



ALYC
Land Yacht Training Course
Manual

Welcome to the Anglia Land Yacht Club

Land Yachting and its sister sport Sand Yachting is a fast exciting sport open to both sexes of all ages from 12 years old and upwards.

This manual provides the basic information covering the theory and rules that explain how land and sand yachting operates in the UK. The Sport is administered by the British Federation of Sand and Land Yacht clubs (BFSLYC) to which all bone fide clubs belong.

This training course covers the theory and practise necessary to achieve Level 3 certification in accordance with the BFSLYC training programme

Aims

The course aims to bring you to a skill level where you will be capable of handling a land yacht safely :-

- Through all sailing manoeuvres
- In a range of wind conditions
- With a knowledge of the sailing and racing rules
- And how to apply them with safety when sailing with other yachts

Training Syllabus

Background and Theory

- The sport in the UK
- Sailing Levels 1 - 3
- Types of land yacht
- Clothing
- Parts of a yacht
- How land yachts sail
- Yacht controls
- Points to remember
- Golden rules
- Sailing terms and directions
- Basic sailing rules
- Racing rules
- Flags
- The Orange Zone

Training Syllabus

Practical Sailing

Level One

A knowledge of essential safety rules

An understanding of the basic sailing rules

An understanding of the wind and its actions on a land yacht

Demonstrate practical sailing under close supervision

Stage 1 sailing

- Yacht rigging
- Pre-sailing check list
- reaching, start and stopping
- Yacht parking

Level 2

Higher level skills including tacking and gybing

Making headway up and down wind in a defined route

Sail on a course with other yachts

Rig a yacht and carry out pre-sailing safety check

Stage 2 sailing

- Pre-sailing check
- Reaching and luff turns

Stage 3 sailing

- Pre-sailing check
- Gybe turns
- Luff and gybe turns

Training Syllabus

Practical Sailing

Level 2

Stage 4 sailing

- Pre-sailing check
- Sailing up and down wind
- Sailing a course

Stage 5 sailing

- Pre-sailing check
- Group sailing on a course

Stage 6

- Pre-sailing check
- Racing

Level 3

Handle a yacht through all manoeuvres and in a wide range of wind conditions

Have an awareness of your limitations and when not to sail

Demonstrate a thorough knowledge of the racing rules

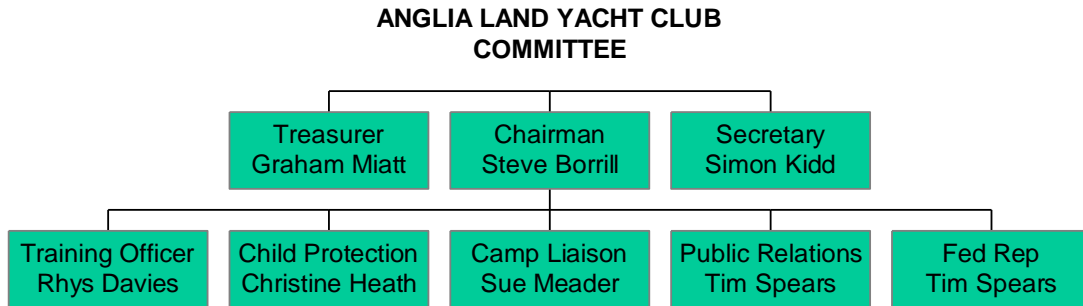
Pilots licence

Passed level 3

Racing rules test

Practical sailing test

Anglia Land Yacht Club



The Anglia Land Yacht club is located at Bassingbourn Barracks near Royston on the A1198. It is a long-established club with excellent facilities, a club-house, a 2 km racing circuit, and a secure parking and storage area. The facilities are rented from the Ministry of Defence and we are grateful for their assistance and co-operation at all times.

The sport, and therefore the club exists for racing. This we do at a range of competitive levels, and across different classes of yacht.

In October every year, the club hosts a stage of the British Championship Series when top sailors from around the country arrive for 2 days of competition. The series extends throughout the year covering 8 or 9 events held at clubs around the country, with most taking place on beaches.

Types of Land Yacht

- **Class 3** - The fastest landyacht with a maximum sail area of 7.35 sq metres and a rotating aerofoil section wing mast. Most are commercially built from glass fibre or lighter modern composite materials, though the rear axle is still made from wood (ash) for strength and springiness. The yachts conform to an outline specification with maximum dimensions set for sail area, yacht length and track and a minimum weight
- **Class 5** - First appearing in the early 1980s Class 5 are the smallest competitive design recognised by the sports international governing body. They are designed and made to a rigid specification and have a maximum sail area of 5 sq metres. Modern Class 5s have a tubular steel chassis, aluminium axles and wheels, and a glass fibre or carbon/kevlar composite fuselage. Precise tuning and alignment as well as good construction techniques are essential to make use of a Class 5 yacht's potential
- **Standart** - This one-design yacht Standart was designed in 1989 by a well-known French constructor. It was recognised as an international class in 1995. With a sail area of 5.8 sq metres it has a pocket luff sail with rigid stiffeners or camber inducers to give the effect of a wing mast. The chassis is a steel tube to which is underslung a glass fibre fuselage. Aluminium axles slot into the chassis to complete a strong, lightweight yacht which can be quickly assembled.

Clothing

As Land Yachting is a year round sport appropriate clothing is necessary for safety and comfort.

Helmet - You cannot sail without one!

A motor cycle or similar style helmet is required. It can be either open or full face.

Goggle

Not essential and mainly a matter of personal choice. On a beach it is advisable to have some form of eye protection.

Gloves

Optional but useful if you want to sheet in hard - and you will!

Overalls

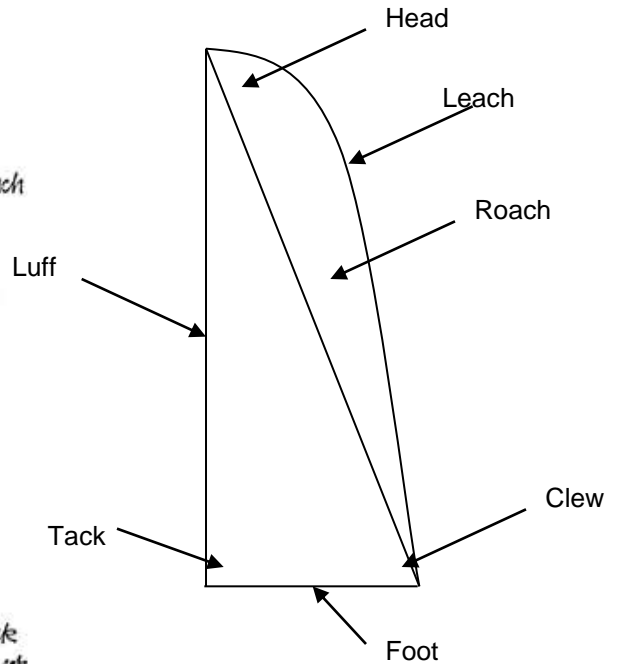
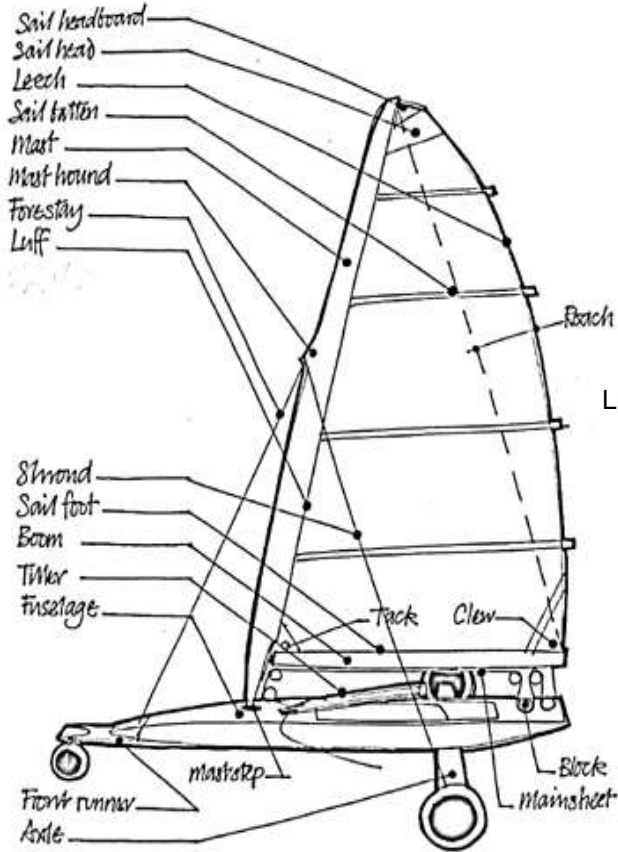
A one piece overall or similar is useful for keeping warm on the airfield. On a beach a dinghy suit is essential under most conditions. If the beach has water filled gulleys a dry suit is recommended.

Shoes

Non slip soles are essential. Trainers or similar on the airfield. Boots if the beach is wet.

Parts of a land yacht

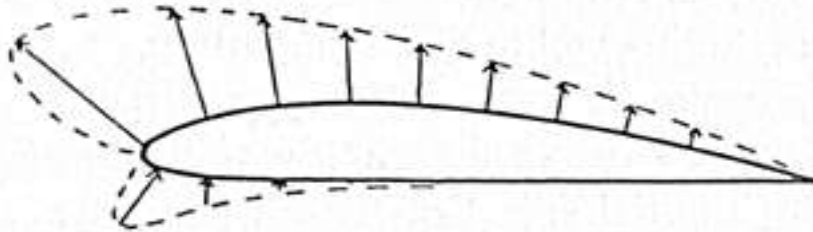
Yacht Parts.



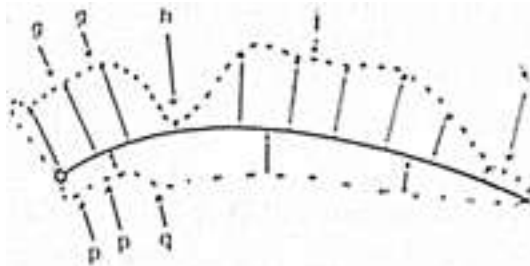
Sail parts

How Land Yachts Sail

Go to <http://www.grc.nasa.gov/WWW/K-12/FoilSim/>



Pressure field around an aircraft wing at 200mph



Pressure field around a dinghy mast and sail

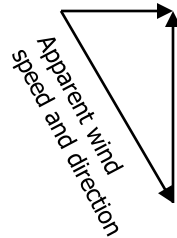
Apparent Wind

The direction and speed of the wind acting on a land yacht is the result of the actual wind and the yacht speed.

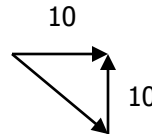
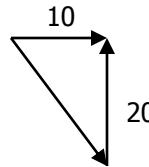
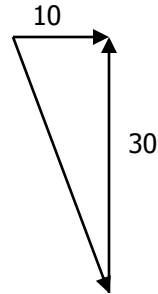
When the yacht is moving faster than the wind speed, the wind appears to come from in front of the yacht. This is called the Apparent Wind and changes both speed and direction as the yacht speed increases or decreases. It also changes with the speed and direction of the actual wind ie gusts.

It is important to understand how the apparent wind affects the position of the sail and best direction for the yacht.

Actual wind speed and direction



Yacht speed and direction



Forces on a Land Yacht

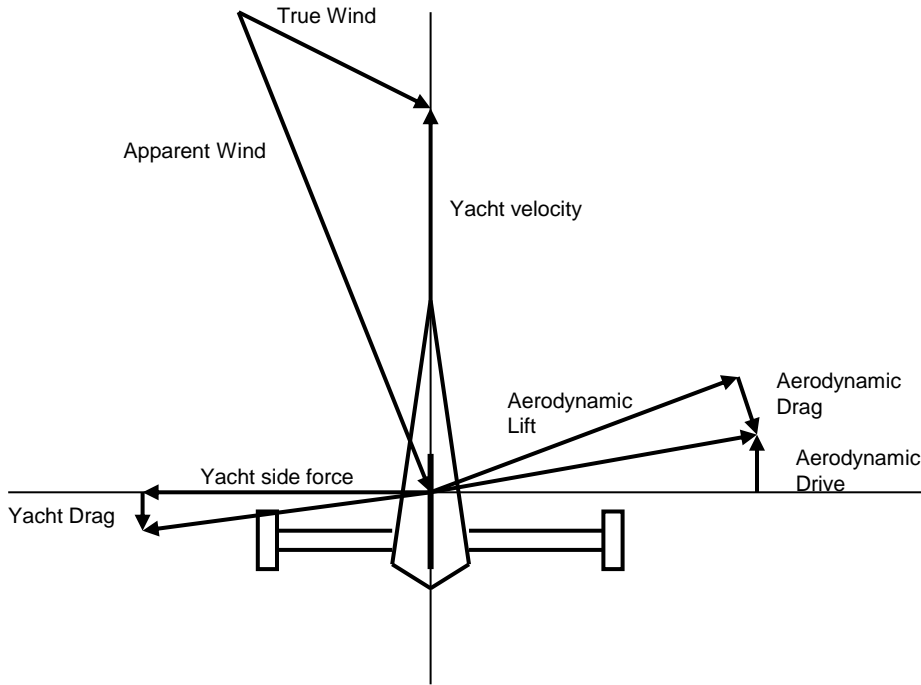


Fig 1 shows the forces at work on a land yacht and the associated triangle of velocities. Once the yacht has achieved an initial velocity, the true wind speed and the yacht speed combine to produce an apparent wind at an angle much closer to the direction of travel of the yacht. The apparent wind develops an aerodynamic force in the sail (as a result of pressure differences on each side of the sail) which has component parts of drive, drag and side force. The more efficient the sail is, the lower the drag and the greater the drive force. As long as the drive force is greater than the total drag the yacht will continue to accelerate, and when the 2 forces are equal the yacht will be moving at a constant speed.

Yacht Controls

Mainsheet - controls the tension in the sail and the speed at which the yacht sails - accelerator

Foot bar - control the steering and direction of the yacht

Hand Brake - Slows down the yacht - ONLY used on sand

Points to Remember

1. Mainsheet

Trailing the mainsheet on the ground looks as sloppy as it is. It is the quickest way to ruin a good rope, and the sheet can also catch on stationary objects. The correct way to store the mainsheet is to stow it by your side or on your lap, so that it can run out freely if necessary. Before putting the mainsheet in the yacht lay it out straight on the ground and remove any twists and kinks.

2. Stopping

The correct way to stop is:

- (a) Approach your stopping point from DOWNWIND of it
- (b) Let the mainsheet loose
- (c) Steer into the wind
- (d) COAST to a stop

Note: On runway circuits slowing down to a standstill is best achieved by COASTING onto the grass, since the grass has more drag than concrete. *However – coasting is the operative word.* If you drive onto the grass under power the following things may happen, if there is a fresh wind.

The yacht may capsize due to the increased resistance to the drive The yacht may skid badly, causing loss of control and hence danger to others (this also messes up the grass)

Trainee pilots may see others stopping by dragging their feet on the ground. This is NOT the approved way of stopping, and can be dangerous for the beginner

Points to Remember

3. Parking the Land Yacht

The following points apply. The yacht should:

- Be pointing into the wind
- Be tipped on its side

Failure to comply with the above points could result in a runaway yacht, which can accelerate very quickly indeed and can cause extensive damage.

4. Think AHEAD

- At least 50 metres and often 100 metres.

Remember that you can't stop as easily as you can in your car – so – learn to keep clear of situations that look awkward.

5. In an EMERGENCY

If the yacht starts to tip uncontrollably LET GO OF THE MAINSHEET or at least let it run out fast, and TURN INTO WIND. DO NOT HOLD onto the mainsheet like grim death (People seem to have this tendency)

Remember it is your *accelerator!*

6. Wind Strength

Due to the high speeds that land yachts reach the apparent wind is usually much stronger than the true wind and comes from a direction closer to the path of the yacht. This shift in wind direction can be as much as 120 degrees. Yachts turning off a downwind leg onto a broad reach or an upwind leg experience a dramatic change in wind strength of the apparent wind which may treble and therefore introduce hiking and possible capsize.

Golden Rules

DO

Plan your moves well ahead

Look around before turning

Use a seat belt (if fitted)

Wear a crash helmet when sailing - ALWAYS

DON'T

Wrap the mainsheet around your hand




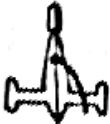






Put your feet down to stop

Get out of the yacht in front of the axle

Hang on to the mainsheet

When in Doubt - Sheet out!

Sailing Directions

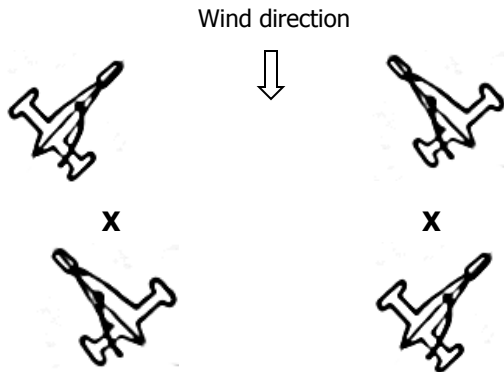
<p>Beating or Tacking Yacht is heading at an angle into the wind</p>	Wind 	
<p>Reaching Yacht is heading across the wind</p>	Wind 	
<p>Broad Reach Yacht is heading at an angle to the wind</p>	Wind 	
<p>Running Yacht is heading in the same direction as the wind</p>	Wind 	
<p>Upwind Yacht is heading directly into the wind</p>	Wind 	

Luff & Gybe Turns

Luff or Tack turn

Yacht changes direction by zigzagging across the wind changing from one tack to another to make headway against the wind.

Sail should be sheeted in hard at point X to prevent possible loss of steering.

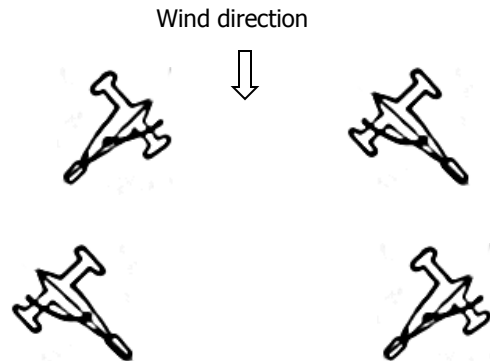


Gybe turn

Yacht changes direction when changing from one downwind tack to another.

Sail should be sheeted in progressively until yacht is in line with the wind and then released when the sail comes about.

Failure to carry out this manoeuvre can result in a delayed gybe which can cause the yacht to hike or over turn.



Sailing Rules

Right of way - upwind



Wind direction



Rule 1

The yacht on your right has right of way

Right of way - downwind



Wind direction

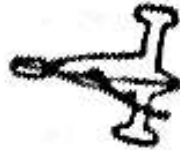


Sailing Rules

Right of way - opposite directions



Wind direction



Right of way - opposite directions



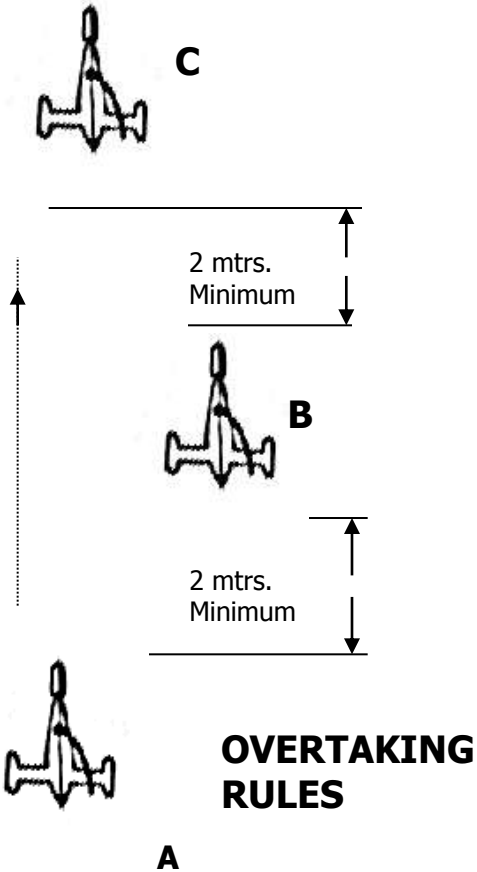
Rule 2

Pass left side to left side allow a yacht's width in between.



Wind direction

Sailing Rules



Rule 3 Overtaking

Normal overtaking can be on either side

Yacht A is overtaking yacht B and must not cause yacht B to have to alter course. Safety in an overtaking manoeuvre is responsibility of yacht A the overtaking yacht.

Yacht C has overtaken yacht A. Yacht B must maintain a steady course whilst there is a minimum of 2 mtrs. separation between the yachts extremes.

Yacht Control

The simplest way to control a hike (when the yacht lifts in a gust) is to let the sheet rope out until the all 3 wheels are on the ground. The amount of rope varies but is typically up to an arms length.

Controlling hiking

Early hike – maintain the sheet tension and turn slightly into wind turning back to the original direction when the wheel is down. On a downwind leg turn slightly down wind.

Medium hike – Sheet out sufficiently to bring the wheel down, don't change direction.

High hike – Let the sheet run out turn away from the wind.

Care must be taken on an upwind leg not to turn too far away across the wind in a high hike without letting the sheet far enough out.

THE MOST LIKELY CAUSE OF A HIKE IS WHEN THE SAIL IS OVER SHEETED AND STALLED USUALLY AT LOW SPEED.

As pilots gain experience they will be able to anticipate hikes by watching other yachts and/or sand/grass blowing more intensely.

Pre-Sailing Checks - Class 5

This must become a disciplined habit for all pilots.

With land yacht upright

- Front wheel nuts tight.
- Little or no play in front wheel bearings.
- Steering
 - Check security of drop arm ball joints.
 - Check steering king pin has no play.
 - Connecting rod firm – not too much play/free movement.
 - Full turn side to side for front wheel.
 - All shackles wired in cable steering
- Wheel hubs running free. Wheel nuts tight.
- Mast support clamp tight and secure.
- Mast stay bars secure.
- All remaining nuts tight and preferably Nylock
- Seatbelt not cut or frayed and operational.
- Tyre pressures: Front 15 – 20 P.S.I. Rear 40 – 50 P.S.I.

With the land yacht on its side:

- Head of sail secure
- Safety wheel in place on top of mast
- Sail battens securely tied and at correct tension
- Sail foot tension correct:
 - check tack fastening and clew outhaul
- Sheet running free in blocks, and untwisted. End knotted

Make sure your yacht is properly prepared to sail. If your yacht breaks, SOMEONE ELSE may be injured or damage caused.