

# Laser SB<sup>3</sup>



## RIGGING MANUAL



## **SB<sup>3</sup> Rigging Instructions**

The Laser SB<sup>3</sup> rigging instructions are a guide to rigging your boat. Due to production supplies certain parts may be slightly modified from those shown. This instruction manual is not a guide to sailing your craft and it should not be considered suitable for the task of learning to sail a boat.

## **LASER CENTRE**

Options, accessories and spares are available from Laser Direct +44 (0)1295 252599

[www.lasersailing.com](http://www.lasersailing.com)

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OX16 8TL  
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## **GLOSSARY**

**Aft:** Back of the boat

**Backstay:** Support at the back of the boat to the top of the mast used to control the mast bend, and support the mast.

**Bow:** Front of the boat

**Burgee:** Wind indicator usually a flag

**Batten:** A thin stiffening strip in the sail to support the leech

**Boom:** A spar at the foot of the sail

**Cleat:** A fitting used for holding / securing ropes

**Clew:** Back lower corner of a sail

**Cunningham:** an eye in the sail above the tack of the sail

**Foot:** Bottom of the sail

**Forestay:** The wire supporting the mast at the bow of the boat

**Gennaker:** Isometric sail hoisted when sailing downwind

**Gennaker pole;** the Pole, which extends to fly the gennaker tack from.

**Gunwale:** The outermost edge of the boat

**Gudgeon:** Fitting on the transom and rudder used to hang rudder

**Granny rail;** The stainless steel rail on the side of the boat.

**Gnav:** Used to control the leech twist and shape of the sails can be referred to as Vang.

**Head:** Top of sail

**Halyard:** A rope or wire used to lower or hoist sails

**Jib:** Front sail

**Jib Sheet:** Control rope for the jib

**Leech:** Trailing edge of the sail

**Luff:** The front edge of the sail

**Mast Heel:** The fitting at the base of the mast

**Mast step;** The fitting on the boat where the mast heel is located

**Shrouds:** Wire supporting the mast

V1 / D3 – Main shroud

V2 / D4 – Cap shrouds

V1 – Lower shrouds

V2 – 2<sup>nd</sup> set of lowers

**Spreaders;** Metal struts placed in pairs to support the mast side ways and control the bend in the mast.

**Stern:** Back of the boat

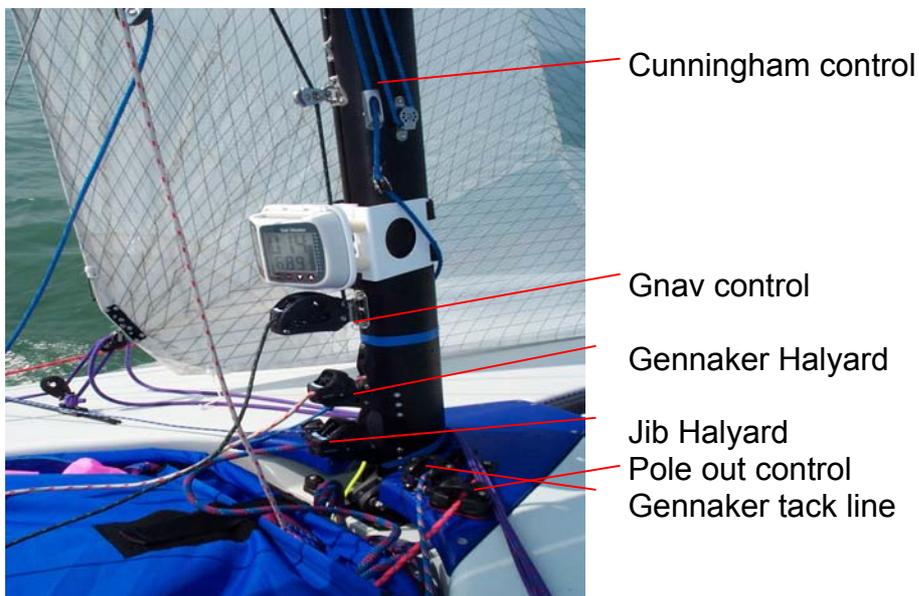
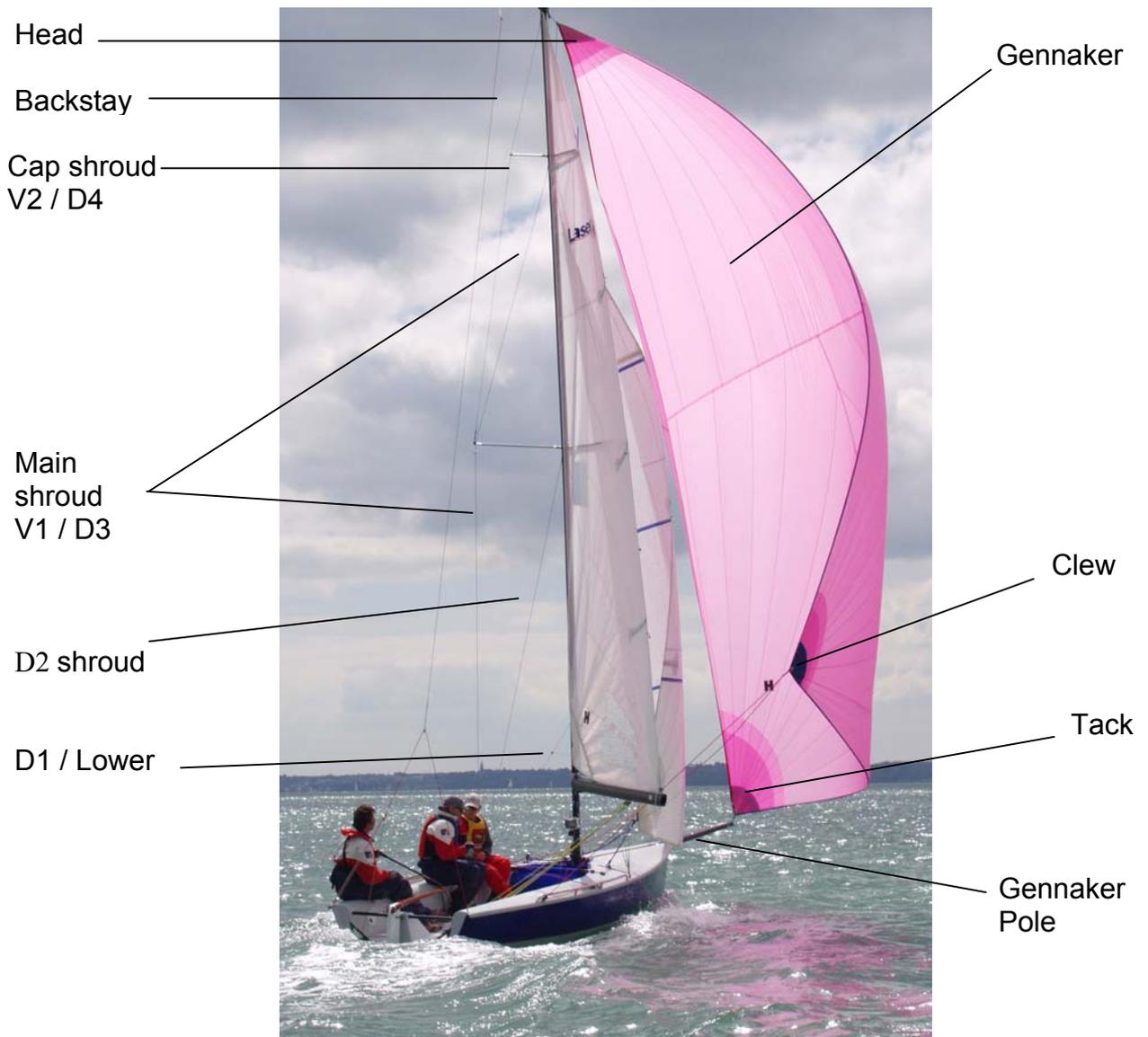
**Stem fitting:** Stainless fitting at the bow which the forestay attaches.

**Tack:** Forward lower corner of the sail

**Traveller:** The track that runs side to side that controls the mainsail side ways in the boat. Used in conjunction with the mainsheet.

**Vang:** Otherwise known as the Kicking strap, Gnav.

## USEFUL BOAT TERMINOLOGY



## **MAINTENANCE AND SERVICE**

- Keep the equipment clean by frequently flushing with fresh water. In corrosive atmospheres stainless parts may show discoloration around screw holes and rivets, this is not serious and can be removed with a fine abrasive.
- Excess water should be removed from the hull.
- Ropes, rigging and fittings should be checked at regular intervals for wear and tear, **including the keel winch gear**.
- All moving parts should be lightly lubricated to avoid jamming, i.e., McLube, Dry Teflon or a dry silicone based spray.
- Inspect shackles, pins and fittings – tape up to stop snagging, coming undone.
- When refastening screws do not re – use Nilock nuts more than three times.
- Do not leave heavy loads on the blocks when not in use as this can distort the bearings.
- Seals on the main hatch and small hatch covers should be checked regularly and replaced if damaged.
- Damaged or worn parts should be replaced.
- Trailers should be rinsed with fresh water and checked at regular intervals. It is recommended that the trailer be serviced annually.
- Gel coat damage should be repaired as soon as possible. Gel coat specifications and repair kits available from Laser Direct.
- UV light will cause fading to some components and fittings, a cover is recommended to reduce the UV degradation.

## SAIL NUMBER POSITIONING

1. Lay the sail on a flat surface starboard side up.
2. Position the 1<sup>st</sup> number ( 3 ) 150mm in from the leech and 60mm below the draft line.
3. The numbers should run parallel to the draft line.
4. Numbers should be 60mm apart.

60mm apart

150mm  
from leech



5. Turn over the sail
6. Position the GBR starting with the R 180mm from the leech
7. The GBR is 60mm above the draft line.
8. The letters are 60mm apart.
9. Position the sail nos 60mm underneath and parallel to the numbers on the opposite side.
10. The numbers should be put on so that they are in line with the numbers on the opposite side of the sail.
11. This will be approx 200mm from the leech.



12. The starboard side GBR should be positioned 60mm above the port side letters and parallel to them.
13. The letters should sit above the port side letters starting with the G
14. The gap between the letters is 60mm.



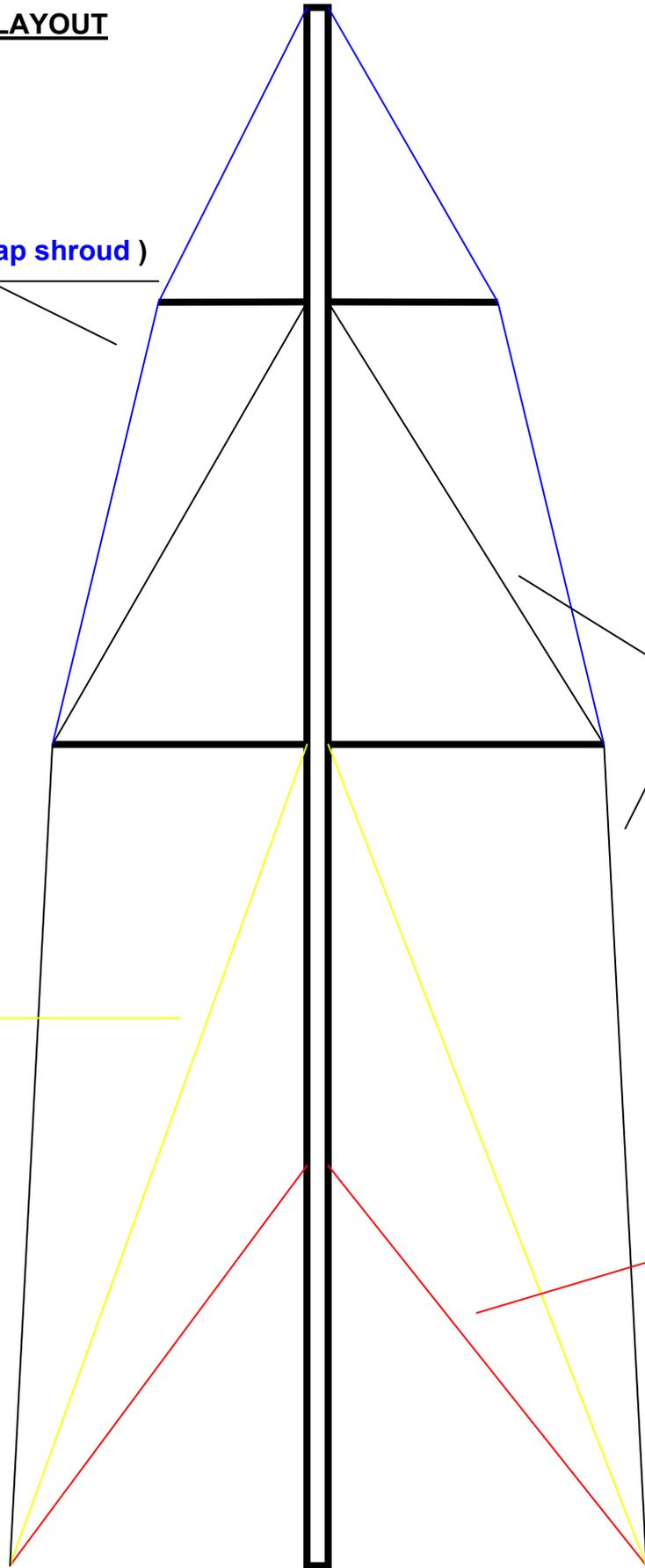
**SHROUD LAYOUT**

**V2 / D4 (Cap shroud )**

**VI / D3 main shroud**

**D2**

**D1  
Lowers**



**D shrouds are diagonals, V shrouds are verticals**  
**V1 / D3 is a continous length, V2 / D4 is a continous length.**

## ASSEMBLY OF THE MAST

1. The mast will be supplied flat packed and will require some tools to assemble:
  - Posidrive screw driver
  - Small adjustable spanner x 2 ( or mole grips ) Care required if using mole grips as these can mark the fittings)
  - Electrician / small screwdriver
  - Tape measure 5meters
  - Rig tension gauge (recommended)
  - Plastic tape
2. The shrouds and halyards will all be in position on the mast and will just require unwrapping.
3. The 2 sets of spreaders and the backstay whip are taped to the mast.
4. The backstay whip has 3 pre-drilled holes and is attached to the crane at the top of the mast. The screws are supplied in the crane.



5. The spreader is fixed with no adjustment. They are marked port and starboard and simply attached with two clevis pins and rings. Ensure that these are taped up.

6. Measure the V2 / D4 ( Cap shrouds ) and adjust the bottle screw to give a distance of 4440mm from the bearing surface of the pin to the bearing surface of the T terminal on this shroud. This measurement may vary slightly and is a starting guide, the objective is to achieve 4" prebend.



7. Fit the V2 / D4 ( Caps)shrouds and the V1 / D3 ( main shrouds) to the T terminals first and then to the spreaders. The Ferrules on the main shrouds are located as shown. Locate the Main shrouds into the spreader end by removing the clevis pin and slotting into position. The clevis pin then fits to the bottle screw on the Cap shroud.

Caps  
4440mm



8. Tape up the main shroud as shown. This holds the feral in position whilst fully taping the end of the spreader assembly.  
9. **Lock** the bottle screw by inserting a small screwdriver and turning **anti** clockwise.



10. V1 / D3 shrouds - Adjust the bottle screws so that they are the same length and showing approx 20mm of thread. (loose, this will be set up once the rig is raised and tensioned)

11. Fit the D2 and the D1shrouds and repeat getting the lengths equal.

12. Ensure that all pins and rings are taped up. The mast is now ready for stepping.

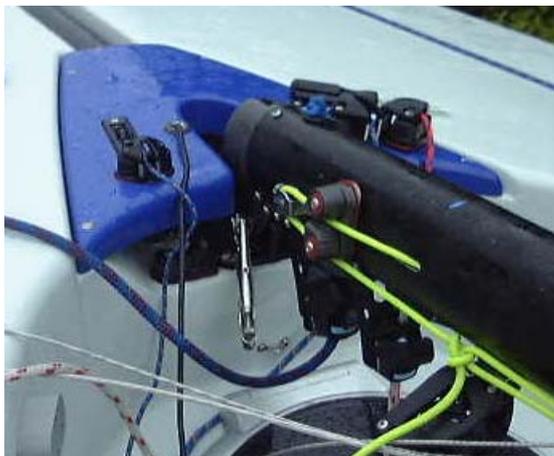


## RAISING THE MAST

1. The rig in transit position. The mast support is positioned at the granny rails. This will be moved to the back of the boat when raising the mast.
2. The trailer should be chocked or lower the rear supports before assembly of the mast.



3. The mast and cradle are moved aft. The mast cradle should be positioned at the back of the boat as shown, and then the mast is moved aft to position the mast heel to the step.
4. The mast should always be positioned on the **port** side of the keel.
5. The Lifting post should not be in position for lifting the mast as it could foul the rigging.



5. The mast step bolt should then be tightened so that the Nilock on the nut is engaged.

6. Attach the shrouds and D2 shrouds. The lowers should remain off at this stage.

7. Ensure that all the shrouds are in their terminals.



8. Tie a bowline in the jib halyard.

9. Pull out the winch hook until the hook is reaching the middle of the granny rails.

10. Attach the hook to the jib halyard.

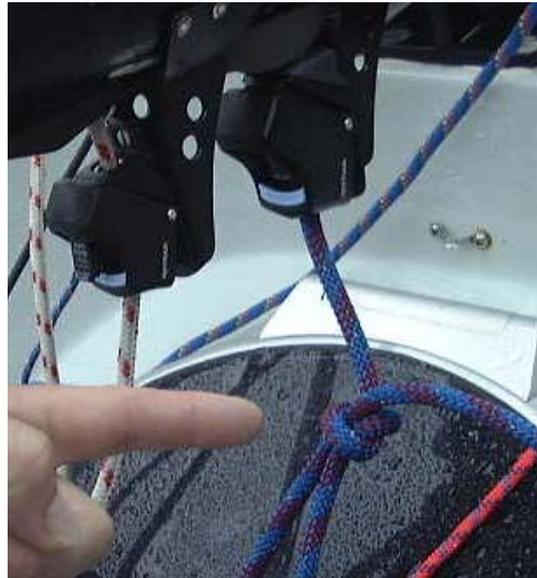


11. Pull in the slack on the jib halyard.

**12. Tie a safety knot in the jib halyard close to the spin lock cleat.**

13. Ensure that the cleat is in the cleated position, AND THE KNOT IS CLOSE TO THE CLEAT.

14. Check the rigging is clear of obstructions and that the jib halyard is not rapped around anything.

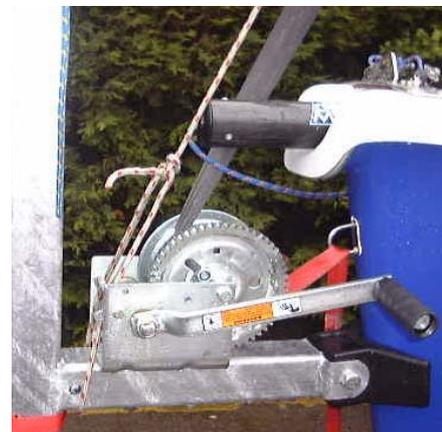


15. The Winch strap must be positioned on the starboard side of the gennaker pole.

16. One person is to operate the winch whilst a second person lifts the mast from the cradle and walks up the boat whilst the winch is reeled in.
17. A third person can assist in the operation by using the gennaker halyard to assist the mast erection.



18. With the mast in the upright position – take the gennaker halyard and secure it to the trailer. Cleat off the gennaker halyard at the mast. This is purely as a safety line whilst attaching the forestay.



19. Using the winch **SLOWLEY** wind the rig forward to engage the forestay clevis pin. Attach the ring to the pin and then release the winch. **DO NOT OVERWIND THE WINCH.**

PLEASE NOTE; The first time the rig is assembled the bottle screws will be in their extended position prior to setting up the rig. Subsequently to the set up of the rig, the bottle screws can be left set in position and this method of raising the mast will enable the rigs settings to remain.

## SETTING UP THE MAST

The objective is to set the mast up to have the correct amount of mast bend and tension in the shrouds. The forestay is a fixed length and is controlled by the class rules, so mast rake is pre set. You are looking for an even bend for and aft and straight side-to-side.



The tension in the V1 / D3 shrouds and the D2 shrouds control the mast bend, as the spreaders are factory set. Adjustment of the tension on the shrouds is done via the bottle screws. To tighten and loosen you will require an adjustable spanner to hold the swage at the top of the bottle screw and insert a screwdriver to turn the bottle screw body in the required direction. When adjusting the bottle screws it is a good idea to keep a record of the number of turns so as to keep the shrouds the same length.

The D1 shrouds are left detached in the initial stages of the set up.



Rig Tension settings;

V1 / D3 Main shroud = 270kg ( 37.5 on a Loos PT1 metric gauge )

D2 Shroud = 213kg ( 34 on Loos gauge )

**Tensions may vary to achieve the correct mast bend.**



The mast bend should be approx 4" at the main spreaders.  
By pulling the main halyard tight and holding the halyard to the aft face of the mast above the gooseneck will give you a good guide.

The halyard will be 4 ½ – 5" at spreader height – this is allowing for the sheave at the top holding the halyard away.

The mast section depth is 4" and is a useful guide comparison.

The lowers D1 shrouds can now be attached and should be just slack.



Lock the shrouds by using a small screwdriver and rotating the grub screw anticlockwise to secure bottle screw.

The backstay control can be used to induce more mast bend if required to flatten the sail.



## VANG SET UP

1. Attach boom to mast.
2. Attach the Gnav bar to the mast.



3. Attach Gnav to the boom.



4. The Gnav tackle ( supplied with Gnav bar ) should be attached by taking the only free end of the black / green fleck rope and feeding this thru the sheave on the top of the boom.



5. Feed this rope thru the pulley on the aft face of the mast and then to the top spinlock cleat.



6. Attach the pulley and shackle on the black / green rope to the lower D ring / webbing on the mast.



7. Attach the large pulley and shackle to the Gnav car on the boom.



8. Attach the last pulley and shackle to the uppermost D ring and webbing on the mast

Vang assembled



## GENNAKER BAG

1. Ensure that the hatch is in the closed position before sailing
2. Hatch shows the handle in the closed position



3. Insert the tube on the gennaker bag onto the bobble first

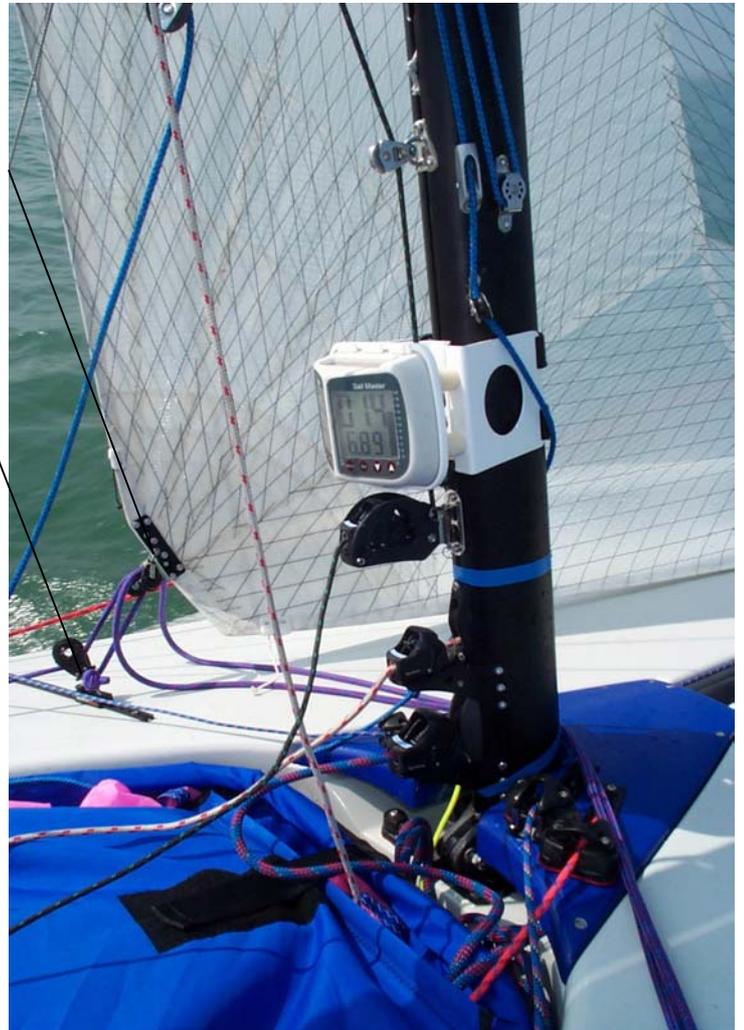


4. Insert the starboard end and secure the elastic to the clip
5. Secure hook on the front of the bag to the clip on the boat



## JIB SHEET AND CUNNINGHAM SET UP

1. The jib sheets are a continuous system.
2. Shackle the two blocks to the jib clew.
3. Dead end one end of the jib sheet through the spring and shackle at the base of the jib car pulley.
4. Feed the other end of the jib sheet up thru the block on the jib tack and then back thru the block on the track.
5. The sheet is then led back to the ratchet block on the deck.



6. The sheet is then led across the boat and led thru the ratchet block,
7. Thru the jib car block
8. to the jib block and back to the jib car block where it is secured with a dead end knot.

## JIB CUNNINGHAM

1. The jib Cunningham is controlled from the cleat at the side of the mast on the port side. This is a useful control if used in conjunction with the jib halyard to raise and lower the jib on the forestay and fine tune the sheeting angle

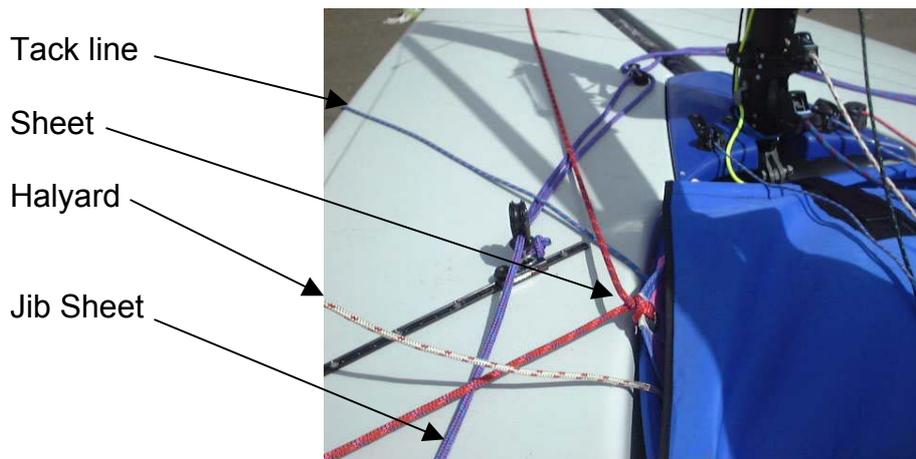


2. The jib Cunningham is led from the port side of the bow fitting to the eye at the tack of the jib.
3. Thru the tack eye and to the turning block on the starboard side of the bow fitting. This then goes back thru the tack eye and dead ends at the Becket on the port side block.



## GENNAKER RIGGING

1. The gennaker should be packed into the gennaker bag leaving the Head, Clew and tack patched corners showing out of the corner off the bag. This can be done with the bag in or out of the boat. When packing the gennaker take the head of the sail and work down the leech of the sail to avoid twists in the sail when packing.
2. The gennaker sheets, Tack line and halyard are all attached to the gennaker OVER the jib sheets.



3. The Gennaker sheets, halyard and tack line all run forwards and underneath the lower shrouds.
4. The Gennaker halyard should be checked to ensure that it is not twisted in the other rigging.
5. The gennaker sheet is attached to the clew of the sail in the middle of the sheet. To do this take the two ends of the sheet and hold them together. Work down the sheet until you have the middle of the sheet and form a loop. Pass this loop through the eye in the sail and then pass the two ends of the sheet through the loop.
6. Take one end of the sheet. Pass it over the jib sheet and forward of the shroud plate ensuring that it is under the lower shroud. Run the sheet to the back ratchet block on the rail and pass it through the block making sure that the arrow on the block corresponds to the direction of you feeding the sheet through the block. The sheet is then led to the front block on the rail and left in the middle of the boat.

7. Take the other sheet and run it over the jib sheet around the forestay and above the gennaker pole and tack line. Feed it around to the back gennaker block at the back of the rail and then forwards to the centre block on the rail.
8. Tie the two ends of the gennaker sheet together.

## MAINSAIL & MAINSHEET SET UP



1. The mainsheet is dead-ended at the rear block on the boom by tying a bowline thru the block.
2. The sheet is then led thru the aft block on the traveller and back up to the boom block.
3. Back down to the forward block on the traveller, back to the forward block on the boom and finally to the centre jammer cleat base.



4. The Mainsail is a loose-footed sail and is attached to the outboard end of the boom **before** the sail is hoisted.
5. The webbing loop simply slides over the end of the boom.
6. The outhaul is then attached by making a loop in the line, feeding the loop thru the eye in the sail and then passing the bobble thru the loop.



7. Hoist the sail with the bow sitting head to wind. **The sails should be stowed for launching and recovery of the boat.** Care should be taken when hoisting the sail and should always be fed into the sail feeder to avoid jamming and tearing the sail. Attention especially to the top batten protector.



8. When the sail is fully hoisted the two plastic slides should be fed into the cut out in the mast luff groove just below the Gnav bracket. The outhaul should be eased at this point to assist this operation.



The outhaul can then be applied





The Cunningham on the mainsail is situated on the starboard side of the mast.



Feed the Cunningham tail thru the Cunningham eye in the sail.



Tie a knot in the tail leaving a short tail after the knot

This then is placed into the sail track below the gooseneck. The short tail is used to release the Cunningham line out of the mast.

## LAUNCHING

### SINGLE POINT LIFT

When launching the boat using the two lifting points either side of the keel box and two lifting straps it is important to:

- Use the keel hold down strap as a security strap. This is threaded through the shackle and a loop formed around both lifting straps. There should be no tension in this strap.
- Ensure that the lifting straps are strong enough for lifting the boat and keel inc rigging.
- The keel should be left in the raised position – Ensure that the winch is locked in the raised position.
- Secure any loose items
- Do not go underneath the boat when it is hoisted.



### LAUNCHING USING THE TRAILER

- The keel sits on the trailer until the boat is reversed in until the top of the mud guard is underwater.



- At this point raise the keel using the winch.



- The boat can then be floated off the trailer.

## **KEEL HOISTING AND LOWERING**

- **WARNING ; Do not allow the winch to free spin, serious damage could occur to the hull and keel if this happens.**
- **If the winch does start to free spin do not attempt to stop it as serious injury could result.**
- To lower the keel take up the tension on the winch handle and release the catch. Keep hold of the winch handle and slowly rewind the keel so that it retracts into the keel box case.
- Guide the keel into the keel box and ensure that nothing is fouling the keel as it retracts into the case. Keep fingers and toes clear.
- When the keel is fully lowered attach the keel hold down strap and secure.
- Remove the post and fit the cover plate

**Ensure that the keel winch rope is replaced if worn.**



When raising the keel it should be winched up just short of the weld on the lifting post and no further.

**Please note: Tuffnel packing strips are supplied with your new boat to shim the front of the keel if required. The red keel buffer material will bed in after a number of hours sailing and may require the shims to be glued onto the front face of the keel buffer to provide a tight fitting keel. A impact adhesive should be used.**



## RECOVERY OF THE BOAT AND TOWING

- With sails lowered the keel should be raised and the rudder removed in plenty of time especially in shallow or unknown waters
- With the trailer submerged – float on to the trailer using the docking arms if fitted.
- Connect the winch hook to the bow eye and secure the winch.
- **Lower the keel onto the trailer before driving off.**
- Slowly drive the trailer clear of the water.



## LOWERING THE MAST:

- This is a reverse action on raising the mast.
- Connect the jib halyard to the winch hook on the trailer winch. The winch can be unwound about 150cm.
- Pull the jib halyard taught, cleat and tie a safety knot up to the cleat.
- Take the gennaker halyard and tie this to the trailer, take up the slack and cleat off the halyard( This is only used as a security halyard whilst releasing the pin on the forestay)
- Put the strong back mast support at the back of the boat.
- At least One person should be in the boat, make sure boat is chocked or trailer supports are down.
- Winch enough tension so that the forestay pin can be removed. **WARNING – Only wind on just enough tension to remove the pin. Make sure that the backstay is slack.**
- Uncleat the Gennaker halyard. **NOT** the jib halyard.
- Lower the mast slowly using the winch. Support the mast in the boat and **SLOWLY** lower it on to the mast support.



- **Weight will come onto the mast at approx 45 degrees and it will need to be supported and lowered into the boat.**

### **Tips for preparing the Laser SB3 prior to trailing:**

#### **Please note:**

This is a guide to assist you in preparing your boat for trailing; it is not a guide to the legal restrictions and laws covering the towing your boat. It is the responsibility of the persons towing to ensure that they comply with the legal requirements for the countries which the trailer will be utilised.



- The mast should not overhang beyond the legal limits at the rear.
- Remove chocks or raise trailer supports before towing
- When securing the mast to the mast supports keep the spreaders facing down and ensure that there is enough slack in the standing rigging to enable the mast to sit on the rear support without putting strain on the spreaders.
- Ensure that everything is secure in the boat.
- When securing the boat to the trailer, put the straps under the granny rails and not over the top of them.
- Do not tow with the keel in the raised position or it will swing and cause damage to the keel and hull.
- Secure the keel fore and aft to stop it moving in the event of a sudden stop.
- Pack the keel box to stop the keel moving during transit.
- When towing with the cover on, put the tie down straps on underneath the cover and the strong back mast support on top of the cover.

