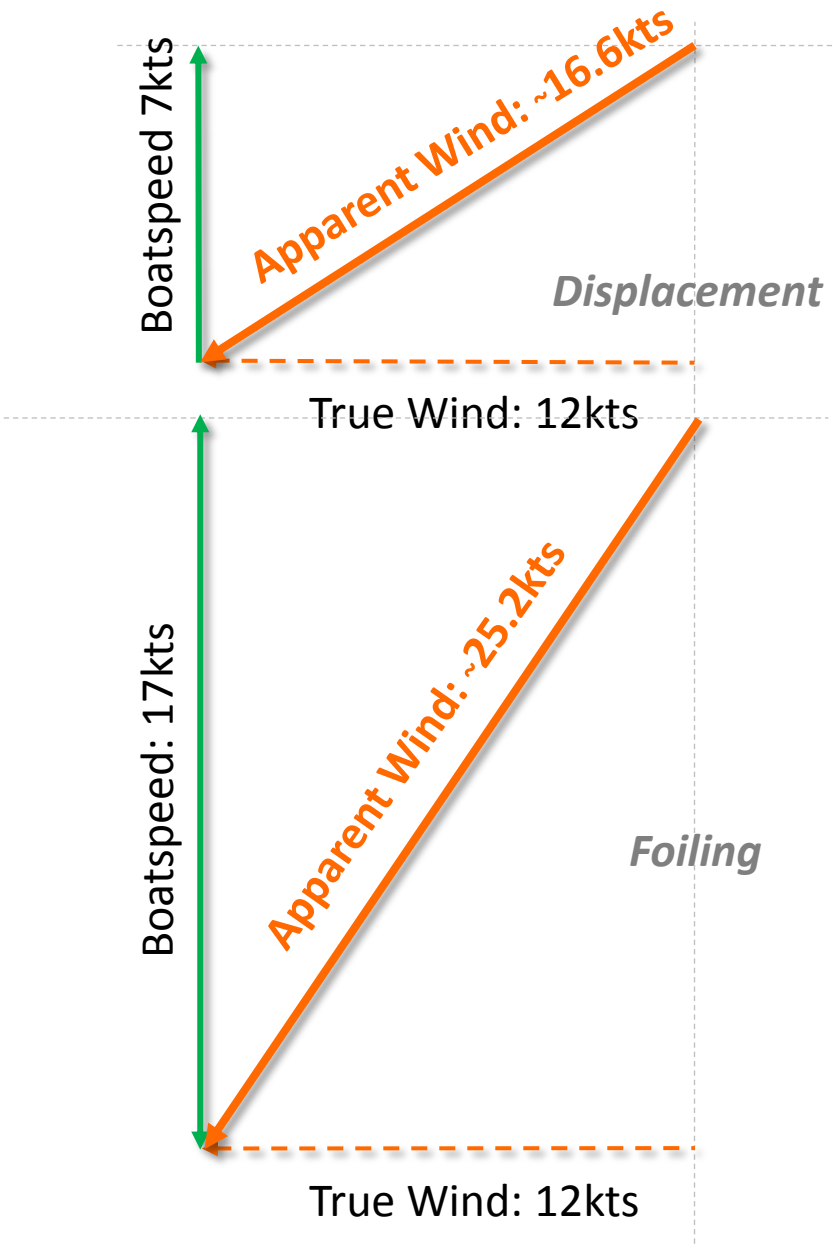
Glide Free Foils – Rig modifications

Introduction

The rigs used on Laser dinghies are quite basic, making it quick and easy to rig. Unfortunately they are not particularly suited to foiling, so we offer some options for improving performance.

Apparent wind



How strong is the wind?

A standard Laser sailing at 7kts in 12 kts of wind experiences around **16 kts** of wind on the sails, which is manageable.

When foiling at 17kts, the apparent wind increases greatly, to over **25kts**.

This means the sails must be trimmed to suit a much higher wind strength when foiling, typically 25 kts.

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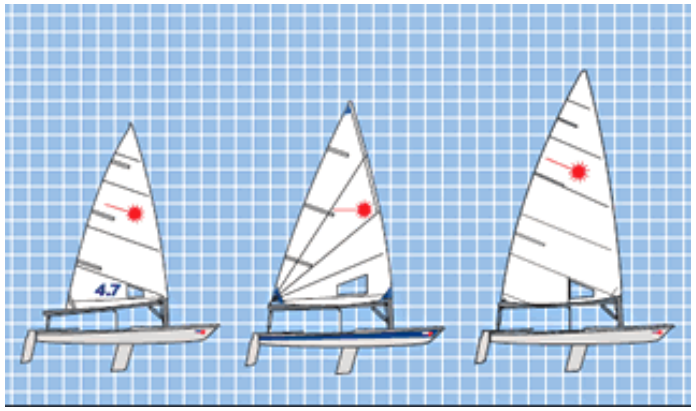
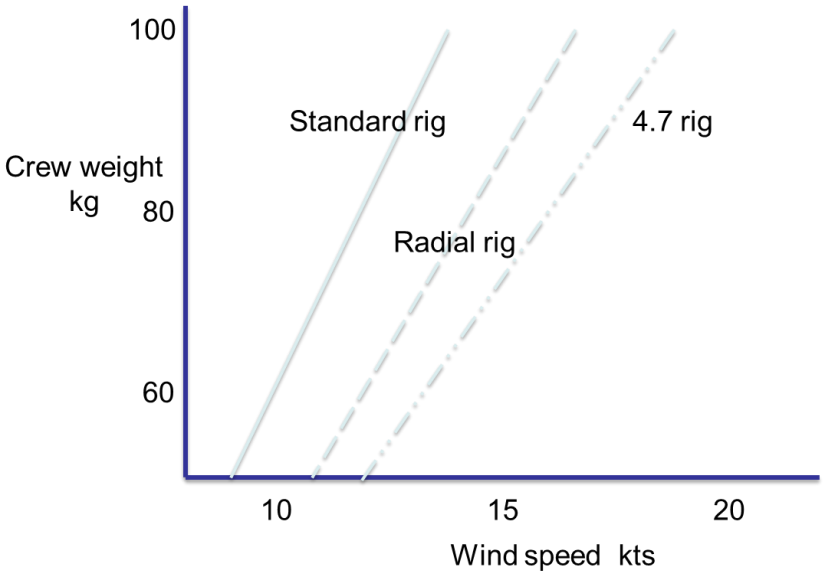
Choosing rigs





Estimated wind speed to enable takeoff with the standard Laser rigs for different crew weights.

Which rig to use?

Typically the “Standard” Laser rig is best for 10-15kts for a moderate weight skipper.

The “Radial” rig is best suited to 12-18kts.

The “4.7” rig gives the best ride, especially in wind consistently over 15kts up to around 25kts.

Specialised larger rigs such as the Rooster are best in the wind range 8-12kts, but easily become overpowered in stronger winds.

Skippers up to 120Kg, can foil and we have even sailed two up at 145Kg in 15kts. Heavier skippers actually find it easier to take off.

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Setting the sail

How to set the sail

Due to the high apparent wind of over 25kts experienced when foiling, you are always sailing in heavy wind and need to flatten the sail to manage the boat.

It is best to have:

Outhaul - tight

Vang – tight – end of boom approx 300mm from deck with no sheet tension

Luff tension – extreme – this bends the mast and flattens the top of the sail.

Sheet tension - eased

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Sheeting the sail

Rapid reaction

Rapid reaction rates are very important when foiling. The standard Laser sheeting system makes it too slow to respond.

It is best to steer very straight and steady and trim the sheet rapidly to maintain the boat on a steady path.

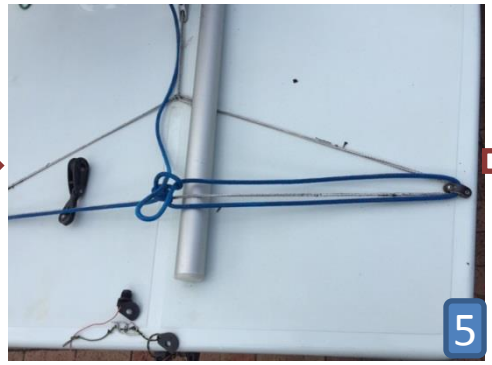
We have trialled 2:1 and 3:1 centre boom sheeting which works very well, but this puts excessive load on the boom, which can **break** unless it is stiffened.

We therefore recommend 1:1 end boom sheeting for best results.

End boom sheeting

Sheeting bridle

When using 1:1 sheeting we recommend making a bridle as shown below.



Larger rigs

Rooster rigs

It is very natural to think that a large sail will give you more power to take off when foiling in lighter air, and it does.

There are several options for this, the most common is the Laser Rooster rig which are normally suitable for winds of 0-15kts apparent wind.

Our experience is that larger sails do indeed result in takeoff at 1-2kts lower windspeed.

The main issue is that you are then foiling at over 15kts in a 12 knot breeze. The apparent wind increases to 25kts and you are completely overpowered.

Solid Wing rigs

X wing rigs

In keeping with the latest design trends in sailing, some skippers are also experimenting with solid wing sails.

This X-Wing sail from Solid Wing Sails in Florida is also being trialled with foils.

The results will be very interesting!

Flattening sails

How to flatten a sail

When foiling, all of the standard Laser sails are too powerful and have a lot of drag, making the boat difficult to control and keep upright.

Apart from using the existing luff, foot and vang controls, you can also surgically flatten the sail by reducing the luff round. Best done with an old sail!

You can easily do this, by taking a fold in the sail maximum 75mm deep and sewing this loose cloth as shown. This applies to both Standard and Radial sails.

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Flattening sails

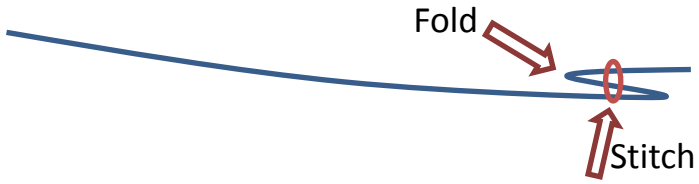
How to flatten a sail

It is easy to flatten your sail at home. Alternatively ask your local sailmaker.

It is very quick, simple and cheap.

Tip the boat on its side, pull on all controls hard. Then pull the loose cloth to the front, mark the excess against the back of the pocket and then sew along this line.

The flattened sail is much easier to handle and performs much better.



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Wings!

Increased righting moment

Trials have been carried out by adding wings on Lasers to gain righting moment.

This helps a lot for sailing upwind when foiling and makes the boat easier to handle, although it is more difficult to get out for hiking.

Wings are quite effective, however they do put a lot more load on the boat, risking failure of the mast step.

They are therefore **not** recommended.

Carbon spars

Specialised rigs

We have trialled larger sails and even a set of full carbon spars for the Laser

The main issue is that you are then travelling at 15-18kts in a 12 knot breeze. The apparent wind increases to 25kts and you are completely overpowered with larger sails.

The carbon spars make a very big improvement to handling due to their light weight, but of course they are non-standard Laser equipment and expensive.