top Tips for Race Preparation

- Study the Advance Instructions and Race Instructions before the event
- Carefully study the course details, know the layout of the course for your next event and look for any possible areas of advantage
- When you go out on the practice session learn the course, check where the water might be rougher or smoother, look for good overtaking opportunities
- Determine your best racing lines, use physical objects on the shore to help you maintain the best possible lines
- Study the local weather conditions in advance of the event, know what wind and sea conditions you might have on race day, be prepared
- Know your own weaknesses and try to correct them by practice
- Try to use the best fuel available to you, high octane 100+ will burn cleaner than lower octanes and is much better for your engine



Know your class rules

The UIM Offshore and Circuit Racing Rules can be found on line at www.UIM.sport go to Documents – Rule Books.

If you are racing nationally make sure you have a copy of your National Rules from your own National Authority as these may be different from the UIM Rules.

Don't forget that rules change each year so make sure you are up to date with any changes, there may also be local changes to rules relating to safety and you will be advised of these at the pilots briefing. These notifications will also be posted on the race notice board by the Race Secretary.



Introduction to the race circuit

All racing venues are different and the course designs will vary from venue to venue, it is extremely important to fully familiarize yourself with the course before racing; this is best done in the mandatory practice sessions before the race. Pay particular attention to the wind direction and where you might experience wind eddies as these can dramatically affect the performance of the boat in a race. The position of the sun and wave patterns should also be considered to ensure you and your team can plan your positioning in the boat.

Budget

How to choose the right class for you

This is the number one consideration in all classes of racing. Choose a class that you can compete in competitively and remember that buying the boat is just the beginning. Running costs, breakages, repairs and fuel as well as race entry fees and transportation costs all need to be considered.

National Competition

Try to select a Class which is active in your country, this is important as by competing in National races on a regular basis you will start to perfect your race craft skills.

Don't forget that good race craft takes time and skill to develop, choose a machine that suits your budget and your ability.



Physical fitness

Physical fitness

How fit are you? Any type of racing requires high levels of personal fitness. So how fit do you need to be, that's simple you need to be fit enough to race as hard on the last lap of the course as you did on the first lap.

Before you start racing you must prepare yourself for the physical challenges that you will face, most top competitive pilots will follow a strict training programme and you should be prepared to train a minimum of three times a week ensuring that you achieve 20-30 minutes of hard physical exercise during each session. If possible use a personal trainer as they will be able to structure your training programme to suit your individual needs. Clearly offshore racing will have different criteria to Circuit Racing.

You need to consider the following points when measuring your fitness levels:

- Body weight
- Strength
- Stamina
- Flexibility
- Mobility
- Agility

Being fit alone won't win races but it will give you more confidence and confidence will help you to win.

Some further useful points to consider are given below:

- Offshore racing demands high physical stamina in order to withstand the constant battering from the waves when travelling at high speed.
- Endurance stamina is also a crucial factor in offshore racing.
- In circuit racing you need to be able to withstand high G Forces, 4-5 G are not uncommon.
- As a pilot you need to be able to give your top performance throughout the race, from start to finish.

All racing demands strong neck and back muscles so you should plan your fitness campaign to focus on these areas. Many of the UIM classes require a maximum BMI, you should therefore control your weight.



Step 1: Good posture

Good posture is essential, this is the starting point of any physical training campaign. Your body should be in good shape, no tight muscles, no weak areas and not overweight. Many of the UIM International Classes require strict BMI and you will be checked to ensure that you comply with these controls before you are given a licence by the UIM. Once you have sorted out your posture and your BMI you are then in a position to move into specific areas of training that will be appropriate for the class you are racing in.

Step 2: Choose the endurance level you need.

So how do we do this, the first question to ask is what class am I racing in and how long will the races last. If you are racing in the UIM Offshore classes you can expect rough offshore conditions if you are racing in Circuit classes you can expect calmer conditions but much higher G Forces. Once you have decided on the class you can then concentrate on the appropriate training, what type of cardiovascular training and how much endurance training you require.

Step 3: Specific Training for you, build general fitness.

Adopt a regular circuit training routine, for this to be successful you should try to train three times a week. Seek guidance from your local gym, work with your own PT instructor where ever possible as this will help you to accurately monitor your progress, as you improve your instructor will help you to move to the next level of training.

So now lets look at some of the ways in which you can help yourself to get into shape and start winning races.

Physical fitness

How to work out

Never go straight into work out always warm up first, a three to five minute jog is a great way to start, warm up the muscles you are going to work on, get the heart rate up. Remember stretching is an important part of warm up but never stretch cold muscles, never bounce while stretching as this may cause injury, never hold your breath while stretching and remember to hold the stretch position but not to be in pain. Use some of the stretching exercises described below in the cool down section.

How to warm up before exercise

Warm up properly before exercising to prevent injury and make your workouts more effective. This warm-up routine should take at least 6 minutes. Warm up for longer if you feel the need. Try some of the warm up exercises below:
March on the spot: keep going for 3 minutes: Start off marching on the spot and then march forwards and backwards. Pump your arms up and down in rhythm with your steps, keeping the elbows bent and the fists soft.
Heel digs: aim for 60 heel digs in 60 seconds: For heel digs, place alternate heels to the front, keeping the front foot pointing up, and punch out with each heel dig. Keep a slight bend in the supporting leg.

Knee lifts

Aim for 30 knee lifts in 30 seconds: To do knee lifts, stand tall and bring up alternate knees to touch the opposite hand. Keep your abs tight and back straight. Keep a slight bend in the supporting leg.

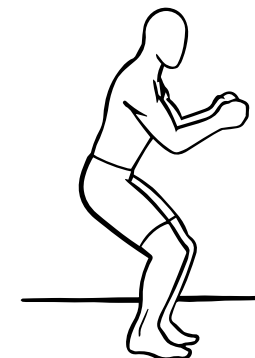
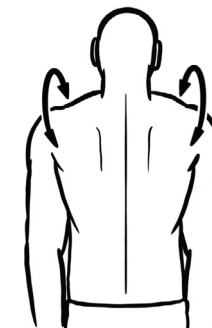
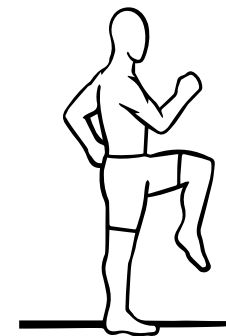
Shoulder rolls

2 sets of 10 repetitions: For shoulder rolls, keep marching on the spot. Roll your shoulders forwards 5 times and backwards 5 times. Let your arms hang loose by your sides.

Knee bends

10 repetitions: To do knee bends, stand with your feet shoulder-width apart and your hands stretched out. Lower yourself no more than 10cm by bending your knees. Come up and repeat.

Now you have completed your warm up exercises go into the full work out programme



Physical fitness

Cardiovascular Workout

Here are some of the basic general training exercises you might like to try in your basic cardiovascular work out routine.

Rocket jumps

2 sets of 15 to 24 repetitions (reps)

For rocket jumps, stand with your feet hip-width apart, legs bent and hands on your thighs. Jump up, driving your hands straight above your head and extending your entire body. Land softly, reposition your feet and repeat.

For more of a challenge, start in a lower squat position and hold a weight or a bottle of water in both hands at the centre of your chest.

Recovery: walk or jog on the spot for 15 to 45 seconds.

Star jumps or squats:

2 sets of 15 to 24 reps

To do a star jump, stand tall with your arms by your side and knees slightly bent. Jump up, extending your arms and legs out into a star shape in the air. Land softly, with your knees together and hands by your side.

Keep your abs tight and back straight during the exercise.

Squats

1 set of 8 to 10 reps

Target: back and legs

Stand with your feet shoulder-width apart, feet facing forwards and hands stretched out in front.

Lower yourself by bending your knees as if you were preparing to sit down on a chair. Go down as far as feels comfortable, aiming to get your thighs parallel to the floor. Slowly rise up to the starting position.

Tips:

- keep your back straight and look forwards
- keep your weight equal between toes and heels
- don't let your knees extend over your toes

Recovery: walk or jog on the spot for 15 to 45 seconds.

Tap backs:

2 sets of 15 to 24 reps

To start tap backs, step your right leg back and swing both arms forward, then repeat with the opposite leg in a continuous rhythmic movement. Look forward and keep your hips and shoulders facing forward. Don't let your front knee extend over your toes as you step back.

For more of a challenge, switch legs by jumping (also known as spotty dog), remembering to keep the knees soft as you land. Your back heel needs to be off the floor at all times.

Recovery: walk or jog on the spot for 15 to 45 seconds.

Burpees:

2 sets of 15 to 24 reps

To do a burpee from a standing position, drop into a squat with your hands on the ground. Kick your feet back into a push-up position. Jump your feet back into a squat and jump up with your arms extending overhead. For an easier burpee, don't kick out into the push-up position and stand up instead of jumping.

As a less energetic alternative, do some squats.

Recovery: walk or jog on the spot for 15 to 45 seconds.

Physical fitness

Stretching exercises pre and post exercise

Use this routine to cool down after a workout to gradually relax, improve flexibility and slow your heart rate. These gentle stretches should take about 5 minutes. Spend more time on them if you feel the need.

Buttock stretch – hold for 10 to 15 seconds

To do a buttock stretch:

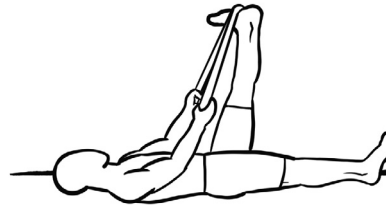
1. Lie on your back and bring your knees up to your chest.
2. Cross your right leg over your left thigh.
3. Grasp the back of your left thigh with both hands.
4. Pull your left leg towards your chest.
5. Repeat with the opposite leg.



Hamstring stretch – hold for 10 to 15 seconds

To do a hamstring stretch:

1. Lie on your back and raise your right leg.
2. Hold your right leg with both hands, below your knee.
3. Keeping your left leg bent with your foot on the floor, pull your right leg towards you keeping it straight.
4. Repeat with the opposite leg.



Inner thigh stretch – hold for 10 to 15 seconds

To do an inner thigh stretch:

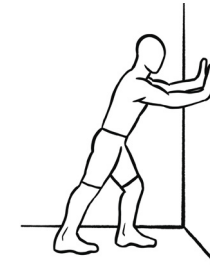
1. Sit down with your back straight and your legs bent.
2. Put the soles of your feet together.
3. Holding on to your feet, try to lower your knees towards the floor.



Calf stretch – hold for 10 to 15 seconds

For the calf stretch:

1. Step your right leg forward, keeping it bent, and lean forwards slightly.
2. Keep your left leg straight and try to lower the left heel to the ground.
3. Repeat with the opposite leg.



Thigh stretch – hold for 10 to 15 seconds

To do a thigh stretch:

1. Lie on your right side.
2. Grab the top of your left foot and gently pull your heel towards your left buttock to stretch the front of the thigh.
3. Keep your knees touching.
4. Repeat on the other side.

Physical training is extremely important but linked to this is your nutrition, it is very important to control what you eat especially just before a competition. Consult with your fitness instructor during your fitness training to work out what works best for you.

Propellers

A quick guide to Propellers

Choosing the correct propeller is one of the most important aspects of correctly setting up a competitive race boat. In this section we try to simplify some of the technical terminology, we look at some of the different types of propeller available, their characteristics, and consider what differences it might make to the performance of your boat.

It is impossible to make a single recommendation of a particular propeller as different boats, hull shapes and engine configurations require different propellers. Probably the best advice is to start with a standard propeller recommended by the boat supplier, in the case of P750 race boats you would typically choose a stainless steel propeller with a pitch of between 12 and 18 inches, remember that your engine should reach its maximum revolutions or close to it in all conditions in order to deliver maximum power and thereby top speed. The greater the diameter or pitch (more about that shortly) the lower the engine revolutions are likely to be.

For the optimal set-up, each propeller has an optimal diameter and optimal pitch. The diameter must be found by experimentation. Optimal performance is never achieved by trimming the tip or trailing edge of a blade. The angle of the blades edge at the tip is very important; a typical mistake here will increase the drag and provide no benefit. Traditionally, most propellers have been designed to operate fully submerged. Indeed, most of these propellers suffer from severe ventilation if operated too close to the surface. Most race boats and many lighter high performance boats, however, use propellers which are designed for operation at the surface. Many of these propellers offer the best top speed performance when the

engine height is adjusted so that the propeller shaft runs at or near the surface of the water at top speed, with only the lower half of the propeller in the water. The most common variations of the surface piercing propeller are the chopper and the cleaver. Though the shape of the blade on these two propellers is very different, both are stainless steel propellers with thin blades, very sharp leading edges, and are usually highly polished.

The only way to check what is the right propeller for you is by hours and hours of testing, I have listed below some of the key points to remember when testing:

1. Record everything you do for future reference.
2. Make your test runs in two directions in order to eliminate or reduce the effect of wind or tide.
3. Only ever make one change at a time, and record every change you make.
4. Use the same crew in all tests and stow all equipment in the same place.
5. Make sure all propellers used are in top condition, that the leading edges are sharp and the body of the propeller is highly polished.
6. Carry the same fuel load throughout your testing



Propellers

Propeller terminology

Diameter

This is the width of the circle made by the propeller as it rotates.

Stainless steel or aluminium

Stainless steel is 5 times stronger than aluminium, and can be made with thinner blades to improve efficiency. Can be repaired easily although generally more expensive than Aluminium. Good efficiency due to less flexing.

Number of Blades

A single blade propeller is the most efficient but this would be impossible to run due to excessive vibration. In order to reduce vibration more blades are required but this sacrifices efficiency. 4-5 Blade propellers give better acceleration and less vibration, they also make better use of rake generation more lift and producing more speed.

Pitch

This is the distance that the propeller would move in one revolution, if it were moving through a soft solid. A propeller acts like a screw cutting through water as it turns. The amount of distance that a propeller can cut through in one full revolution is known as the pitch of the propeller. Pitch is usually marked in inches. This is the theoretical pitch. (Propellers are not as efficient as marked) By altering 1" of pitch we could expect a change of approximately 200rpm. A loss of 1/4" Diameter could increase rpm by 200revs. Adding diameter will result in rpm loss.

Slip

This is the difference between the theoretical distance of travel i.e. pitch and the actual amount of travel. If a propeller has a 10 inch pitch but the actual distance the propeller advances in one revolution is 8 inches the slip is 2 inches or 20%.

Rake

The propeller rake is the blade angle from 90 degrees of the propellers centre. Propellers have varying angles of rake which are consistent with manufacturer designs for efficiency and speeds. Aft or positive rake (blades angled away from the boat) helps to trim the bow of a vessel upwards which can increase boat speed. Forward or negative rake (blades angled towards the boat) is generally used in heavier slow speed applications.

Cupping

When the trailing edge of the blade is formed cast with an edge curl it is said to have a cup. This small curve or lip on the trailing edge of the blade allows the propeller to hold water better which normally adds about 1/2" to 1" of pitch.

Rotation

The direction in which the propeller turns.



Propellers

Ventilation

Propeller ventilation is caused by air from the surface or exhaust gases being drawn into the rotating propeller blades. This results in the propeller slipping more than usual due to the reduced water load on the blades. The obvious symptoms of this are a sudden increase in engine RPM as well as a possible loss of speed. This commonly occurs when trying to turn the boat at high planning speeds or if the outboard is trimmed out too high. In racing conditions this can also occur when following another boat too closely. The small bubbles in the water created by the leading boat can cause ventilation of the propeller of the following boat, with a subsequent loss of speed. This is why you rarely see high speed race boats following directly in the line of the leading boats, even if they are far enough back to be out of the spray and wake.

Cavitation

Propeller cavitation is less obvious than ventilation, but can be far more damaging. When the propeller blade passes through the water at an increasing speed, the pressure that holds the water to the sides of the blades is lowered. If the water is sufficiently warm, and depending on the speed of the boat, formation of water vapour (boiling) can occur. These bubbles that are produced then immediately collapse, releasing energy that can cause a cavitation burn on the propeller blades. In the worst case a complete loss of grip will be experienced. Stainless steel propellers due to their superior strength can withstand cavitation damage better than aluminium and can also be produced with thinner blades to reduce the occurrence of cavitation. If a propeller has suffered cavitation burn you will notice that the propeller is dull, no longer highly polished and that a film of chalky deposit will appear on the surface of the propeller. Cupping a propeller can help reduce cavitation.



Propellers

Different types of propeller



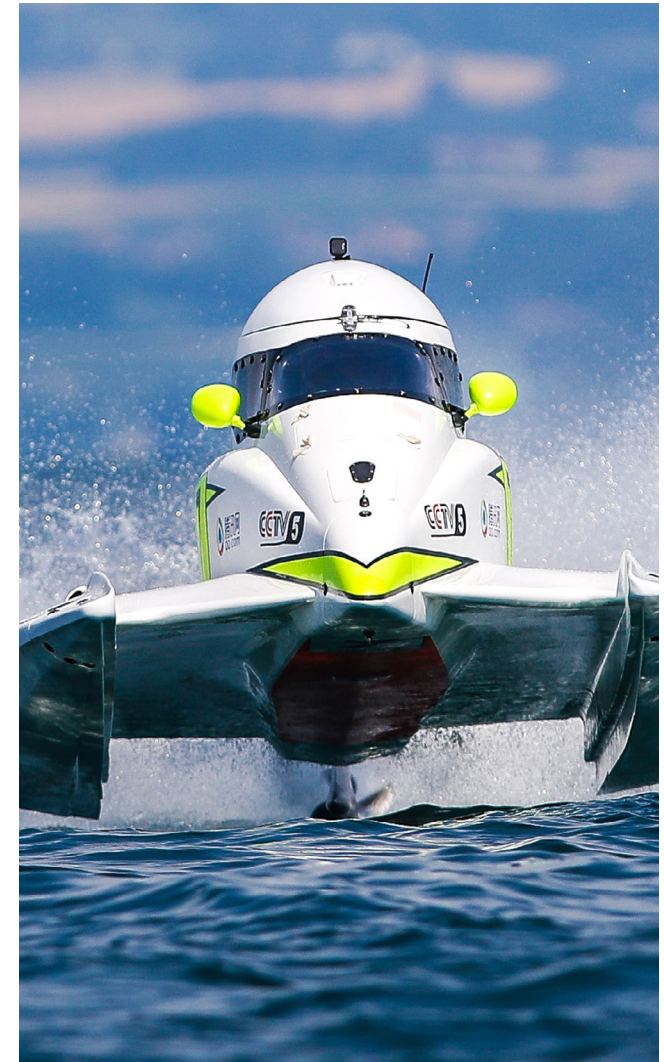
Cleaver

A Cleaver propeller will generally have more tail or stern lift and less bow lift, so if your requirement is to get the stern of the boat more out of the water to reduce drag this is the propeller to try. A disadvantage is that a cleaver will generally not carry a load as well and will slip more at the bottom end on most boats.



Chopper

A Chopper propeller will help a boat requiring bow lift. Enhanced bow lift reduces drag, increasing the efficiency of the boat and improving overall performance. A Chopper also permits higher engine mounting on the transom for greater speed. A disadvantage of this is that the higher you mount the engine the more uncontrollable the boat becomes. You may also experience too much ventilation and possibly not be able to get the boat on the plane; the only solution is more testing.



On the race circuit



Racing lines

In all racing it is extremely important to take the fastest possible racing line around the course in order to maintain a high average speed. Carefully check the design of the course before you go out on the water, note the best possible route which sometimes may include taking a single sweep around two marks. Take advantage of the practice session before the race to fully familiarize yourself with the race course.

The key to fast cornering is to smoothly execute the turn so that you can maintain the maximum power possible. Some course designs require you to “pin turn” at the mark, this is a different technique but can be extremely effective if executed well. Learn to anticipate the racing lines that your fellow competitors may take; you may be able to take advantage of their driving style and gain valuable positions by their mistakes. Remember that your boat will be at its fastest when you are correctly trimmed, and travelling flat, speed will be lost by cornering too tightly or especially when airborne. During any race it may be necessary to

drive defensively to protect your position, this may require you to follow a different racing line so you will need to balance possible loss of speed against protecting your position, this comes with experience and is part of what will be taught in this Competition module.

When choosing the correct racing line avoid following directly behind other boats, as the wash from of their propellers causes small bubbles in the water which can cause ventilation of the propeller of the following boat, with a subsequent loss of speed. This is why you rarely see high speed race boats following directly in the line of the leading boats, even if they are far enough back to be out of the spray and wake. It is also a requirement of P750 racing rules for boats not to follow directly behind each other.

Cornering left and right hand turns

On all Propstars race training boats the propellers turn in a clockwise direction when in forward drive. This means that the boats corner easier in left hand turns and the turns can be taken tighter.

Cornering in right hand turns can be more difficult as you are fighting the torque of the propeller. A softer approach to a right hand turn may help as this will reduce the effect of the propeller and improve the handling of the boat.

On boats with hydraulic trim engines should be trimmed in more as you approach a right hand corner in order to counter the effect of a clockwise propeller. On P750 boats the position of the copilot should be towards the front of the boat to ensure the bow is weighted down which will reduced the likelihood of sliding/drifted in the turn.

On the race circuit

High Speed Turns

A properly executed high speed turn should be completely safe however if this manoeuvre is conducted irresponsibly there is a high risk that you will be thrown out of the boat. The following points must be considered before carrying out this manoeuvre:

- Avoid turning sharply over confused water or washes from other boats.
- Check that your turn will not conflict with other craft and does not take you into danger and complies with racing rules.
- Be aware that you may have to reduce speed to take the turn.
- If the propeller starts to cavitate or ventilate either reduce the sharpness of the turn or reduce speed or both.
- Once the turn has been completed it will be safe to apply more power.



Airborne

There are several reasons why a boat can become airborne whilst racing, lets look at some of the causes:

In flat water whilst travelling fast into the wind the bow of the boat will lift and if not counteracted quickly will lead to the boat becoming completely airborne. In P750 boats the key factors that lead to this are the trim of the boat and the position of the copilot. A good pilot and copilot will learn to recognize the point at which their weight needs to move forwards and possibly the speed eased at the same point. This comes with experience however during this competition training module we will discuss and learn these techniques.

When running fast in rough conditions it is possible that the boat will at some point jump off waves and become totally airborne, when this happens there are a number of actions you must take which are set out below:

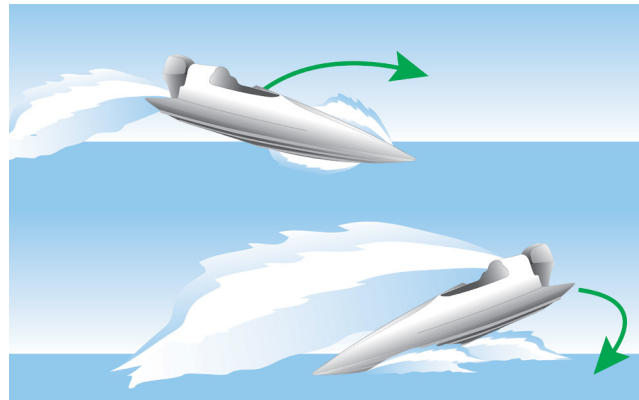
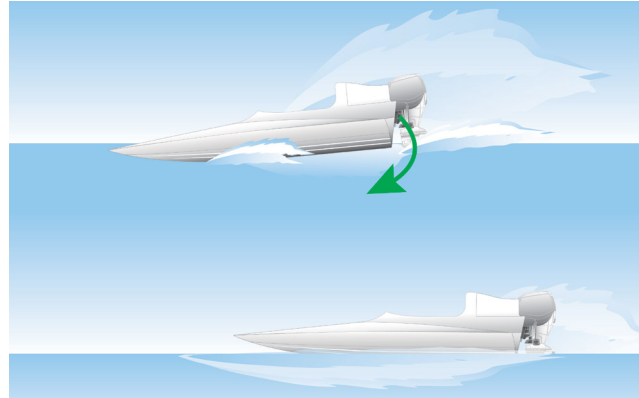


- Immediately reduce power to prevent damage to engine.
- Try to ensure the steering is pointing in a straight line prior to jumping as this will help to prevent the boat falling off on one side.
- If the boat is balanced and trimmed correctly it will land squarely, if not it may well land heavily on one side. This needs to be avoided as damage to the boat can be caused and possible injury to the driver.
- Don't forget that as soon as a boat becomes airborne you have no control, no steering, no forward drive and no cooling to the engine.
- Landing stern first does not cause any major problems unless the engine submerges. Landing bow first but not stuffing can be dangerous as it is possible the boat will hook, this is similar to a spin where the boat ends up at 90° to its direction of travel. This problem is covered in more detail under hooking below.

On the race circuit

Stuffing

This is the term used when a boat jumps a wave but then falls into the back of the next wave in front, this can be dangerous as the sudden de acceleration can cause the co pilot to be thrown out of the boat. A boat can also fall into a stuff by catching the transom or back of the boat on a wave which causes the bow to trip and then fall into the back of the next wave.

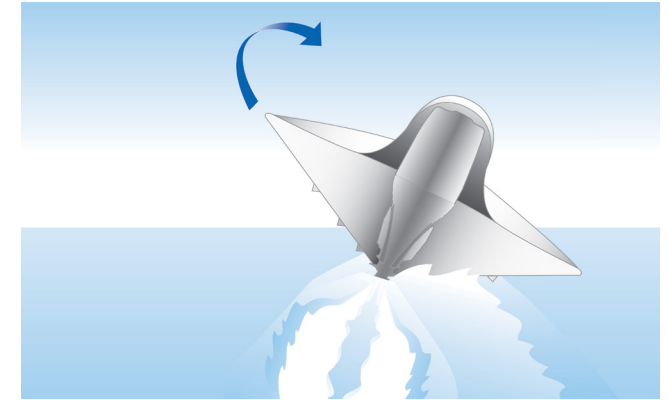
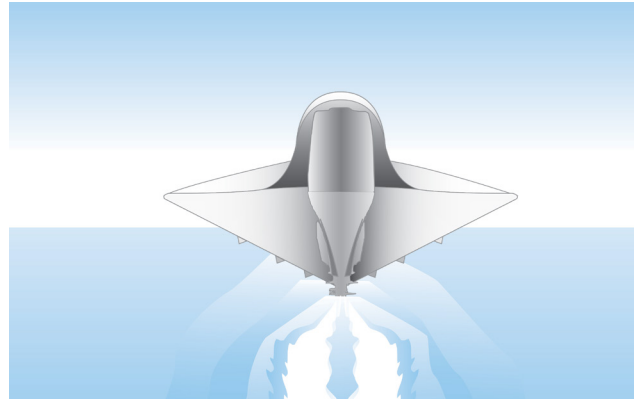


Hooking

Hooking in a powerboat is sometimes likened to spinning in a car. A hook is caused when the centre of gravity of the boat moves forwards usually caused by the actions of the waves and the speed of the boat which causes the back end of the boat to break free of the water and for the boat to spin sideways. This is particularly dangerous in racing conditions or when travelling close to other boats. A hook is

more likely to occur in rough conditions although if the boat is trimmed and on the edge of control a hook can occur in a straight line. In rough conditions if a boat becomes airborne and then lands bow down but does not stuff a hook can result, this is usually caused by severe bow steer. In P750 boats hooking can also occur as a result of under inflated hijackers.

On the race circuit



Chine Walking

Chine walking occurs in V-bottom mono hulls such as the GT15 or RIBS. The chine of a hull is where the bottom joins the side. Chine walk is a violent, often rapid, side to side oscillation when the boat literally bounces from one chine to the other. True chinewalk is one of the most dangerous events that you can experience. Typically, the driver must ease out of the throttle while keeping the wheel straight. This is not always the answer, but dumping the throttle and/or attempting to steer out of this condition can cause total loss of control and lead to an accident. The first step in gaining control is to assure that the engine is properly mounted (centred and plumb) and there are no hull defects. The next important step to take is to ensure the boat is balanced as an imbalanced boat will tend to fall off to starboard. Proper positioning of batteries and other accessories is one step in minimizing this condition. Environmental conditions; wind, waves, an unexpected wakes etc. are always changing and trying to push the

hull off balance. Constant awareness of this and an almost automatic response is necessary which only comes with experience. Key points to remember are:

- Small helm corrections to port as required
- Overcorrection to port throws the hull past centreline and it tries to fall to port
- Under correction to port allows the hull to continue to fall to starboard and requires additional correction to port, often resulting in overcorrection
- Each under or overcorrection requires a larger correction to compensate and, if that correction is too much or too little, the oscillation increases. This is the beginning of chinewalk, the time to ease out of the throttle and start over before it becomes dangerous

Q: What is Chine Walking?

A: It's violent, often rapid, side to side oscillation when the boat literally bounces from one chine to the other

On the race circuit

Capsizing

If you lose control of your race boat and as a result turn upside down, it is likely that both the pilot and copilot will be thrown clear. However if you find yourself trapped underneath the capsized boat it is important to not panic, you will find an air pocket due to the shape of the hull in which you can breathe. The safety team will be with you in a matter of seconds, however if you are not restrained then you can push yourself down and away from the hull into open water.

The safety team will check you are ok, In P750 race boats, if the conditions allow you will need to right your boat using the righting ropes situated at the bow, as seen in the picture below.

Following a capsize you will need to thoroughly clean your engine and prepare it for restarting the procedure set out below should be followed:

PROCEDURE FOR RE-STARTING 2-STROKE OUTBOARD MOTOR AFTER IMMERSION

Tools Required

- No.7 Flexible socket
- 3 new spark plugs
- Spark plug spanner
- Screwdriver (Phillips)
- Easy start spray/WD40

Procedure

1. Remove cowling from engine
2. Remove air box on front of engine
3. Remove fuel line that feeds top carburettor and prime fuel bulb until fresh fuel comes through
4. Drain all three carburettors by undoing their bottom drain screws on right hand side
5. When drained and no fuel seeps, prime the fuel using the fuel bulb to pump fresh fuel through
6. Tighten up carburettor screws
7. Remove all three spark plugs
8. Once removed and the boat secure pull start the engine (kill cord out) to blow out the water (roughly 15 times!)
9. Spray all three cylinders and carburettors with easy start (WD40 if none available)
10. Refit Fuel line to carburettors
11. Replace bottom two plugs with new and attach HT leads
12. Pull start engine (kill cord in) until it starts then it will run rough
13. Stop engine replace top plug and attach remaining HT lead (can spray more easy start if required)
14. Air box screwed back on
15. Preferable to go run boat on water before next heat

The whole procedure should take approximately 15 – 20 minutes, so competitors should be able to make their following heat.



On the race circuit



Avoiding collisions, proactive not re active driving

In order to win races you must first finish so avoiding collisions is an essential part of your race planning strategy. Proactive driving is a skill which enables you to anticipate the actions of your fellow competitors and take the appropriate action, frequently these decisions are made in an instant and the good driver will react instinctively to situations on the race course.

What to do if you are involved in an accident on the water

The first thing to do is to check for any injuries and immediately decide if assistance is required. If assistance is required attract the attention of the rescue boats on the course. If you are in the water try and get back to the boat and await recovery by the rescue services, At all races there will be comprehensive safety and medical cover and the response time to all incidents is usually very quick, the OOD will Red Flag the race the moment he knows

that he has persons in the water. If you are injured follow the instructions of the paramedics and allow them to do their job. It is normal at many powerboat racing events for a driver to be recovered on a stretcher prior to being examined by the race doctor/paramedic. Conform to the instructions of the rescue officials at all times. If you are injured and are taken to hospital the medical officer/OOD will revoke your licence in which case you will have to be declared fit to race by a qualified doctor prior to racing at the next event.

On the race circuit



Surf Racing

The UIM P750 class can run the M-shape course at a surf venue, the normal positioning of race marks are for two marks to be placed beyond the breaking waves with the inner and right hand turn mark placed inside the wave periods.

Driving a ThunderCat boat through surf is likening to that of a motocross bike on a ramp. Surf racing requires immense concentration and awareness of other race boats due to the unpredictability of the conditions. The aim is to keep the propeller in the water as much as possible, as discussed earlier when you are airborne you have no control or forward propulsion. Therefore when approaching a wave head on, the driver should decelerate slightly just before the boat leaves the wave, this ensures the boat stays level on take off. If the power is not reduced or worse, increased the boat will leave the wave vertical and potentially turn upside-down.

We advise approaching a wave straight on rather than at an angle, if you find yourselves with no other choice, angle the boat into the wave as much as possible and decelerate proportionate to the size of the wave.



When approaching the shore, driving with the wave pattern. Understand the wind direction as this can affect how the boat lands when the boat jumps over a wave. Teams cannot follow behind another competitor at any time on the race circuit, if you are unsure if another competitor is in front of you, potentially obscured by the wave, slow and wait until you know it is clear before jumping off a wave.

Finishing the race

Finishing a race and signing off

The finish of a race is shown to the driver by waving a black and white chequered flag.

A driver who finishes a race must withdraw from the course without hindering the boats that are still in the race.

A driver who finishes a race and then cuts across the course will be disqualified in that race or heat and get zero points.

The OOD will brief the finishing procedure at drivers briefing, you should pay particular attention to this as failure to comply may result in disqualification. It is worth noting that finish procedures may differ from venue to venue, sometimes it will be possible to turn immediately into the centre of the course after passing the chequered flag and sometimes you will be required to pass the next turn mark before turning into the centre of the course or in circuit racing you are required to complete one more full lap of the course. Make sure you follow the procedure as briefed by the OOD; you don't want to win the race only to be disqualified at the finish.

At many racing events competitors are required to sign off at the end of racing, make sure you know the rules and follow the instructions in race instructions or those given at drivers briefing.

The protest procedure

All teams and drivers are entitled to protest the results or penalties given if they feel there is sufficient justification. If you are lodging a protest you must inform the OOD first, if you are protesting the results this must be done within the time limits set by the class rules, usually 30 minutes from time of the results being posted. All protests must be in writing and accompanied by the protest fee (details of this will be found in race instructions) Protests against eligibility can only be lodged prior to the drivers briefing or up to that point in the drivers briefing where the OOD asks if there are any such protests. The protest will be heard by the appointed Race Jury and they are required to strictly follow the procedure set out in the rule book. At International events the Jury must follow the procedure as described in the UIM Offshore Rule Book. If you are unhappy with the result of the protest you may appeal to either your National Authority in the case of National races or to the UIM for all International races.



REMEMBER...

Throughout these practical exercises your performance will be timed and monitored and guidance given to improve your lap times and competition driving techniques.

Practical on water training;

The following practical exercises will be covered in this Competition module. In each of these exercises you will be required to demonstrate good boat handling, safe cornering and maintaining your racing lines. During these exercises your performance may be timed and filmed for discussing after the session.

1. Driving at speed round the race course
2. Cornering at speed
3. Practice jetty starts
4. Racing lines
5. Overtaking and Overlaps
6. Overtaking and blocking manoeuvres

One of the key aspects of on water race training is to assess your ability and race awareness skills and to be aware of what other boats in the race are doing and how you should avoid them. You will also be assessed on your knowledge of the overtaking and overlap rules throughout this activity.

Throughout these practical exercises your performance will be timed and monitored and guidance given to improve your lap times and competition driving techniques.



Competition Training

CERTIFICATE OF COMPLETION



This is to certify that

.....
Has completed the Competition Training course of the UIM Propstars Youth Development programme

PROPSTARS ASSESSOR



Environmental

Environmental training must be included in all of the different UIM Propstars training modules. Guidelines on the topics to be covered are set out in the summary of the UIM Environmental Code.



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Propstars and the Environment

Introduction

The UIM Environmental Code

The UIM place great importance on ensuring that a strict code of conduct is followed at all race meetings with regard to the environment. Through the UIM Propstars programme we will seek to educate competitors and officials in order to establish the highest environmental standards and levels of consciousness during the organisation of all powerboat events. The UIM Environmental Code must be adopted and followed and the education of both new competitors and officials is of the utmost importance.

The key areas of responsibility:

1. To raise awareness on the effects of racing and to consider how to reduce the impact.
2. To promote environmental responsibility with both competitors and race officials.



Propstars and the Environment

General Principles Definition

1. Powerboat activities fall into three main categories: competition, recreation and transport.
2. Competitive powerboat racing events are a major constituent of the international and national sporting calendars, attracting an increasing audience and producing significant economic effects. It is a sport which, like most other sports, and human activities in general, creates an impact on the environment.
3. Power boating activities in general, as a means of transport or for recreation, continues to increase, and therefore must also be looked at from an environmental point of view. The UIM will do its best to transfer best practices from competitive power boating to these other areas.
4. The UIM considers it to be of major importance to develop a coherent environmental policy, taking into account the legislative and regulatory requirements of each country.
5. The UIM will seek to establish at all times the highest environmental standards during the organization of powerboat events at all levels and will promote environmental consciousness among all powerboat racers. The UIM will do so in close co-operation with the National Authorities and all involved stakeholders.
6. The UIM environment policy, as defined in the UIM Environmental Code, is based on mutual respect of the needs of the environment and of reasonable practices of powerboat sports and powerboat driving in general.
7. The UIM seeks close co-operation with international authorities and organizations in order to ensure that there are sufficient facilities for powerboat activities in environmentally acceptable conditions and encourages its member nations to do so at national, regional and local level.
8. All national federations affiliated to the UIM shall do their best efforts in order to give proper prominence to environmental matters and to the principles of the UIM Environmental Code. Full details of the UIM Environmental Code can be found at www.UIM.sport in the rulebook of any discipline.
9. In order to reduce noise and emissions, the UIM encourage the use of electric vehicles for the services provided inside the event.

Noise

Concerns regarding noise at powerboat events are not limited to the machines themselves. In addition to the expected engine noise, organizers and environmental stewards must be aware of the magnitude of sound from public address systems, crowds and other sources associated with an event. Minimizing excessive noise associated with powerboat activity and taking public reaction to noise in consideration is the responsibility of all concerned: drivers, clubs, organizers and officials.

Propstars and the Environment

The UIM recommends:

- To avoid all unnecessary running of engines.
- To reduce as much as possible the sound levels in all disciplines and ensure that all applicable regulations are strictly respected.
- The UIM shall always promote research on the question of sound level in relation to powerboat sports.
- The UIM will aim to set regulations stipulating the maximum permitted noise levels for each class.
- Noise levels should be set for the different classes in cooperation with the different commissions. When the limit has been set the regulations shall be monitored and sanctioned strictly

Fuel

It is recommended that regular unleaded fuel, available at the service stations, or other cleaner fuels provided by the organizers, without additives, except oil for two stroke engines, is used. The use of alternative energies such as bio fuels, hydrogen or electricity, as long as they are not more noxious for the environment, must be encouraged for all disciplines in conformity with the relevant technical regulations. For the purposes of protecting the environment, provisions regarding fuel storage mentioned in the relevant rules must be respected.

Protection of Ground Water

- Measures must be taken to prevent leaks of fuel, oil, cleaning, degreasing, cooling and brake fluids, etc. into the ground and water or vapour into the air.
- Containers/facilities to recover rubbish, oils, chemicals, detergents, etc. must be provided.
- The use of an environmental mat, (or other effective device) protecting the ground and water, is compulsory to be used where servicing of machines is permitted by the organizer, amongst others in the paddock and repair areas. Any infraction of this rule will be reported to the OOD who will fine the driver/pilot responsible a maximum of USD1000 or any other amount mentioned in the regulation or appendix of the discipline.
- Provision must be made for the treatment of spillage and the disposal of contaminated material by the organizers.
- It is strictly forbidden to empty onto the ground and water waste fluids from vehicles or boats located in dry or wet pit areas or in the campsite. Waste water may only be disposed of by using the designated containers located at the race site. Full details of these facilities will be provided at Drivers briefing. . Any infraction of this rule will be reported to the OOD who will fine the driver/pilot responsible with a maximum of USD500. Other sanctions may be specified by the OOD or the UIM Commissioner.
- After the event Do not leave any kind of rubbish behind, leave the site as you found it.



Propstars and the Environment

Environmental Mat

The Environmental Mat is compulsory for all disciplines. It must be composed of an absorbent part and an impermeable part. Its use will be compulsory everywhere where work on powerboats is allowed by the organizers.

Cleaning of the boats

- Cleaning of engine and motor parts, where permitted by the regulations, must only be carried out at places with cleaning facilities.
- Only certified non toxic solvent, without the addition of chemical products (for example detergent), is permitted when cleaning the boats.
- The cleaning area must be built with a non-porous surface and a proper drain with an oil-divider to prevent pollution of the ground and water. Any infraction of this rule will be reported to the Officer of the Day (OOD) who will fine the driver/pilot responsible with a maximum of USD500. – or any other amount mentioned in the regulation or appendix of the discipline.

Action to be taken by drivers / participants

- Each driver is responsible for the waste generated by his team during the event.
- Where organizers provide the necessary containers for waste they must be used as directed.
- Waste must be retained by the team until the approved facilities provided by organizers can be used.
- Where refuelling or servicing of a powerboat is being undertaken at events, driver/participants must provide and use an environmental mat to protect the ground and water. This environmental mat must also be compulsory when an electrical generator or any other device with a thermal engine is used by the driver/pilot or the team. These mats must be removed by the driver/pilots/competitors after use.
- Any infringement by the participant or driver/pilot (who is responsible for his team) of the UIM regulations can result in a fine, disqualification from the event or suspension, and may also result in the participant or driver/pilot being liable for any costs of rectification.

Requirements to encourage environmental behaviour by the spectators

Visitors to a powerboat circuit, track, event or gathering can play an important role in keeping the environment clean and undamaged.

Here are some suggestions:

- In co-operation with the local authorities, select the routes to and from circuits, tracks, etc., which will cause as little annoyance as possible for the surrounding areas.
- Provide clear signs to circuits, tracks and venues.
- Avoid parking on vulnerable places (verges, green lanes).
- Avoid parking in long grass.
- Promote the use of public transportation in publications and promotional releases i.e. web or other forums.
- Avoid too high concentrations of people in order to preserve vulnerable places i.e. wildlife and bird reservation.
- Provide sufficient sanitary facilities and safe cleaning and deposit systems.
- Inform the spectators about responsible behaviour on the site.
- Specify in contracts with catering firms a requirement to sell drinks and food packaged in recyclable, reusable or biodegradable material, and to provide and maintain sufficient waste containers. Promote cooperation with caterers that have high standards on ethical and ecological food.
- Promote the use of electrical/hybrid transportation services or the use of sharing services in order to reduce the use of private vehicle
- Manage the events in such a way that only footsteps remain on the soil.

Propstars and the Environment

A Summary of Key Points to follow

Description	Comments
UIM Environmental Code Knowledge and usage	Where to find details of the code and how to apply it to local events, races, competitors and officials. www.UIM.sport in the rulebook of any discipline.
Environment, emissions and sustainability	To ensure that the impact on the environment is minimal with particular regard to emissions and sustainability
Eco-friendly accommodation available?	To promote the use of eco-friendly accommodation, responsibility of officials organising the event.
Environmental information for spectators	Information on environmental control measures to be made available to the public.
Cleaning up race site before the race	Responsibility of all, this is something that will appeal to juniors and participating schools.
Instructions for participant about environmental protection	Competitors and Officials to be educated within the UIM Propstars programme on the importance of environmental protection.
Recycling stations in pits and for spectators	These to be made available at all Powerboat Racing events.
Loud speakers positions and directions to minimize noise	To educate competitors and officials on their responsibilities to ensure noise pollution is minimised
Person(s) who take care about collecting waste at the time of the event	To train and nominate appointed officials responsible for these actions.
Environmental instructions at drivers briefing	To train UIM Officials with Propstars to promote an environmental understanding at all powerboat racing events.
Check of using mats under engines and refuelling areas	To educate Officials and Competitors to appreciate the importance of these actions.
Cleaning instructions and restrictions of boats	To educate Officials and Competitors to appreciate the importance of these actions and in particular the use of bio degradable products.
Noise measurement equipment? Find correct place for measurements	To educate Officials and Competitors to appreciate the importance of these actions.
Measuring noise of boats	To increase the general knowledge of awareness regarding noise pollution. To help us to return to a venue in the future .
Fuelling in the authorized zone	To minimise environmental impact and to increase safety.
Monitoring of smoke / pollution	To minimise environmental impact and to increase safety.

Contacts

If you need support or any further informations do not hesitate to contact the UIM office and the UIM Environmental Working Group ad the email UIM@UIM.sport



Instructor Training

This section is designed to assist UIM Instructors when constructing their lesson plans for the different modules of the Propstars programme.

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Day One Basic Training

- Programme
- Equipment required

Day Two Basic Training

- Programme
- Equipment required

Day Three Basic Training

- Programme
- Equipment required

Day Four Advanced Training

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Day Seven Competition Training

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Day Eight Competition Training

- Programme
- Equipment required

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Day Nine Competition Training

- Programme
- Equipment required

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Instructor Training

Day One Basic Training

09.00 – 09.30

Meet and Greet: Initial meet and greet to provide an overview of the UIM Propstars Training programme including the three levels, Basic, Advanced and Competition and to set out the goals and objectives of each section.

09.30 – 10.00

Getting Interactive: what experience, enthusiasm and drive do the trainees have and how do they see themselves involved in the programme.

10.00 – 10.30

The Basic Training Programme:
Provide an overview of this module

10.30 – 10.45

Pause for Coffee Tea etc.

11.00 – 12.00

Let's look at the boats: Use whatever you have available, P750, GT15 or other alternatives. During this session we will look at Engines, Control Systems, and Maintenance as well as discussing the different types of boats available.

12.00 – 13.00

Safety Briefing on how to get out on the water: to include use of life jackets and all other safety equipment.

13.00 – 14.00

Lunch.

14.00 – 17.00

Water awareness skills on land and water and Let's get on the water:

- To include some basic rope work.
- How to moor a boat.
- 15.00 – 15.15 Coffee Tea etc.
- How to leave a berth.
- How to approach a berth.
- Turning in a restricted area.
- Propeller effect.

17.00 – 17.15

End of day de brief and tasks for the next day:

The trainees will be asked to each prepare a different presentation for the following day; the topics will be selected by JP and will include safety, mooring, and basic boat handling.

End Day One

Equipment required

Day One Module

- Classroom facility.
- A copy of the Propstars Training book for each trainee, plus note books and pencils etc.
- White board.
- Tables, chairs etc.
- A suitable training boat.
- Mooring ropes.
- Practice ropes.
- At least four small floating buoys with ground tackle.
- A suitable jetty or pontoon.
- One life jacket for each trainee.
- Tea, coffee, refreshments and suitable toilet facilities ashore.



Instructor Training

Day Two Basic Training

09.00 – 10.30

Presentations by trainees.

10.30 – 10.45

Coffee Tea etc.

11.00 – 12.00

Trailing and Launching: To include securing a boat for trailing, slipway launching and recovery (if available) land and shore based risks.

12.00 – 13.00

Rope work, an interactive session: to include how to tie a round turn and two half hitches, a bowline, a clove hitch and a sheet bend. This also to include when to use the different knots.

13.00 – 14.00

Lunch.

13.00 – 15.00

How to tow a boat to include alongside towing and towing astern. If the 2 or more training boats are available this would provide a great interactive session.

15.00 – 15.15

Coffee/Tea.

16.00 – 17.00

Mooring in a restricted area: To include approach, departure, reversing out using a head line or a spring line.

17.00 – 17.15

End of day de brief and tasks for next day

The trainees will be asked to each prepare a different presentation for the following day, the topics will be selected by JP and will include trailing and launching, safety, towing, rope work and mooring in a restricted area.

End Day Two

Equipment required

Day Two Module

- Classroom facility.
- Min 2 suitable training boats more would be ideal.
- A training boat on a road trailer with securing straps etc.
- A suitable slipway for launching.
- Mooring ropes and tow ropes and suitable fenders.
- Practice ropes.
- At least four small floating buoys with ground tackle.
- A suitable jetty or pontoon.
- One life jacket for each trainee.
- Tea, coffee, refreshments and suitable toilet facilities ashore.



Instructor Training

Day Three Basic Training

09.00 – 10.30

Presentations by trainees.

10.30 – 10.45

Coffee Tea etc.

11.00 – 13.00

Fun boat handling: Lay salmon course, manoeuvring around a salmon course, boat control, balance, smooth lines accurate use of throttle.

13.00 – 14.00

Lunch.

14.00 – 15.00

To consider Man Overboard recovery: to include application in general boating activities and also different considerations whilst racing.

15.00 – 15.15

Coffee and Tea.

15.15 – 16.00

To consider collision avoidance Regulations: To include rule of the road, actions to take.

16.00 – 17.00

Interactive Rule of the Road session on water using two or more suitable training boats. To include the boats driving around in different directions and following the collision avoidance rules.

Introduction to fast driving around slalom course.

17.00 – 17.15

End of Day de brief and allocate tasks for the next day

The trainees will be asked to each prepare a different presentation for the following day, the topics will be selected by JP and will include man overboard recovery, collision avoidance rules and safety.

End of Day Three

Equipment required

Day Three Module

- Classroom facility.
- 2 or more suitable training boats.
- Minimum 12 small floating buoys with ground tackle.
- Minimum two life rings or horseshoe belts for MOB recovery.
- Mooring ropes and tow ropes and suitable fenders.
- Practice ropes.
- A suitable jetty or pontoon.
- One life jacket for each trainee.
- Tea, coffee, refreshments and suitable toilet facilities ashore.

Instructor Training

Day Four Advanced Training

Half day only if on a Saturday/Sunday.

09.00 – 10.30

Presentations by Trainees.

10.30 – 10.45

Coffee Tea etc.

11.00 – 11.30

An Introduction to the Advanced Training Module.

11.30 – 12.00

Race Safety Equipment: To Include racing vests and life jackets, racing protective helmets, protective clothing. Trainees will be required to bring racing vests or life jackets and racing helmets to the next session.

An introduction to the race track.

On water training.

End of Day Four

Equipment required

Day Four Module

- Classroom facility.
- Minimum two Racing vests, two racing helmets.
- Practice ropes.
- Tea, coffee, refreshments and suitable toilet facilities ashore.



Instructor Training

Day Five Advanced Training

09.00 – 09.30

The Advanced Training Module: Provide an overview of this module.

09.30 – 10.00

Race Administration, race Officials and rules: To include How to start racing, the role of racing officials, safety in racing.

10.00 – 10.30

Racing Personnel and Documentation: To include the role of scrutineers, the race secretary, timekeepers, Commissioners and race documentation.

10.30 – 10.45

Coffee and Tea etc.

11.00 – 11.30

Race Instructions, Race Numbers and Drivers briefing.

11.30 – 12.00

Interactive session with questions and answers on personal race safety equipment: To include correctly fitting helmets, correct size and type of racing vest or life jacket, protective clothing.

12.00 – 13.00

Preparation of boats and personal equipment for on water time trials. Lay salmon course.

13.00 – 14.00

Lunch.

14.00 – 14.30

Race Flags: To include Safety and flag procedures.

14.30 – 15.00

Racing Lines and cornering: To include on water training, racing lines, cornering left and right, boat balance.

15.00 – 15.15

Coffee Tea and safety check boats and equipment.

15.15 – 17.00

Racing lines and cornering: Timed On water activities controlled by flags.

17.00 – 17.15

End of Day de brief and allocate tasks for the next day.

The trainees will be asked to each prepare a different presentation for the following day, the topics will include the role of racing officials, Race documentation, personal safety equipment, race flags, racing lines and cornering.

End of Day Five



Equipment required

Day Five Module

- Classroom facility.
- A copy of a set of typical race instructions for each trainee. JP to e mail template.
- Race flags to include: Red flag, yellow flag, Black Flag, Chequered Flag, Green Flag.
- 4 suitable training boats .
- Minimum 12 small floating buoys with ground tackle.
- Mooring ropes and tow ropes and suitable fenders.
- Practice ropes.
- One life jacket for each trainee.
- Tea, coffee, refreshments and suitable toilet facilities ashore.



Instructor Training

Day Six Advanced Training

09.00 – 10.30

Presentations by trainees.

10.30 – 10.45

Coffee Tea etc.

11.00 – 12.30

Rules: To include start procedures, marks of the course, overtaking and overlap, rounding marks, missed marks, finishing procedures.

12.30 – 13.00

Support Boats: To include the role of safety and medical boats, tow boats, marshal boats and actions you must take.

13.00 – 14.00

Lunch.

14.00 – 14.30

Set up a practice race course.

14.30 – 14.45

Drivers briefing given by UIM Instructor.

14.45 – 15.00

Coffee Tea etc.

14.45 – 17.00

Time Trials and practice racing using suitable training boats. To include race start cornering, overtaking, overlaps, rounding marks.

17.00 – 17.15

End of Day de brief including race de brief, allocate tasks for next day. The trainees will be asked to each prepare a different presentation for the following day, the topics will include giving a drivers briefing, rules governing overtaking, overlaps, start procedures, finishing a race and the roles of the support boats.

End of Day Six

Equipment required

Day Six Module

- Classroom facility.
- Race flags to include: Red flag, yellow flag, Black Flag, Chequered Flag, Green Flag.
- 4 suitable training boats.
- Minimum 12 small floating buoys with ground tackle.
- Mooring ropes and tow ropes and suitable fenders.
- Practice ropes.
- One life jacket for each trainee.
- One racing helmet for each trainee on the water.
- Tea, coffee, refreshments and suitable toilet facilities ashore.



Instructor Training

Day Seven Competition Training

09.00 – 09.30

The Competition Module: Provide an overview of this module.

09.30 – 10.00

Racing Preparation: Given by UIM Instructor to include personal preparation physical, mental, discipline. Boat preparation and equipment.

10.00 – 10.30

Understanding the Race Circuit and Course: Given by UIM Instructor to include, dangers of the course, conditions, weather and wind speed and direction, best racing lines.

10.30 – 10.45

Coffee Tea etc.

11.00 – 11.30

How to avoid collisions: To include proactive driving not re active.

11.30 – 13.00

On water simulated racing. To include how to drive, entrapment, trim and dangers of over trim, wind effect, hooking, airborne, high speed turns.

13.00 – 14.00

Lunch.

14.00 – 15.00

On water racing experience: Training to be controlled by race flag signals. Note this session will require the presence of safety divers and a doctor/paramedic on site.

15.00 – 15.15

Coffee Tea etc. and comment on driving on water by UIM Instructor.

16.00 – 17.00

Resume on water practical racing experience sessions as above.

16.30 – 17.00

Recover boats from water and wash down, remove propellers and store all equipment.

17.00 – 17.15

End of Day de brief and allocate tasks for the next day. The trainees will be asked to each prepare a different presentation for the following day; the topics will include race preparation, the dangers of a race course, how to avoid collisions and drive pro-actively, hooking, entrapment, high speed turns etc.

End of Day Seven

Equipment required

Day Seven Module

- Classroom facility.
- Race flags to include: Red flag, yellow flag, Black Flag, Chequered Flag, Green Flag.
- 4 or more P750 boats.
- Minimum 12 small floating buoys with ground tackle
- A qualified diver and paramedic on site. Mooring ropes, toe ropes and fenders.
- One life jacket and racing helmet for each trainee on the water.



Instructor Training

Day Eight Competition Training

09.00 – 10.30

Presentations by trainees.

10.30 – 10.45

Coffee Tea etc.

11.00 – 1300

Surf Training at sea or more protected water practice racing using suitable training boats Theory discussion followed by on water training on the sea.

13.00 – 14.00

Lunch.

14.00 – 15.00

Race Training for courses at sea or on protected waters.

15.00 – 15.15

Coffee Tea etc.

16.00 – 1700

Race Training for courses as above continued.

1700 – 17.15

End of Day de brief.

End of Day Eight

Equipment required

Day Eight Module

- Classroom facility.
- Race flags to include: Red flag, yellow flag, Black Flag, Chequered Flag, Green Flag.
- 4 suitable training boats.
- Minimum 12 small floating buoys with ground tackle.
- A qualified diver and paramedic on site.
- Mooring ropes and tow ropes and suitable fenders.
- One life jacket/racing vest and one racing helmet for each trainee on the water.
- Tea, coffee, refreshments and suitable toilet facilities ashore.



Instructor Training

Day Nine Competition Training

09.00 – 09.30

Resume by UIM Instructor regarding final presentations.

09.30 – 10.30

Exam Presentations by Trainees.

10.00 – 10.15

Coffee Tea etc.

11.00 – 13.00

Exam Presentations by Trainees cont.

13.00 – 14.00

Lunch.

14.00 – 15.00

On water exam presentations and instruction given by trainees.

15.00 – 15.15

Coffee Tea etc.

16.00 – 17.00

Final on water time trials, fastest boat wins.

17.00 – 17.15

End of Day de brief.

17.30

Presentation of UIM Certificates to all successful trainees.

End of Day Nine

Equipment required

Day Nine Module

- Classroom facility.
- Race flags to include: Red flag, yellow flag, Black Flag, Chequered Flag, Green Flag.
- 4 suitable training boats.
- Minimum 12 small floating buoys with ground tackle.
- Mooring ropes and tow ropes and suitable fenders
- One life jacket/racing vest and one racing helmet for each trainee.
- Tea, coffee, refreshments and suitable toilet facilities ashore.





Dream ...

Train ...

Race ...

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