

Bug



RIGGING MANUAL

Safety Afloat

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. Please read the manual before rigging and sailing your Bug.

Before you go sailing:

- Check you are wearing suitable clothing and safety equipment for the conditions and time of year.
- Always wear a buoyancy aid or life jacket
- Make sure a third party knows where you are sailing and how many there are of you.
- Check the weather forecast
- Check the time of high and low tides if applicable.
- Seek advice of local conditions if sailing in a new area.
- Always check the condition of your craft before setting off.
- A sailor's safety knife should be carried on board.
- **Check for overhead cables when rigging, launching and recovering.**

On the water:

- Conform to the sailing rules of the road.
- Look out for changing weather conditions.
- Never sail beyond your ability.
- Ensure that you can cope with any changes in the wind conditions
- Understand and be competent in the sailing skills and righting techniques.

Important information

There are two hatches and one transom drain bung on the Bug, these must all be checked to ensure tightness and correct fitment prior to every time you sail:

1. Under the centre toe strap on the aft face of the centreboard case console.

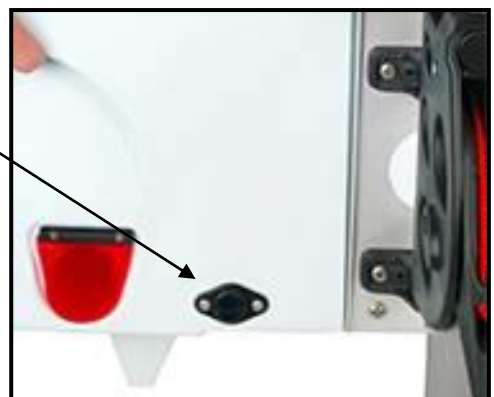


2. On the centreline of the aft deck.



Example of INCORRECT hatch fitment:

3. Check the transom drain bung is located securely by turning it in a clockwise direction until hand tight.



Bug Rigging Instructions

The Bug rigging instructions are a guide to rigging your boat.

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1. Glossary

Bow: Front of the boat

Stern: Back of the boat

Transom: Back of the boat

Fore: Forward

Aft: Rearward

Clew: Back lower corner of a sail

Tack: Forward lower corner of sail

Head: Top corner of sail

Luff: Forward edge of the sail

Foot: Bottom edge of the sail

Leech: Rear edge of the sail

Burgee: Wind direction indicator (usually a small flag)

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

Mast: Main vertical spar supporting the rig/sails

Boom: Spar at the Bottom of the mainsail

Sheet: Rope for controlling the inward/outward position of the sail

Gennaker: Isometric sail hoisted when sailing downwind

Gunwale: The outermost edge of the boat

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

Cunningham: Purchase system for tightening the forward edge/luff of the sail

Vang/Kicker: Purchase system for tightening the rear edge/leech of the sail

Outhaul: Purchase system for tightening the bottom edge/foot of the sail

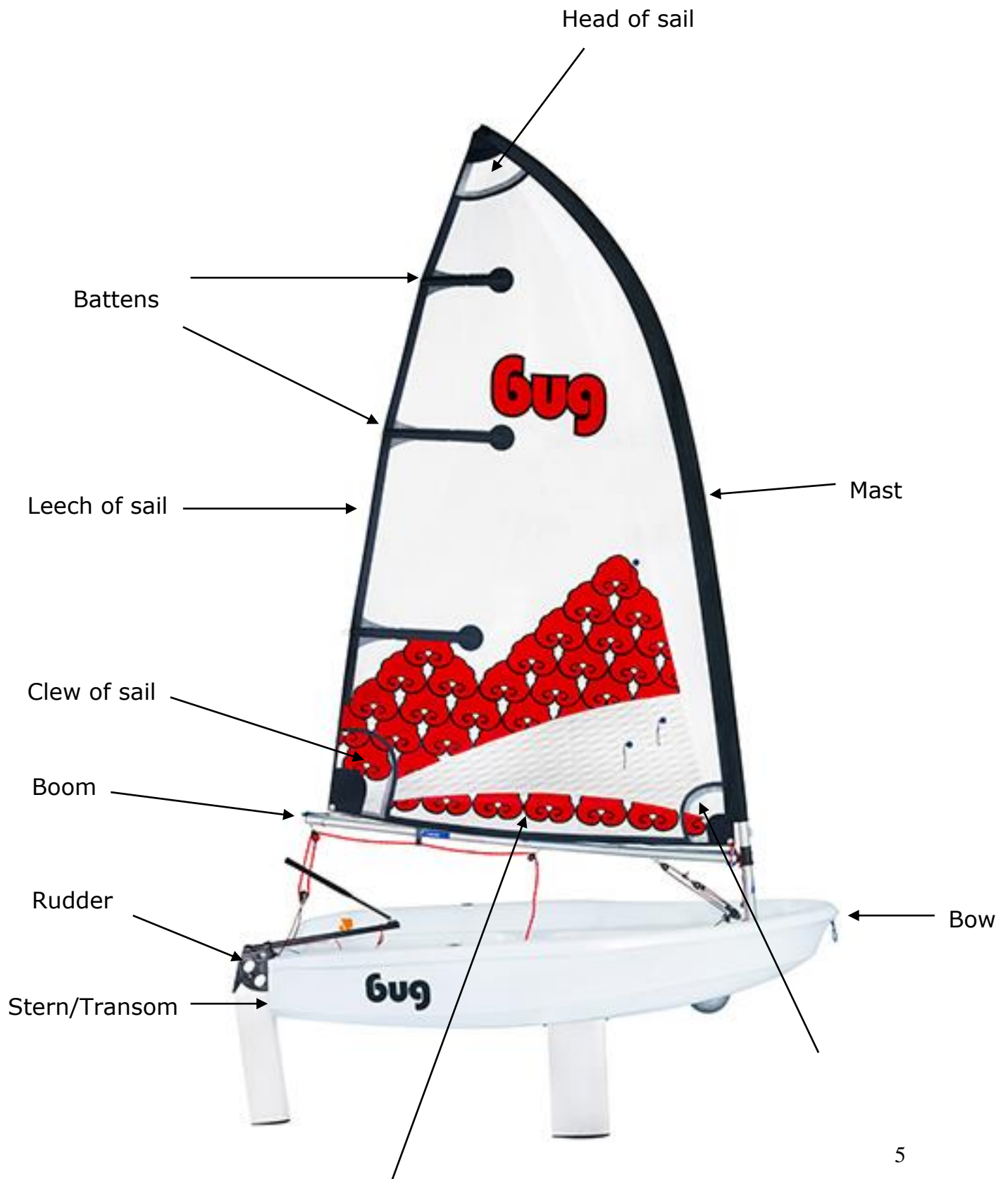
Mast Heel: Bottom edge/foot of the mast

Mast step: Integral tube where the mast heel/foot of the mast is located

Rudder: Blade and attachments used for steering the boat

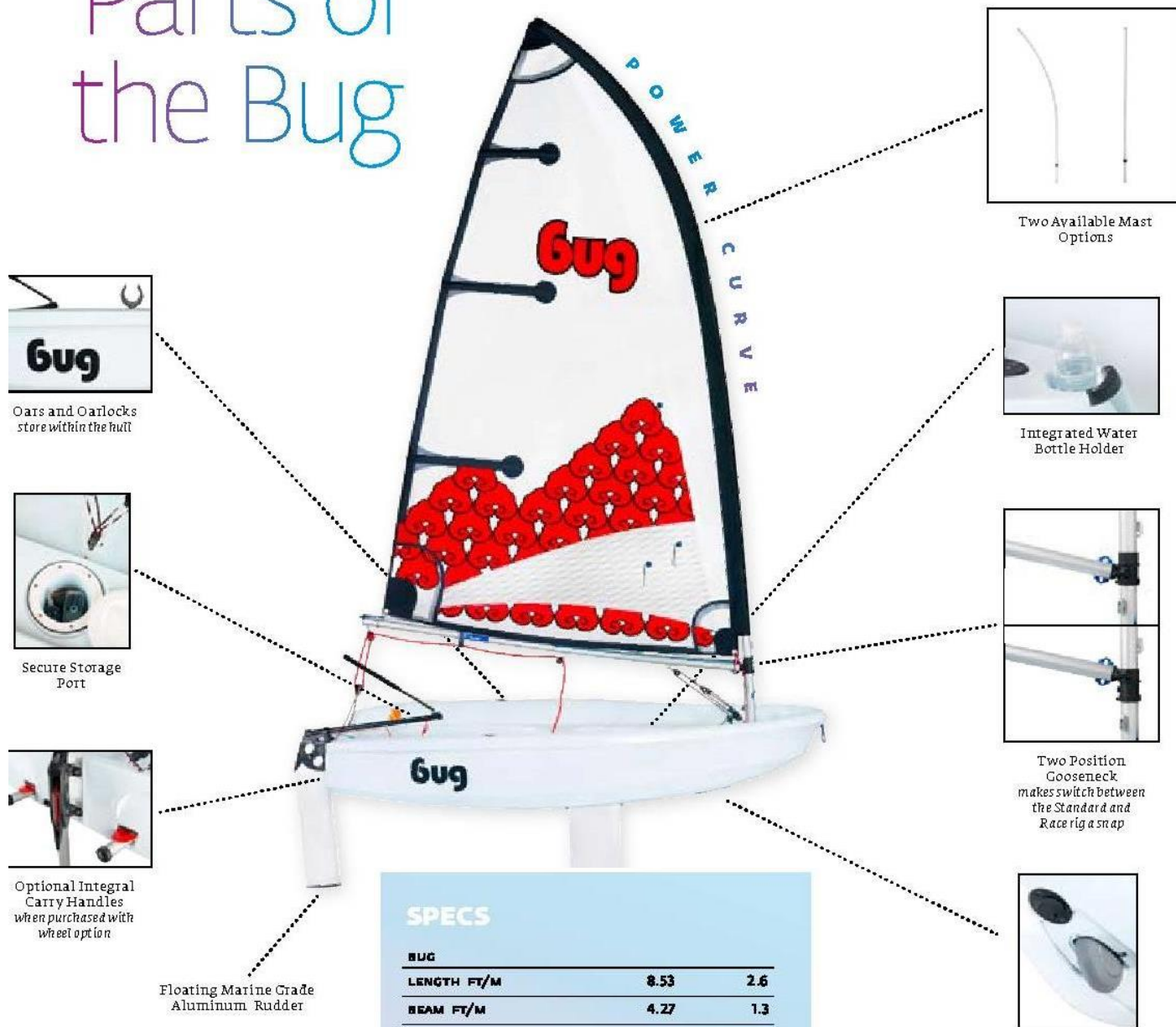
Painter: Rope exiting through the bow/front of the boat used for leading/towing or tying the boat to a jetty or buoy.

2. Useful Boat Terminology



Parts of the Bug

3. Parts of the Bug/Specification



SPECS

BUG		
LENGTH FT/M	8.53	2.6
BEAM FT/M	4.27	1.3
DRAFT FT/M	2.95	0.9
SAIL AREA FT ² /M ²	40.90	3.8
HULL WEIGHT LB/KG	101.41	46.0
CAPACITY	1 PERSON	
SKILL LEVEL	BEGINNER-ADVANCED	
RACE LEVEL	CLUB-INTERNATIONAL	
OPTIMAL WEIGHT* LB/KG	66/154	30/70
TRANSPORT	CARTOPPABLE	

BUG RACE		
SAIL AREA FT ² /M ²	57.05	5.3

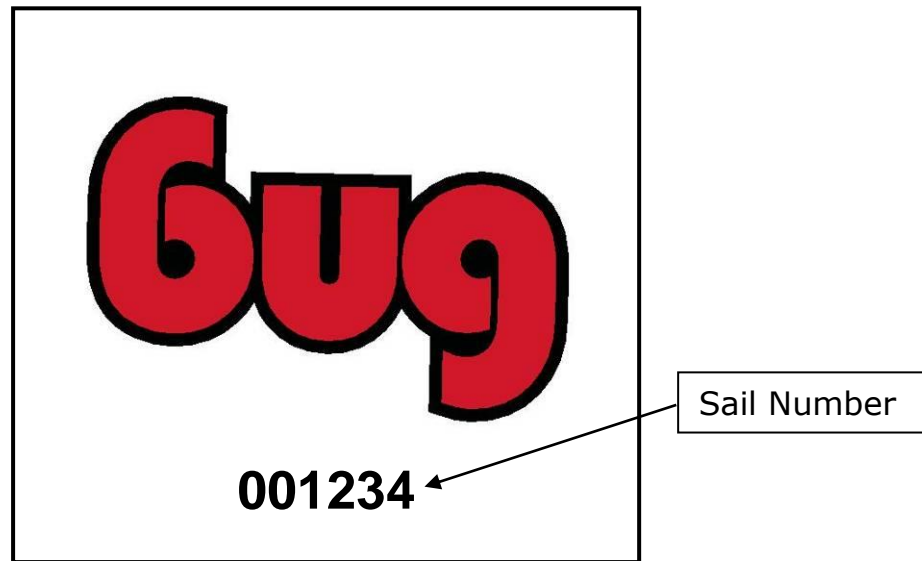
* MAX WEIGHT WHEN USED AS A TENDER 352LB/160KG

4. Maintenance and Service

- Keep the equipment clean by frequently flushing with fresh water. In corrosive atmospheres stainless parts may show discoloration/brown staining 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.
- All moving parts should be lightly lubricated to avoid jamming, i.e., McLube, Dry Teflon or a dry silicone-based spray. Do not use Oil.
- Inspect all shackles to ensure they are tight. (Pliers should be used for this operation.
- Damaged or worn parts should be replaced.
- Sails should be thoroughly washed down with fresh water, dried and stored in a dry place.
- Trailers should be rinsed with fresh water and checked at regular intervals. It is recommended that trailers be serviced annually.
- Repairs to the polyethylene hull should be undertaken only by persons with the relevant equipment and skills.
- UV light will cause fading to some components and fittings, a cover is recommended to reduce UV degradation.
- **Do not leave the rig under tension when not sailing or during storage.**
- **Your Bug should only be used in conjunction with the Bug specific launching trolley. The use of any other launching trolley may damage the hull and invalidate your warranty.**
- **The hull should NOT be left on a pebble beach, as the polyethylene could dent.**
- **Care must be taken to support the hull adequately if storing on racking or similar. Any sustained point loading could permanently dent or distort the hull.**

5. Sail Numbers

1. Identify the sail number of your Bug by referring to the builder's serial number plate positioned on the starboard (right hand) side of the rear sub deck inner tank side.

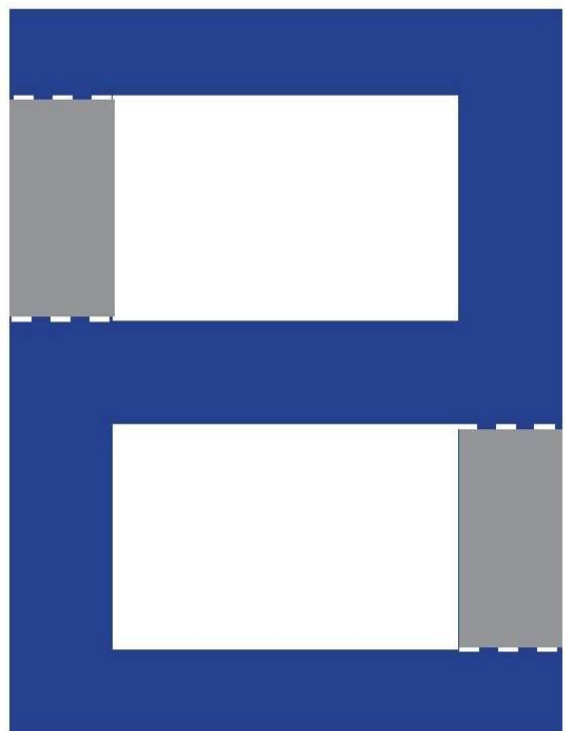


2. Cut the required sail numbers from the generic digital 8's supplied using the following guidance:

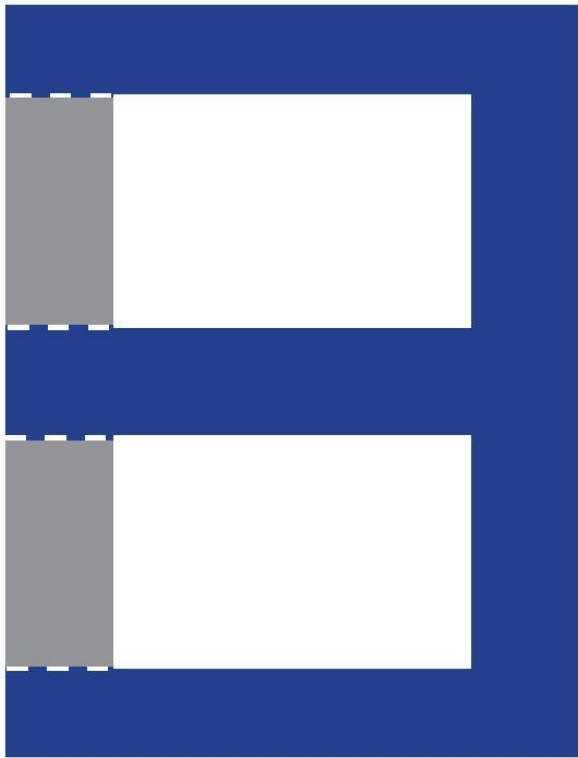
Cut on dotted line to make a 1



Cut on dotted line to make a 2



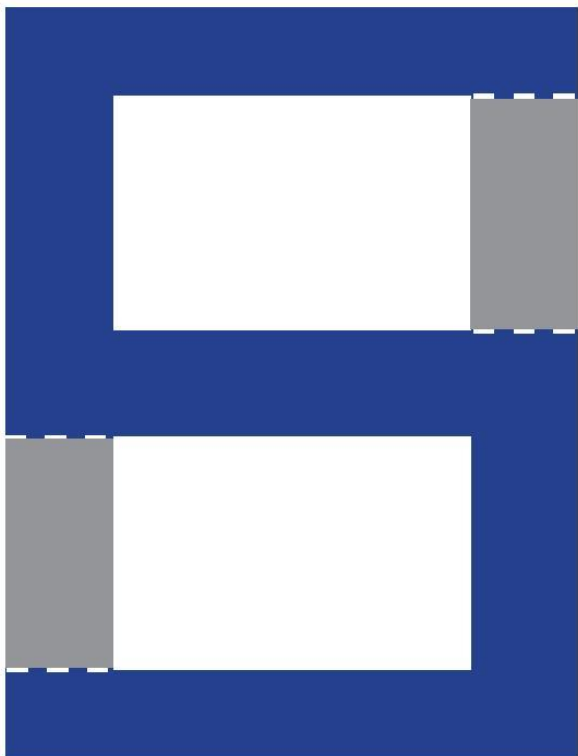
Cut on dotted line to make a 3



Cut on dotted line to make a 4



Cut on dotted line to make a 5



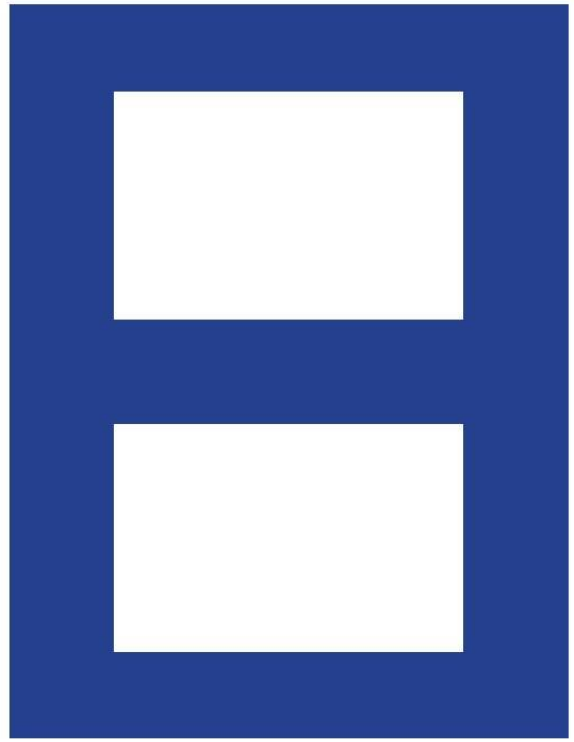
Cut on dotted line to make a 6



Cut on dotted line to make a 7



No cuts needed for an 8



Cut on dotted line to make a 9



Cut on dotted line to make a 10



3. Apply the sail numbers in a dry, clean and wind free environment using the following guidance:

Standard/Training Sail

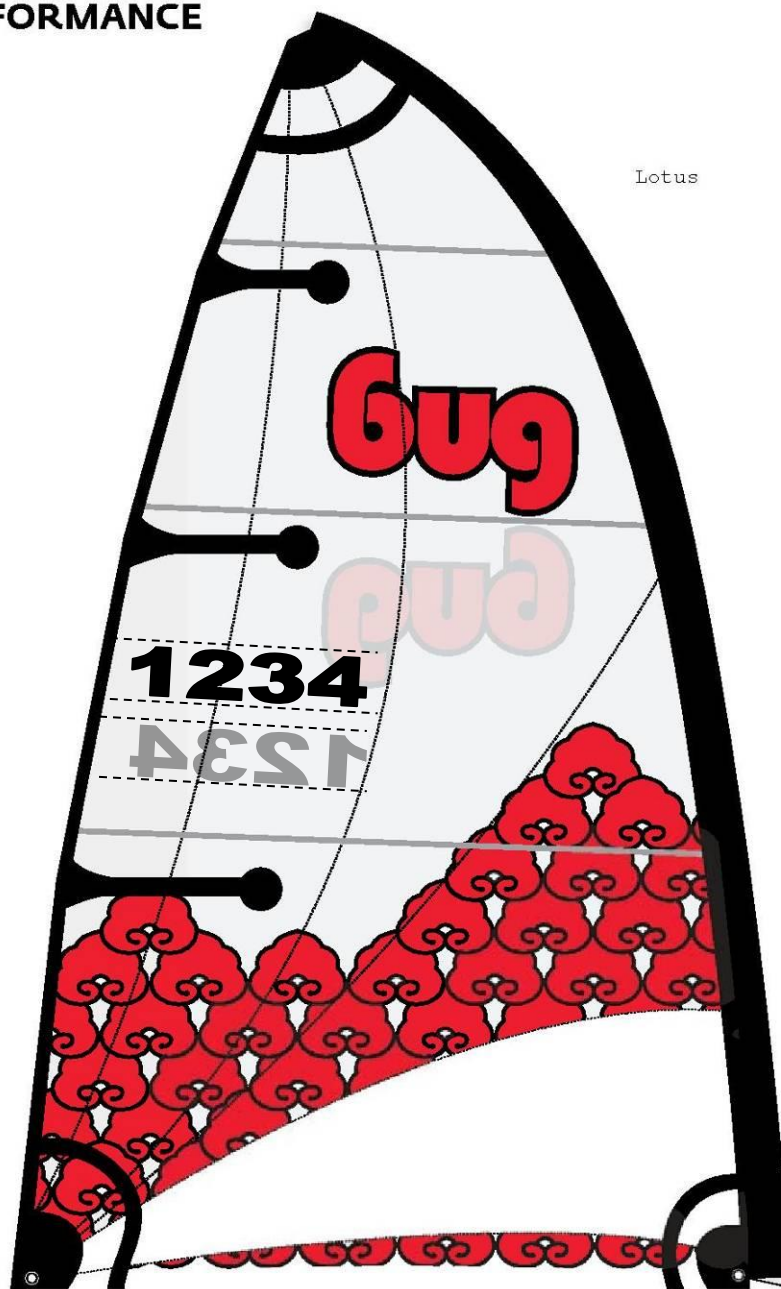
1. Lay the sail on a flat surface starboard/right hand side up.
2. The numbers on the starboard/right hand side of a sail are always higher than that of the port/left hand side.
3. Mark a line 90 degrees to the leach at 50% of the total leach length. (Use tape)
4. Measure 100mm in from the leech on this line.
5. The left-hand side of the first number should be positioned 100mm in from the leech with the top of the number against the aforementioned tape line.
6. The numbers should be positioned 60mm apart.
7. Turn over the sail and position the port/left numbers 60mm below the lower edge and parallel to the starboard/right hand side numbers.



Race/Performance Sail

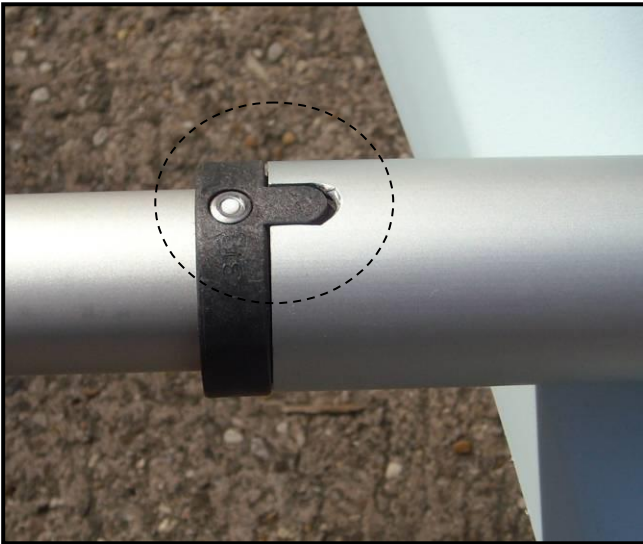
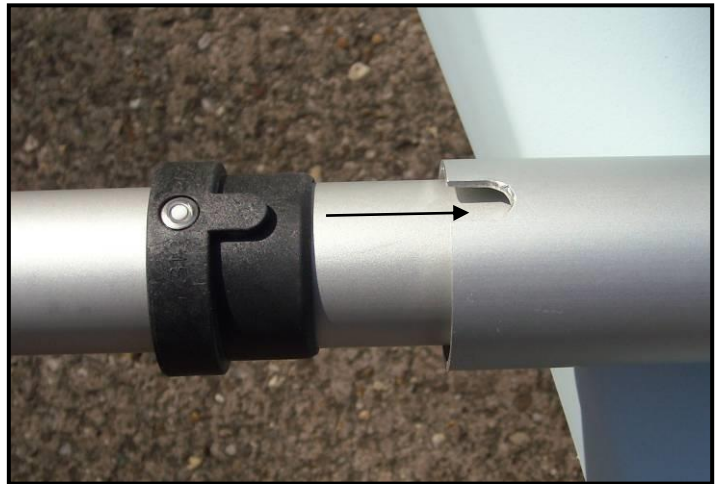
1. Lay the sail on a flat surface starboard/right hand side up.
2. The numbers on the starboard/right hand side of a sail are always higher than that of the port/left hand side.
3. Measure 200mm down, from the second batten pocket of the sail.
4. Mark a line parallel to the batten pocket. (Use tape)
5. Measure 100mm in from the leech on this line.
6. The left-hand side of the first number should be positioned 100mm in from the leech with the top of the number against the aforementioned tape line.
7. The numbers should be positioned 60mm apart.
8. Turn over the sail and position the port/left numbers 60mm below the lower edge and parallel to the starboard/right hand side numbers.

PERFORMANCE



6. Rigging and Raising the Mast

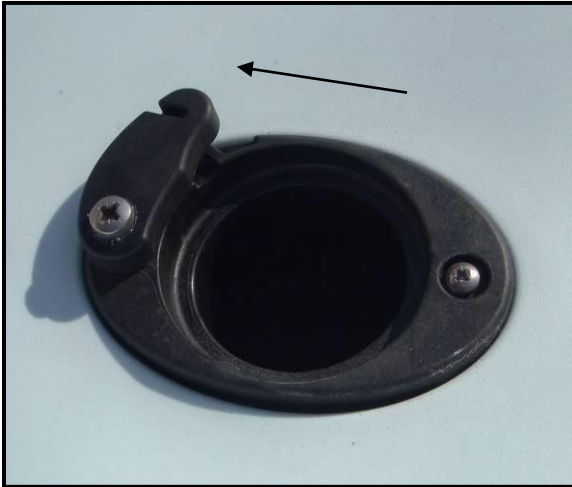
1. Unwrap the spars and locate the lower end of the upper mast into the upper end of the lower mast.



2. Take care to ensure the reactor finger (comprising part of the upper mast collar) locates securely into the recipient slot in the upper edge of the lower mast.

3. Lay the sail on the ground and slide the mast into the sail luff tube from the foot of the sail working gently upwards.
4. Take care to ensure the upper edge of the topmast goes right to the head/top of the sail until it bears up against the webbing strap at the very top of the luff tube aperture.
5. Ensure the sail battens (Race/Performance sail only) are located securely in their batten pockets.





6. Place the bow of the boat facing directly into the wind.
7. Push the mast retainer swing arm in to its "open" position in readiness for mast insertion.

8. Place the lower end of the complete mast assembly into the mast step tube before pushing the mast retainer swing arm back to its "closed" position.

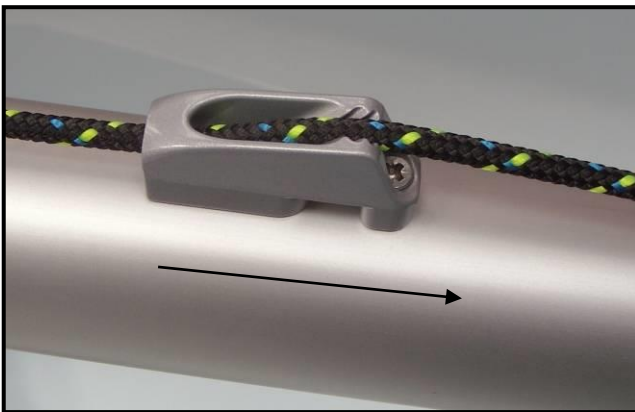
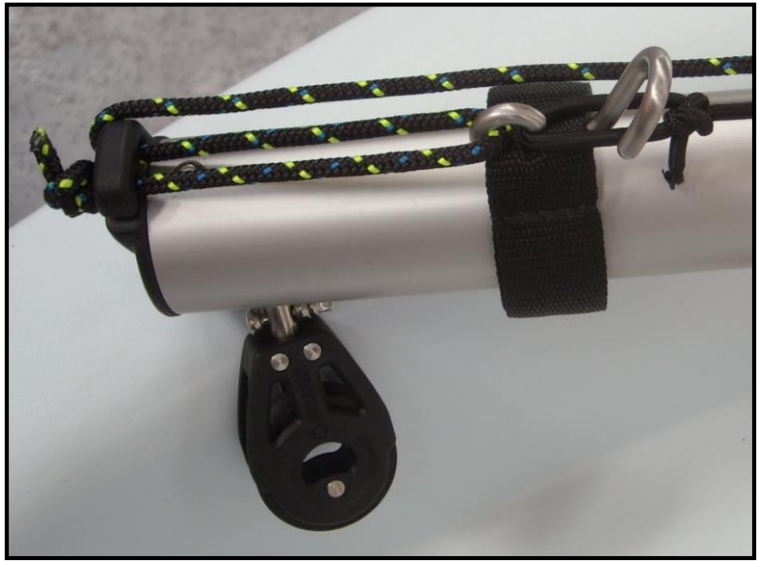
Note: The mast retainer swing arm prevents rig loss upon capsize!



7. Rigging and Fitting the Boom

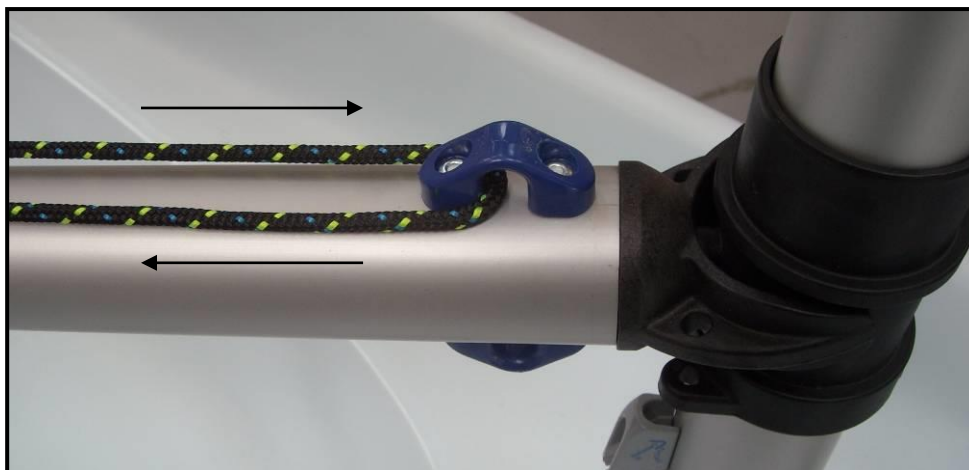
1. Take the outhaul control line and tie a double half hitch stopper knot in one end.
2. Pass the untied end through:
 - a. The starboard/right aft/rear boom end.
 - b. The outhaul clew strap eye.
 - c. The port/left aft rear boom end.

This creates a 2:1 purchase cascade system as shown.



14. Pass the remaining loose end of the outhaul control forward and through the outhaul cleat on the top surface of the boom.

15. Continue forward this time passing the loose end through the plastic fairlead at the forward most top surface of the boom before passing it aft/backward again.





16. Tie the loose end of the outhaul control line directly to one end of the outhaul elastic as shown.

17. Tie the remaining end of the outhaul elastic directly back on to the outhaul clew strap eye as shown.

Note: This slightly elaborate outhaul arrangement creates a tidy and convenient endless system that can remain rigged on the boom once initially setup for your first sail.



Standard/Trainer Bug Rig

18. When using the standard Bug sail the inboard boom end yoke arm should be fitted to the gooseneck mast collar as shown.

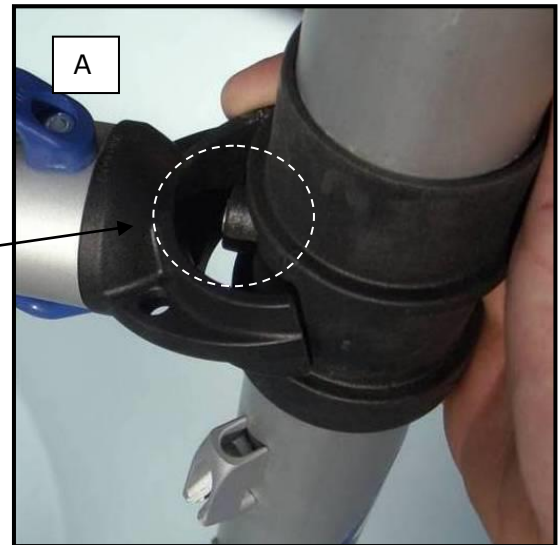
Note: This ensures the mast is able to "free rotate" thus enabling the reefing option supported by the standard rig to function.

(It also raises the boom height to a less intrusive level for the non race/performance sailor!)

Race/Performance Bug Rig

19. When using the Race/Performance Bug sail the inboard boom end yoke arm should be fitted to the gooseneck mast collar as shown.

Care should be taken to ensure the mast collar spigot pin locates successfully into the recipient slot in the "mate" surface of the inboard boom end yoke arm.



Note: This ensures the mast is NOT able to "free rotate" thus keeping the bent topmast in parallel with the boom to maintain the best sail flying shape possible.

20. Hook the mainsail clew on to the clew outhaul hook.



8. Vang/Kicker

Note:

- Standard/Trainer Bugs are supplied with a 3:1 vang/kicker purchase cascade. (2 block system)
 - Race/Performance Bugs are supplied with a 6:1 vang/kicker purchase cascade. (3 block system)
1. Attach the lower block to the eye bracket on the aft face of the mast immediately above deck level.
 2. Attach the uppermost block to the webbing strap on the lower face of the boom.
 3. Rope up the Vang/Kicker purchase system as shown:



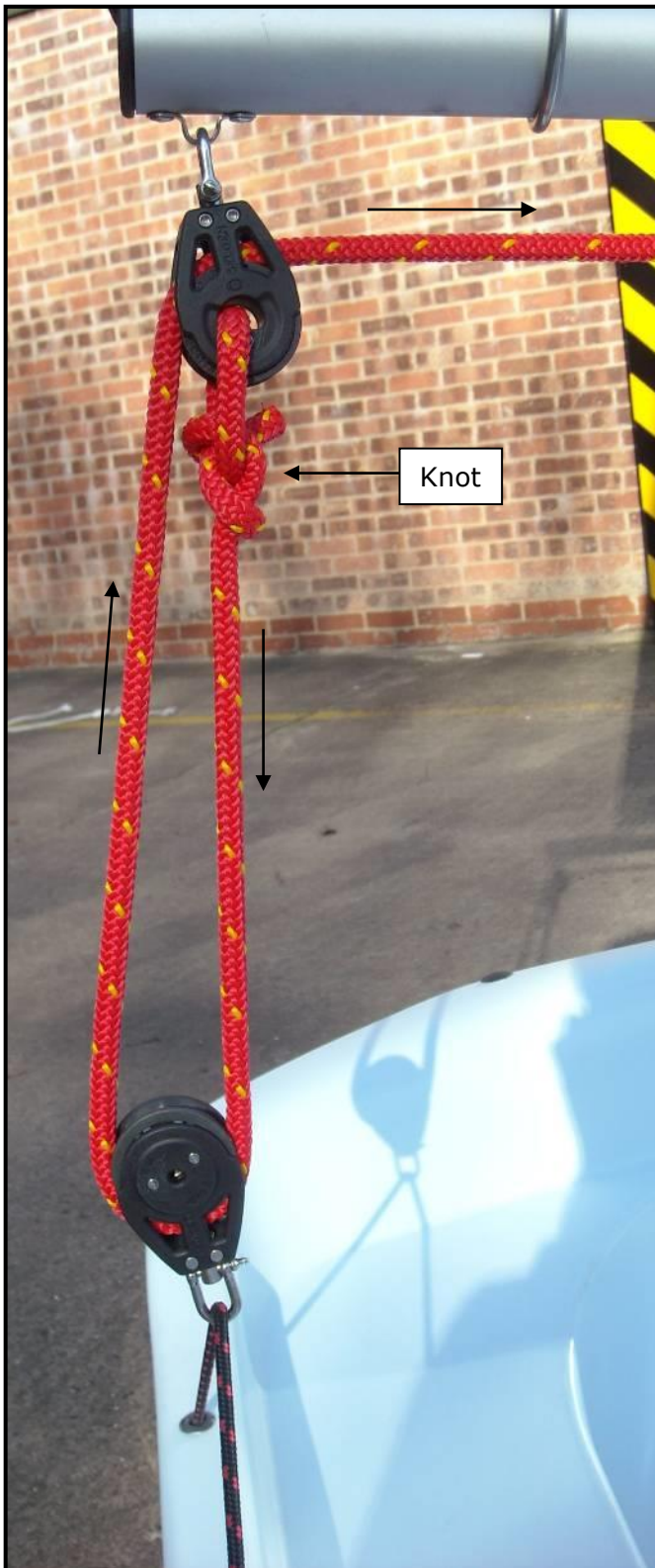
Standard/Trainer Bug Rig
(3:1)

Race/Performance Bug Rig
(6:1)

Note: The additional mid cascade block required is supplied only the with power curve topmast.



9. Mainsheet



1. Take the mainsheet and tie a bow line loop on to the centre of the mainsheet block located on the lower aft/rear surface of the boom.
2. Pass the remaining loose end downward and through the auto ratchet traveller block.
3. There are arrows on the auto ratchet traveller block to depict the correct direction the rope should pass. This will ensure that when under load the auto ratchet block engages correctly.
4. Pass the remaining loose end upward and through the mainsheet block on the lower aft/rear surface of the boom travelling in a clockwise direction before leading it forward along the boom.

5. Pass the loose end through the webbing sling immediately above the helms cockpit area.

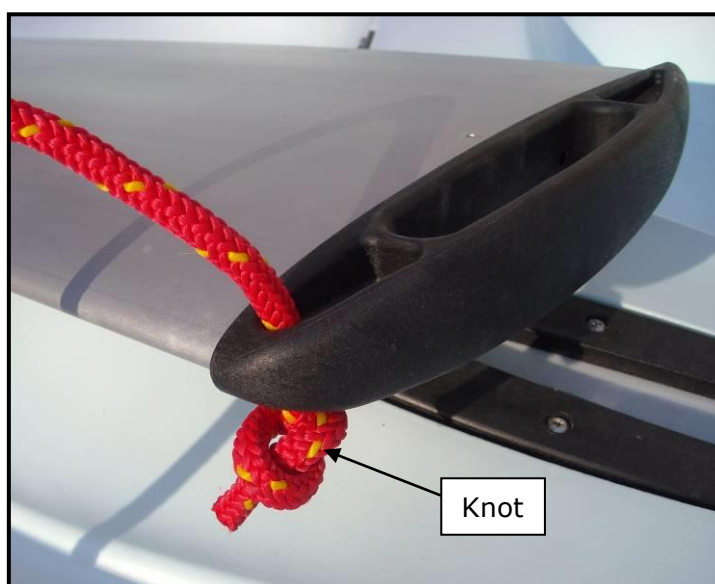
Note: This prevents the rope from sagging and getting tangled up around the helmsman during tacks and gybes!



6. Pass the loose end in a clockwise direction through the remaining mainsheet block positioned on the lower mid section of the boom.

7. Finally pass the loose end through the hole in the front end of the dagger board top cap before tying a half hitch stopper knot.

Note: This knot in the mainsheet prevents centreboard loss upon capsize!



10. Cunningham

Standard/Trainer Bug Rig

When using the standard Bug sail the cunningham control line should be configured to incorporate usage of the D-ring on the forward edge of the luff tube and the clam cleat on the front face of the lower mast immediately above the gooseneck collar as depicted.

Note: This ensures the mast is able to “free rotate” thus enabling the reefing option supported by the standard rig to function.



Race/Performance Bug Rig

When using the Race/Performance Bug sail, tie a double half hitch stopper knot in one end of the cunningham line before passing the remaining loose end:

- (a) Upward through the lug on the lower port side of gooseneck collar.
- (b) Upward through the lug on the port side of the inboard boom end yoke arm.





- (c) Through the tack eye travelling in a port/left to starboard/right direction.
- (d) Downward and through the plastic fairlead on the underside of the inboard end of the boom travelling in a starboard/right to port/left direction

- (e) Upward and for the second time, through the tack eye travelling in a port/left to starboard/right direction.
- (f) Downward and through the lug on the starboard side of the inboard boom end yoke arm
- (g) Downward and through the clam cleat on the starboard side of the mast immediately below the gooseneck collar.
- (h) Downward and through the pulley block immediately below the aforementioned clam cleat before tying a 100mm rope handle in the end of the control line.

Note: This ensures the mast is NOT able to "free rotate" thus keeping the bent topmast in parallel with the boom to maintain the best sail flying shape possible.



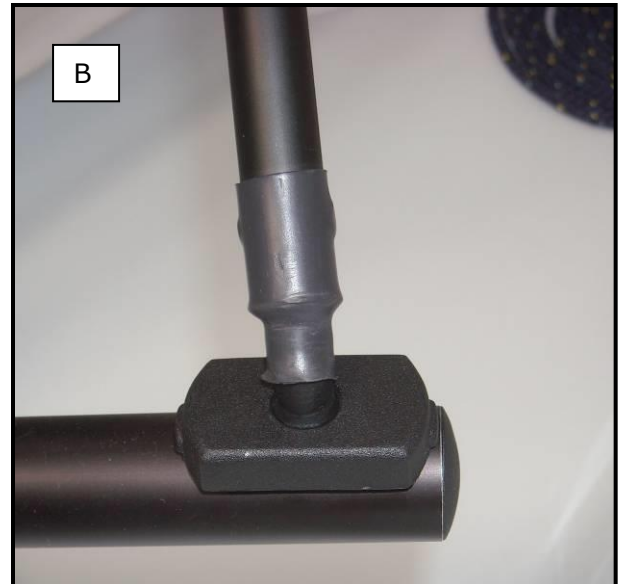
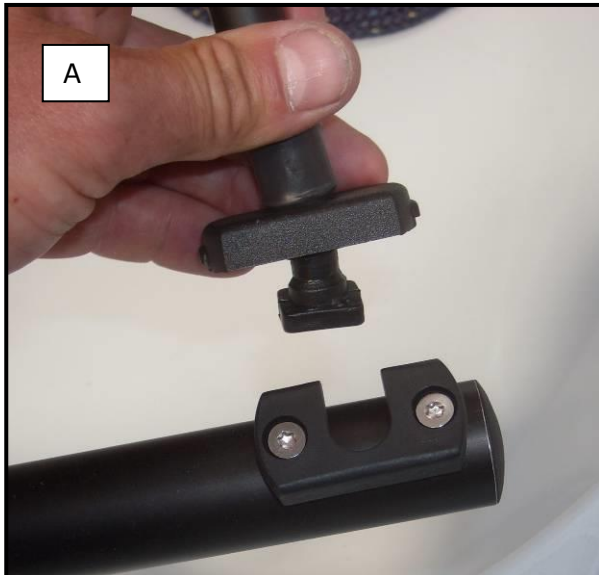
11. Rudder

1. Take the loose tiller arm and carefully remove the pre-tapped retaining screw from the aft/rear end of the tube.
2. Insert the aft/rear end of the tiller arm tube into the rudder head tiller arm hood travelling in a forward to aft/rearward direction.
3. Line up the tiller arm retaining screw hole with its corresponding recess/hole on the uppermost aft/rear surface of the rudder head tiller arm hood.
4. Re-locate the tiller arm retaining screw, driving it carefully through both the rudder head tiller arm hood and the tiller arm.



Tiller Arm Retaining Screw

5. Clip the tiller extension on to its mounting bracket on the uppermost forward surface of the tiller arm.



6. Take the rudder assembly and pass the tiller extension and tiller arm under the mainsheet bridle strop at the aft/stern edge of the boat.
7. Lower the rudder head assembly on to the rudder gudgeons situated on the stern/transom of the boat.



8. Ensure the integral rudder gudgeon clip (Blue) is successfully engaged, resulting in the rudder head automatic "clicking" in to place securely.
9. Fit the secondary rudder retaining split ring through the upper pintle pin.

Note: To remove the rudder assembly from the transom gudgeons, the rudder retaining split ring must be removed and the integral rudder gudgeon clip (blue) pressed inward.

12. Mainsail Reefing

Note: This function is only applicable to the Standard Bug Rig.
The architecture of the Race/Performance Bug rig does NOT support this function.

1. Unhook the lower Vang/Kicker block from the eye bracket on the aft face of the mast immediately above deck level.



2. Ease the outhaul control line tension whilst simultaneously rotating the mast through 720 degrees (Two complete turns) in either direction.
3. Re-attach the the lower Vang/Kicker block to the eye bracket on the aft face of the mast immediately above deck level.

Your Bug Is Now Ready For Launching!

13. Launching and Basic Safety on the Water

Before You Go Sailing:

- ❖ Check you are wearing suitable clothing and safety equipment for the conditions and time of year.
- ❖ Always wear a buoyancy aid or life jacket
- ❖ Make sure a third party knows where you are sailing and how many there are of you.
- ❖ Check the weather forecast
- ❖ Check the time of high and low tides if applicable.
- ❖ Seek advice of local conditions if sailing in a new area.
- ❖ Always check the condition of your craft before setting off.
- ❖ **Check for overhead cables when rigging, launching and recovering.**

Launching

- ❖ Raise the rig with the boat facing into the wind.
- ❖ Launch the boat using the appropriate launching trolley.
- ❖ Take the boat into the water with the bow facing into the wind.
- ❖ Ensure that there is enough water to float the boat off the trolley.
- ❖ When there is enough water below you, lower the centreboard and rudder fully.
- ❖ Cleat the rudder downhaul in the cleat on the tiller.
- ❖ The rudder and the centreboard should be raised before coming ashore.

On The Water

- ❖ Conform to the sailing rules of the road.
- ❖ Look out for changing weather conditions.
- ❖ Never sail beyond your ability or that of your crew.
- ❖ Understand and be competent in the sailing skills and righting techniques.



Enjoy Your Bug Sailing!