



Sailing Tips

In this document we describe how to set up your boat for foiling and outline some tips for foiling with Glide Free Foils for your Laser.

Foiling for the first time

Foiling dinghies provide a thrill unlike other forms of sailing. Managing the speed and acceleration is not a natural reaction, even for experienced traditional dinghy sailors. Incredibly, Glide Free Foils supercharge your Laser and require a matching level of skill to master. Foiling is certainly not for the novice or feint hearted sailor. Upgrading your Laser with foils is akin to moving from a Dinghy to a Sailboard, it is not something that everyone can easily master at their first attempt.

Initially you may only be able to foil successfully downwind, which is definitely recommended. This is just like dinghy sailing with a spinnaker for the downhill ride. You may initially need to sail in displacement mode upwind before lifting off to fly for fun downwind. With a little experience you will start foiling very fast across the breeze like a sailboard, and finally you may even be able to master fast upwind sailing.



Fun foiling on your Laser with Glide Free Foils

To manage foiling for the first time usually takes a few days of practice, persistence and even professional instruction. With a foiling Laser you need to learn how to take off and then stay upright. You will perhaps for the first time experience true 'apparent wind' sailing and will be on the edge of control. You will need to be patient and very persistent to get it right... but you will be well rewarded!!



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Takeoff

You should first start in moderate, steady winds on an open bay without too much traffic. Even stopping requires some special skill! Don't bother to go out in winds below 10kts, this may only serve to frustrate you as you really need a decent puff of wind around 12kts to lift off, although once up and foiling at speed you can continue to foil through lulls and patches of lighter air.

Once your foils are properly engaged, look for an area of clear water ahead and wait for a consistent gust of around 12 kts or more. Sit well aft at the rear of the cockpit, bear away onto a broad reach and sheet on enough to fill the sail. Once your speed builds, lean hard and gently bear away. The boat should start to lift clear of the water. If it struggles to lift, you are probably pointing too high. Make sure you are pointing well downwind with the sheet well eased. Heeling the boat slightly to windward by leaning hard, assists with early takeoff.

As the boat lifts and clears the water, it levels out and accelerates very quickly, the apparent wind moves ahead, luffing the sail and providing drag. As the boat lifts clear of the water you may get quite nervous about how to react. If you do nothing or do not react quickly enough, the boat will fly high out of the water and may then crash, fall in to windward or both!! A little embarrassing and perhaps frustrating until you learn to bear away and sheet on quickly. Trimming, leaning and steering in the right proportions is absolutely essential. If you become overpowered, ease the sheet a little and sit well forward.



For your first sail, choose a steady breeze and moderate 10-15kt winds. Lighter sailors can use a Laser Radial rig, with very good performance.

Always steering and trim the sheet to keep the boat moving, and prevent the sail luffing. In stronger breezes you will soon find yourself going very fast downwind with the sail sheeted in quite tight. Enjoy the rapid increase in speed and sheer thrill. This is what foiling is all about!!

As you get the feel of the boat, some of the things you will notice are that the boat remains quite stable and all goes quiet, save the swish of the foils and wand as the boat accelerates well beyond the wind speed. This feels like low level gliding and is quite a surreal experience.



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We recommend that on your first trials, simply aim to sail downwind and keep the boat balanced upright. Resist the temptation to use the rudder violently, only very small tiller movements are required. Trimming the mainsheet quickly is very important, and is the reason we recommend centre boom sheeting, as it is much quicker to trim the sheet. It also solves the age old problem of catching the mainsheet around the stern when gybing.

Just keep the sail full at all times and keep the boat going fast, get used to the feeling and how to trim both tiller and rudder.



Foiling at speed: Note centre boom sheeting for responsive trimming.

Strong winds

Sailing technique in a foiling Laser is a skill to be honed. In strong winds the Laser pops out of the water on a reach quite easily, as soon as you sheet on and lean hard. On a broad reach you just sit back and enjoy the ride, but on a tight reach you will need to lean quite hard and heel the boat slightly to windward to take off. The skill then is to stay up, under control and make sure you trim for the changes in apparent wind.

As your top speed rapidly increases, the boat begins to ride higher. To keep it in the water, simply move your weight forward. While it does not at first seem a natural reaction, the boat becomes more stable and even faster and the height control becomes more stable. For and aft trim of your body weight is an important tuning control you exercise over the boat, enhancing your skill in this area greatly improves performance.

Driving the boat hard at top speed is also an art, as foiling is different to other methods of sailing. If you are hit by a gust do not round up, the rig is loaded and the boat starts to drive down, you simply hang on, bear away, roll your weight aft and wait for it to recover. If on the other hand, the sail luffs, if you ease the sheet or even if you sail into a lull, the boat rather unexpectedly flies high in the air as the load on the foils is reduced. It is best to recover by sheeting on and bearing away. It is a real challenge to experiment and develop the skills to get the best out of the boat, even for experienced skippers. For inexperienced skippers it is quite simple to bear away and foil off downwind at high speed. The boat remains remarkably stable.



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Surviving a crash

A crash occurs when the main foil lifts to the surface and ventilates, sucking air across the top of the foil, which results in a dramatic loss of lift. The boat rapidly drops back to the water surface, hitting the water with lots of spray. When the boat crashes it is always a soft landing and easily controlled. The boat does not nosedive or cartwheel, but can fall in to windward if you do not respond quickly. In many cases you can just hang on and wait for it to recover and lift off again.



The initial crash – hang on!



Recovery



Back on deck!

Surviving a crash on a foiling Laser at high speed. A soft landing, no nosedives or cartwheels.



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Foiling upwind

Once you get the hang of reaching, gradually head the boat up into the wind, steadily sheeting in and leaning hard. Perhaps the greatest skill is required when foiling to windward. You will need to lean very hard, as well as trim and steer accurately. Keeping the boat heeled to windward is critical and finding the groove and keeping the boat there is a real challenge even for skilled sailors. You need around 3-5 degrees windward heel, letting the boat fall in on top of you windsurfer style.



Foiling upwind with a Radial sail in 12-15kts of wind –takes skill and stamina

At first it is an uneasy feeling as there is a risk of capsizing backwards. As you practice this technique, it becomes possible to steer higher into the wind, keeping the speed up and gradually strapping on the mainsheet. It is a unique feeling, as you seem suspended in mid air, with the boat going both fast and high. This is best done in a steady breeze.

It is important to realise that high speeds upwind are normally achieved at much lower angles to the breeze, due to the change in apparent wind. This means that when sailing at 12kts upwind, you will not point as close to the wind as a Laser in displacement mode doing only 6 kts. In fact to point as high into the apparent wind, you will sail around 12-15 degrees lower to the actual wind direction than a slower boat, but your higher VMG will more than compensate for this.

As sailors become more skilled, they will find better ways to take advantage of this effect, with highly developed techniques for achieving windward heel upwind. We have found that thick hiking pads make it much easier to hike comfortably when heeling the Laser to windward when taking off and foiling upwind.

In light winds

In marginal foiling conditions of 8-12kts, it is necessary to work the boat with your body to get an early takeoff. There are 3 main elements to this,

- a) broad reach and sit well aft.
- b) Lean hard while heeling the boat to windward keeping a neutral helm,
- c) bear away and sheet on as the boat lifts.

It is a delicate art, requiring practice, but you are well rewarded as the boat foils early and glides so effortlessly over the waves.



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We have found that larger sails will naturally provide more power for an early takeoff. It is also much easier for lighter skippers to lift free of the water. We have trialled larger rigs, but light weight skippers quickly become overpowered once foiling, so it is recommended to stick with a sail that you can readily manage, rather than powering up with a big sail. But if you want the challenge, give it a go!



Leaning aft assists with early takeoff.

Moving your body

If you stay aft in the cockpit, the boat may fly too high, occasionally crashing. Initially this effect can be reduced by giving more lift on the rudder to trim the nose down. The downside of this is that it makes takeoff more difficult. It is far better to develop the technique of moving your weight forward in the boat once you are clear of the water. This trims the boat bow down, keeps the bow level and places more weight over the main foil. It also enables you to maintain an easy takeoff and makes it easy to keep the boat flying in lulls by moving your weight aft again. You will eventually find that movement of your weight for and aft while foiling is a key factor in trimming the boat.

Flying high and fast with your weight well forward results in a stable, steady flight and gives the best speed. It also enables you to start going upwind at high speed.

Reducing lift in strong winds

In strong winds, you may wish to reduce the lift on the main foil and fly low and under control. To do this, rotate the gear handle part way, before engaging the foil. This will engage the gear one tooth away from the normal position, significantly reducing the lift of the main foil. You can also use this position for low drag upwind displacement sailing.



Rotate the gear handle part way, prior to engaging the handle.



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Settings

When first taking your boat for a sail with the new foils, make sure that rudder foil is at the minimum lift setting, with the adjustment wound fully up. This will ensure maximum lift and relatively easy takeoff. Initially this may mean that the boat rides too high, but will give you a good feel for takeoff.

If the boat rides too high and crashes. Ease the sheet and stop the boat. Wind the trim adjusting thumbnut on the rudder clockwise to trim the bow down. It will take you a little experience to find the optimum setting for your weight and the rig you are using, but once set, you can continue to foil without the need for further changes.

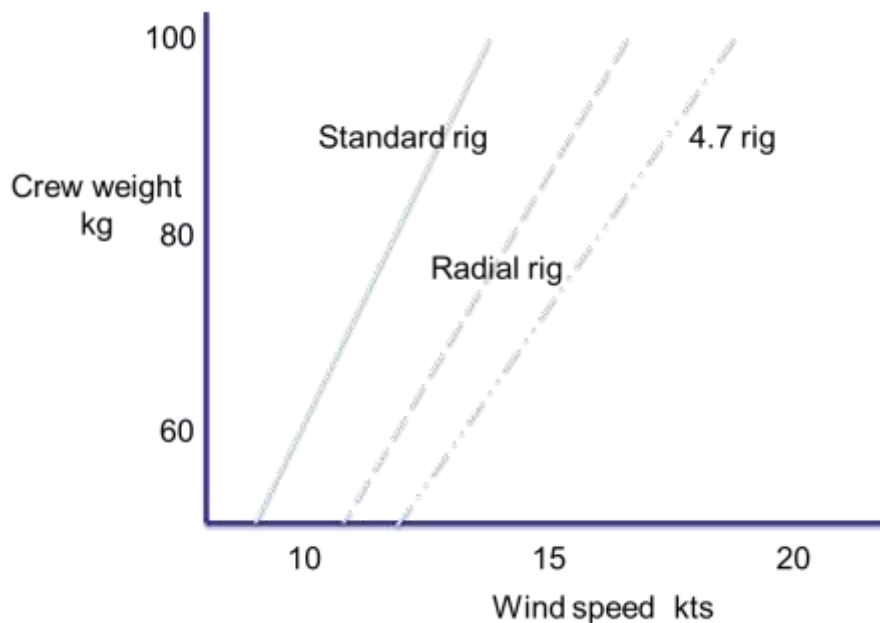
If you are heavy, takeoff requires higher wind speed, but ironically, your weight makes the boat rotate more easily and takeoff is relatively easy.

If you are light, it will be more difficult to sink the stern during takeoff. Use less lift on the rudder to help takeoff, sit well aft and be prepared to move to the front of the cockpit when up and foiling.

Rig size

To enable early takeoff in lighter winds, we have trialled larger rigs up to 9.0 sqm. While it may make 1-2 kts difference in the critical wind for takeoff, these larger rigs very quickly become overpowered, even in 12-15kts and are difficult to handle once up and going. The key to good all round performance is definitely efficiency, not power.

The standard Laser rig is a reasonable size for most skippers, enabling the boat to pop out of the water in just 10-12 knots of wind and it remains manageable up to around 15-18kts of wind speed, provided it is trimmed appropriately and the luff tension is applied heavily to flatten the sail.



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



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Surprisingly we have found that the smaller rigs, especially the Laser radial, only requires an extra 1-2 kts of windspeed for takeoff, but has significantly lower drag and heeling moment, making it far more manageable and faster than the bigger rig. In strong winds, around 15kts, it has even been possible for a 96Kg skipper to takeoff with a Laser 4.7 rig.

Soft rigs

There is a general perception that foiling requires solid wings or fully battened sails with pocket luffs and camber inducers to work at all. Much of this misconception is based on what we see in the sailing press. The reason that AC72 and AC45 cats have solid wing sails is that it is mandated by the rules. In both Moth and A class cat classes where these solid wing rigs have also been trialled, the standard rigs have proven superior across the wind range, and are of course far more practical.

While the soft sails used on Lasers are generally heavily criticised as being 'inefficient', they are regularly sailed in strong winds with quite reasonable performance. In fact the major issue is with the sails being too full, rather than any inherent issue with the soft sail itself being 'slow'. Our trials with the standard Laser rigs have proven good performance, even in strong breezes, provided the correct rig size is selected and that it is adequately flattened using the luff, foot and vang controls. It helps to ease the vang in stronger breezes to maintain control in gusty conditions.

We have no doubt that it will be possible to further improve the performance of rigs using similar techniques employed by sailboards, but the existing standard Laser rigs have proven more than adequate for fun foiling, without any alteration up to boatspeeds of around 20-25kts, which is more than fast enough for most skippers.

Wing tip choice

In the beginning, it is recommended to use the large, high lift, Spitfire wingtip in 10-15kt winds, to get the boat to lift early and fly in moderate conditions and experience easy foiling. With some practice and skill, you will be able to graduate to the Delta speed foil wingtip for high speed in winds over 15 kts. This foil has a much smaller area, far less drag and is significantly faster. It is also much easier to sail with in strong winds.

To change the wing tips, depress the locking pin with the nipple on the end of your Safety Hook and pull the tip out of the aluminium extrusion. You can then slide in the new tip, depressing the spring clip and then let it engage with the locking hole.



High lift Spitfire wing tip and low drag Delta Speed foil wing tip



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Frequently Asked Questions

The following answers to frequently asked questions may also assist to guide you:

What conditions can I sail in?

We recommend that you start your foiling in a steady 12-15kts breeze, flat water and a large open space. If the wind is consistently under 10kts, you will be frustrated as you may only be able to take off in the strongest gusts. Once the breeze exceeds 18-20 kts, the boat becomes more difficult to handle, especially with the standard rig, as might be expected. While we do not recommend use in breezes over 25kts for safety reasons, surprisingly we have found that experienced, heavier skippers can handle winds well over 25 kts with the 4.7 rig using the small foils.

Do I need a special rig?

The foiling kit is designed for use with the 3 standard Laser rigs. While the standard rig works well in lighter winds 10-15kts, surprisingly we have found that the smaller sails are much easier and more controllable when foiling because of the high apparent wind. We recommend that you start with a Radial rig and in stronger winds use the 4.7 rig for high speed foiling.

Specialised rigs may further improve foiling performance, but they are not necessary for you to experience the thrill of foiling on your Laser.

How do I set up the main sheet?

The standard Laser sheeting system works fine, although we have found that a 3:1 centre boom sheeting set up is far easier and faster to trim than the standard end boom sheeting. For a younger/smaller person 4:1 centre boom sheeting works very well. Do not oversheet the main, use vang to hold the sail flat. Centre boom sheeting also removes the typical Laser handling problems with the mainsheet getting caught around the transom during gybes. The only issue is that this puts a higher bending load on the boom, which may break in strong winds, if not handled properly.

What to do if the boat is flying too high?

*Adjust the thumb nut on the rudder, anti-clockwise to trim the bow down.
Pull the mainsail on, keep it full and bear away and sit further forward in the cockpit.
Re adjust the centreboard tooth engagement 1 notch in the gear block less to give less lift.*

What do you do if boat does not want to lift out?

*Check that the gear handle is fully engaged and has not moved forward. Make sure you have two turns of the retaining cord around the toggle pin.
Adjust the thumb nut on the rudder, clockwise to trim the bow up.*

Sit further back in the cockpit to get your weight aft.

Don't point high initially, bear away on a broad reach, heel the boat to windward slightly don't pump or bounce hard, and just let the boat Glide Free.

How should the sails be set up?

We have found that heavy luff tension and out haul pulled out very tight works best, also with a lot of vang tension. You are effectively sailing in over 20kts of apparent wind while foiling, the sails need to be set up for heavy air sailing.



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Should I pump the sail to get the boat to lift off

No, we have found that hard pumping of the rig and bouncing your body tend to keep the boat in the water, it is better to lean out hard, bear away to a broad reach, heel the boat slightly to windward and let it lift out by itself.

Why does the boat fly higher when mainsheet is eased

It is interesting that the boat actually flies higher (momentarily) if you ease the mainsheet or run into a lull with lighter wind. This is because the load from the wind on the rig pushing the boat down is relieved and the boat can then fly higher, well for a few seconds anyway. It is a strange, surreal feeling, which applies to all foiling sail craft. If you keep the sail trimmed and full, by bearing a way and sheeting on, you can control this lifting out.

Training and coaching

Glide Free Design provides you with the equipment to experience foiling on your Laser, but cannot train you. That is something you have to do yourself with perseverance and practice. We supply documentation and instructional videos, but we cannot turn you into a master foiler... that is up to you!

Training and coaching services are being made available via local distributors of Glide Free Foils, Sailing schools and Coaches. Glide Free Design fosters skilled training resources to support you. We have established a list of Glide Free accredited sail training resources, which is available on our website. You can contact your local distributor for guidance on local training.

Please go to our website www.glidefree.com.au for the latest tips and information on Glide Free Foils
We wish you many hours of fun sailing on your new Glide Free Foils.

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