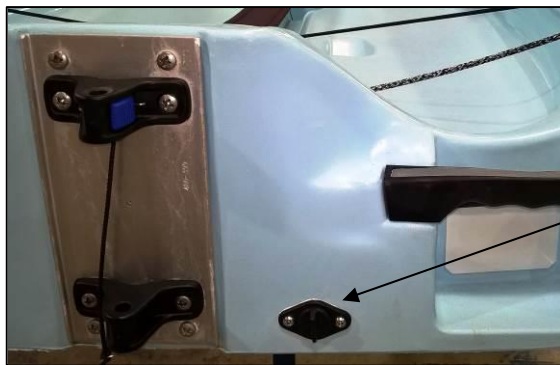


Fusion



RIGGING MANUAL

1. Glossary/Useful Boat Terminology
2. Parts of the Fusion
3. Sail Numbers & Rating Yardstick for Racing
4. Rigging the Mast and Cunningham
5. Raising the Mast
6. Fitting the Boom
7. Rigging the Mainsheet
8. Rigging and Fitting the Vang
9. Rigging and Raising the Jib
10. Cockpit Drain Bung
11. Fitting the Rudder
12. Fitting the Daggerboard
13. Mainsail Reefing and Stowing the Mainsail
14. Adding a Painter/Towing in a Line
15. Top Cover
16. Launching and Basic Safety on the Water
17. Care, Maintenance and Service
18. CE Certification



WARNING: Please check the transom drain bung is closed securely by turning it in a clockwise direction until hand tight.

1. Glossary/Useful Boat Terminology

HULL

Bow:	Front of the boat
Painter:	Rope exiting through the bow/front of the boat used for towing or tying the boat to a jetty, buoy or trolley
Stern/Transom:	Back of the boat
Fore:	Forward
Aft:	Rearward
Mast Step:	Integral tube where the mast heel/foot of the mast locates
Gunwale:	Upper/outermost edge of a boat's side
Port:	Left side of the boat when looking forward
Starboard:	Right side of the boat when looking forward
Leeward:	Direction away from the wind
Windward:	Direction from which the wind is coming
Gudgeon:	Fitting on the transom and rudder used to hang rudder

SPARS

Burgee:	Wind direction indicator (usually a small flag on the top of the mast)
Mast:	Main vertical spar supporting the rig/sail
Mast Heel:	Lower edge/foot of the mast
Boom:	Spar at the bottom of the mainsail
Outhaul:	Purchase system on the boom for tightening the lower edge/foot of the sail
Vang:	Purchase system for tightening the rear/aft edge (leech) of the sail
Cunningham:	Purchase system for tightening the forward edge/luff of the sail
Sheets:	Ropes for controlling the inward/outward position of the sails

FOILS

Daggerboard:	Blade assembly found in the middle of a dinghy to counteract leeward slippage/create forward motion
Rudder:	Blade assembly found at the back of a boat used for steering
Pintle:	The male part (pin) of the rudder hanging system

SAILS

Mainsail:	Sail aft/rearward of the mast (Larger of the two)
Jib:	Sail forward of the mast (Smaller of the two)
Tack:	Forward lower corner of a sail
Clew:	Rear lower corner of a sail
Head:	Upper corner of sail
Leach:	Rear edge of the sail
Luff:	Forward edge of the sail
Foot:	Bottom edge of the sail
Batten:	A thin stiffening strip in the sail to support the leach

2. Parts of the Fusion

Unpack your Fusion and check you have all the required components.

Your Fusion comes in the following component parts:

- | | |
|--------------------|--|
| 1. HULL COMPLETE – | To include jib hardware (Specification dependent) |
| 2. SAIL KIT – | Standard mainsail, pro mainsail, jib, jib sheet pack (Specification dependent) |
| 3. SPAR KIT – | Upper mast, lower mast and boom |
| 4. FOIL VANG KIT – | Dagger-board, rudder assembly, rope/block pack, vang pack |
| 5. DOCUMENT PACK – | Rigging manual with CE certificate |



Rope/Block Pack (Supplied as part of Foil Vang kit)

- | | |
|-----------------------------|-----------------------|
| 1. MAINSHEET – | 7mm Navy/White (10m) |
| 2. DAGGERBOARD SHOCK CORD – | 5mm Black (1.2m) |
| 3. CUNINGHAM CONTROL LINE – | 4mm Grey/Black (0.9m) |
| 4. TRAVELLER BLOCK | |
| 5. SISTER CLIPS (X2) | |



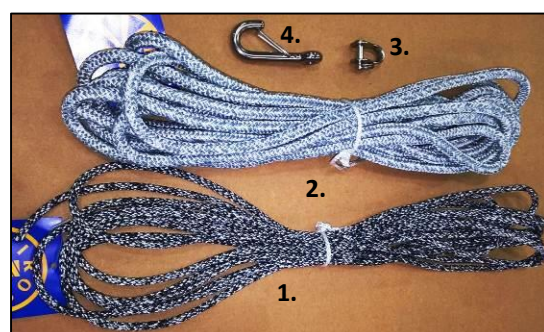
Vang Pack (Supplied as part of Foil Vang kit)

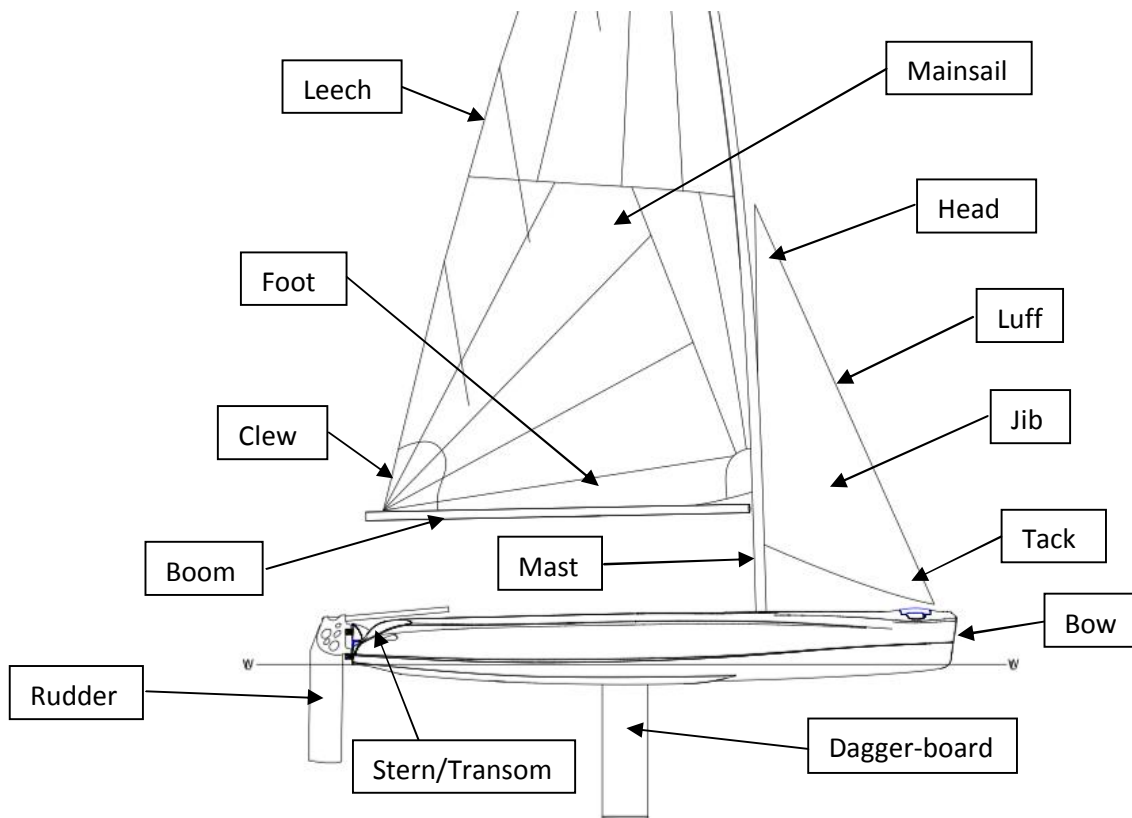
- | | |
|--------------------------|-----------------------|
| 1. VANG CONTROL LINE – | 4mm Grey/Black (2.8m) |
| 2. LOWER BLOCK & HOOK | |
| 3. UPPER BLOCK & SHACKLE | |



Jib Sheet Pack (Supplied as part of the sail kit - Specification dependent)

- | | |
|------------------|---------------------|
| 1. JIB HALYARD – | 4mm Grey/Black (5m) |
| 2. JIB SHEET – | 6mm Grey/White (5m) |
| 3. RIGGING LINK | |
| 4. SNAP HOOK | |



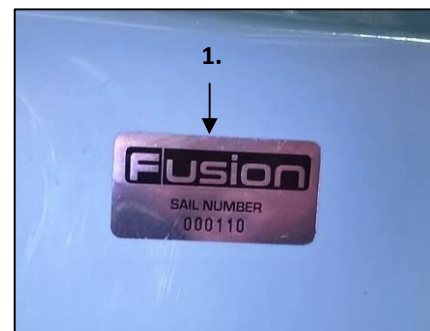


3. Sail Numbers & Rating Yardstick for Racing

Fusion has been issued a Portsmouth/Great Lakes yardstick of 1300 for racing. (This applies to all sail/crew configurations.)

If you intend to race your Fusion you will need to attach sail numbers. These can be supplied by a local chandlery although their positioning is important!

1. Identify the sail number of your Fusion by referring to the sail number plate positioned on the port (left hand) side of the forward cockpit.



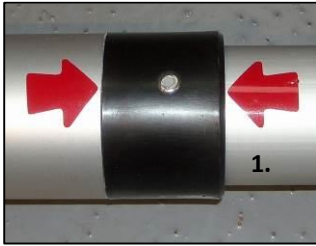
WARNING: Compliant positioning of sail numbers is defined by the racing rules of sailing as enclosed:

Positioning –

1. Lay the sail on a flat surface port side up.
2. The numbers on the starboard side are always higher than the port side.
3. Measure 450mm above the Fusion logo and draw a base line 90 degrees perpendicular to the leech.
4. Measure 70 mm from the leech and draw a line parallel to the leech
5. Position the port sail numbers starting with the last digit square with the base and leech lines drawn.
6. The remaining numbers should be square to the previous number 60 mm apart.
7. Turn the sail over and mark a line on the starboard side of the sail 100 mm above the port numbers.
8. Starting with the last digit, work from the leech line and positioning the sail numbers 60 mm apart as above.



4. Rigging the Mast and Cunningham



1. Insert the upper mast into the lower mast, making sure the red arrows align.

2. Thread the jib halyard through the halyard plate eye on the upper mast.

3. Take one end of the jib halyard (Specification dependent) and pass it through the jib halyard cleat positioned on the port (left hand) side of the lower mast before **temporarily** tying the two free ends together.

TOP TIP: Electrical taping over the mast joint prevents sand and water ingress which aids the ease of righting after capsize. It also keeps the red arrows correctly aligned and makes it easier to withdraw the mast from the sail upon de rigging!

4. Unfold the mainsail (try to keep it clean and dry) and sleeve it over the top of the mast and jib halyard, making sure that the mast stays together.

5. Slide the sail down the full length of the mast keeping the cunningham D-ring facing forwards. (In line with the cleats at the base of the mast)

6. Take care to ensure the upper edge of the mast goes right to the head/top of the sail until it bears right up against the webbing strap at the very top of the luff tube aperture.

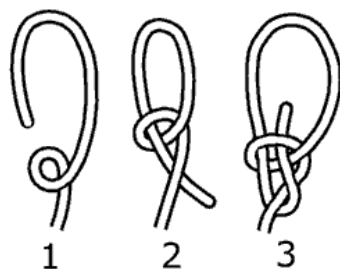
7. If you are using the Pro Sail, (Specification dependent) insert the battens (three) into the batten pockets ensuring the batten ends engage correctly into the fold overs at the outer edge of each batten pocket. (To prevent loss whilst sailing)

8. Untie the previously "temporarily tied" jib halyard ends and tie a figure of eight knot in the end that remains through the cleat.

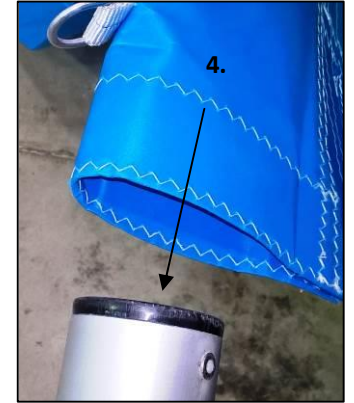
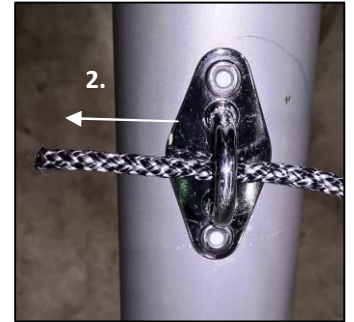


9. Working from the jib halyard exit point of the mainsail, pull the non-cleated rope end out from inside the mainsail luff. (Ensuring that it remains threaded through the eye)

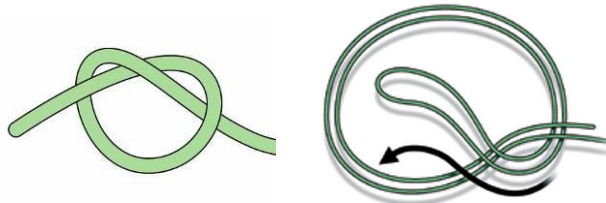
10. Temporarily re-tie this loose jib halyard end (pulled out of the mainsail luff) to the cunningham D ring using a bowline (for safe keeping) until a point in time when you wish to hoist a jib.



TOP TIP: Take any slack out of the jib halyard by pulling the rope at the cleat before tidying the loose end away in jib halyard pocket on the port (left) hand side of the mainsail tack. This tidies the rope away neatly and prevents the halyard from flapping when sailing without the jib hoisted.



11. Take the cunningham control line and tie an overhand knot in one end before threading the other end through the slot underneath the cunningham cleat positioned on the forward face of the mast.
12. Continue to thread the untied end around the D ring on the lower forward edge (luff) of the mainsail before passing it through the main body of the cunningham cleat. (Jaws)
13. Tie an overhand loop handle (large enough to put your hand in) in the end of the cunningham line.
14. Finally, tension the cunningham line just enough to remove any wrinkles in the luff of the mainsail prior to engaging the line in the cleat jaws.



5. Raising the Mast



TOP TIP: In windy conditions, raising the mast can be made **MUCH** easier by wrapping the sail around the mast in a clockwise direction before positioning the clews webbing strap over the integral plastic sail hook.

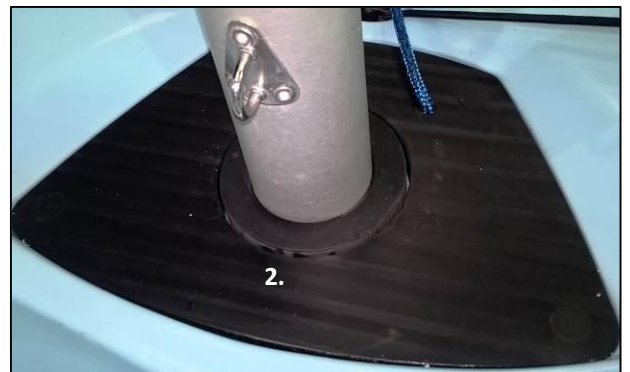
WARNING: The mast is metal and is an electrical conductor. Contact with overhead electric wires could be fatal, please exercise extreme caution when raising the mast, launching and sailing.

1. With the boat positioned bow/front facing into the wind, lift the mast carefully in to the boats mast step with the vang tang facing forwards towards the bow/front of the boat.

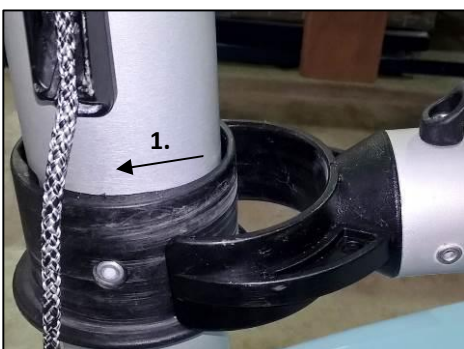


2. Ensure the mast retention key goes right through the keyway in the front of the boats mast deck plate, before rotating the mast 180 degrees until the vang tang faces immediately aft/rearwards towards the transom/stern.

WARNING: The mast key **MUST** be correctly engaged through the keyway in the boats mast deck plate to prevent disengagement from the hull in the event of capsize.

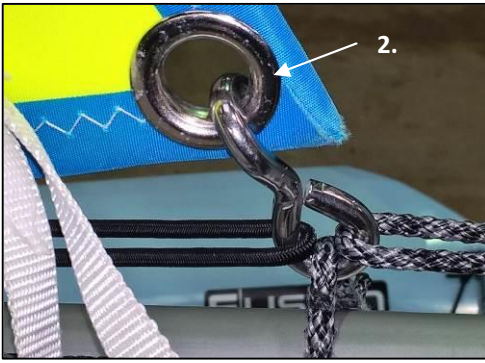


6. Fitting the Boom

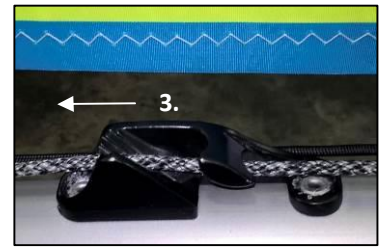


1. Clip the boom onto the masts gooseneck collar. This will require a firm push.



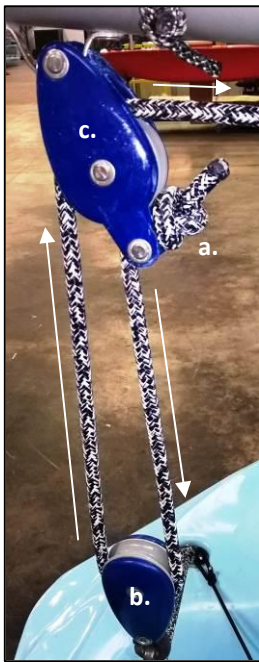


2. With the boat positioned bow/front facing into the wind, connect the sail to the boom by locating the clew hook into the clew outhaul eyelet at the aft/rear lower corner of the sail.
3. Tension the clew out haul line to the desired amount and secure it in the cleat on the mid upper surface of the boom.



TOP TIP: The correct outhaul tension for normal conditions would leave the foot/lower edge of the sail 100mm (a hands width) from the boom when the sail is filled.

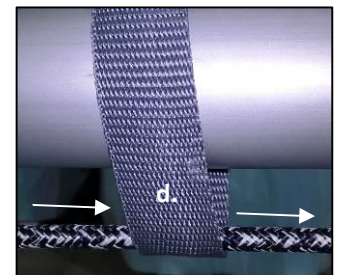
7. Rigging the Mainsheet



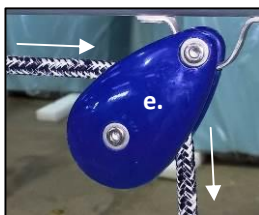
1. Join the large traveller block to the small traveller block using their integral sister clips.
2. When standing on the starboard/right hand side of the hull:
 - a. Tie a figure of eight stopper knot in one end of the mainsheet before threading the other end through the becket of the booms aft/rear mainsheet block in a bow to stern direction.



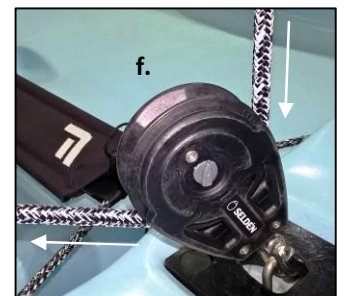
- b. Thread the loose end downwards, passing around the large traveller block in a bow to stern direction.
- c. Thread the loose end upwards passing it around the mainsheet block on the lower aft/rear end of the boom travelling in a stern to bow direction.
- d. Thread the loose end forward through the webbing sling immediately above the helm's cockpit area.



TOP TIP: This prevents the rope from sagging and getting tangled up around the helmsman during tacks and jibes!



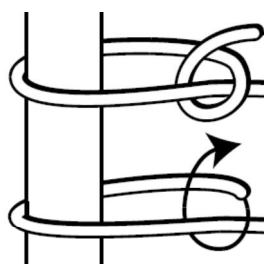
- e. Thread the loose end through the remaining mainsheet block positioned on the lower mid-section of the boom travelling in a stern to bow direction.
- f. Thread the loose end through the mainsheet ratchet block situated at the aft/rear end of the daggerboard case in the middle of the boats cockpit.



TOP TIP: Take care to ensure the mainsheet passes through the ratchet block so it free-wheels when sheeting in but locks when sheeting out. (There is also a ratchet on/off switch, on the side of the block)

3. Finally tie the end of the mainsheet through the webbing loop at the aft/rear end of the rear centre toe strap using a half hitch with a secondary overhand knot in the very end of the rope to prevent the half hitch coming undone.

TOP TIP: This eliminates twisting, knotting and potential unthreading of the mainsheet when in use.

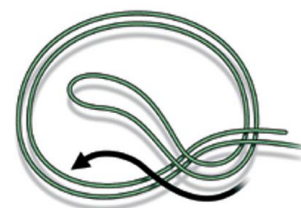
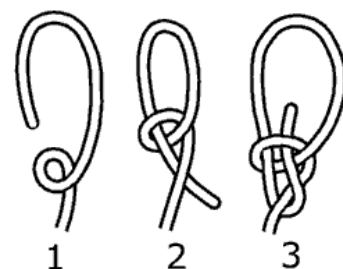
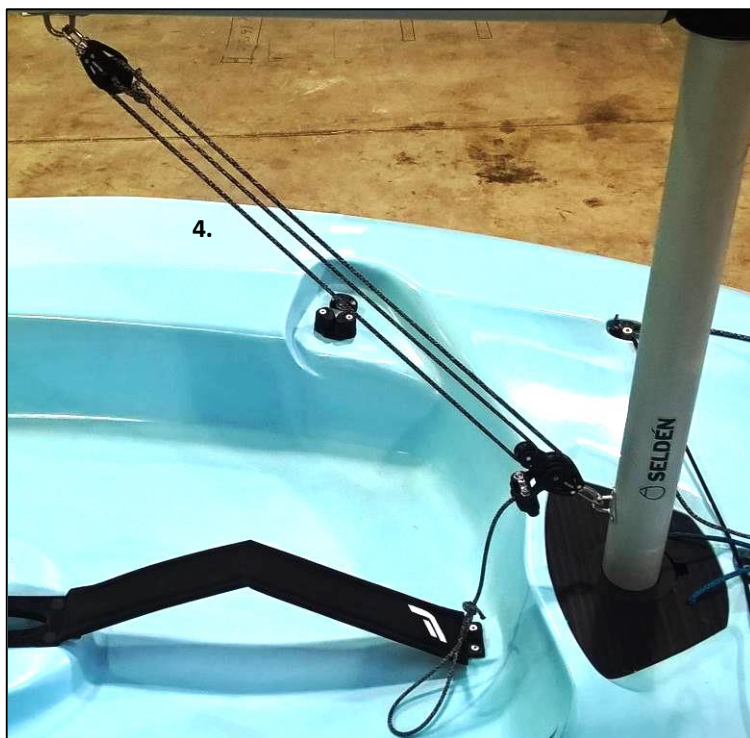


8. Rigging and Fitting the Vang

Background: The Fusion is supplied with a 3:1 vang purchase cascade. (2 block system)

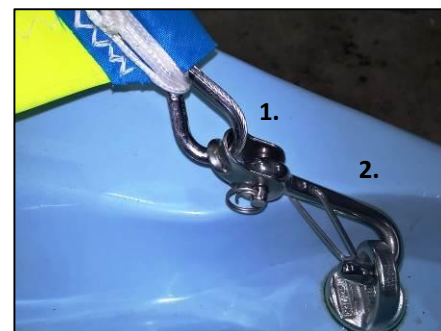
1. Take the lower vang block and using its integral snap hook attach it to the eye plate positioned on the aft/rear face of the lower mast. (Just above the mast deck plate)
2. Take the upper vang block and using the shackle provided attach it to the eye plate positioned on the lower surface of the boom. (Near the front end).
3. Take the vang control line and attach one end directly through the central hole of the upper vang block (Not around the pulley sheave) using a bowline loop.
4. Thread the remaining loose end around the purchase system as shown before passing it through the cleat fairlead of the lower vang block and tying an overhand loop/handle in its end. (large enough to put your hand in)
5. Tension the vang to the desired amount and secure it in the cleat which forms an integral part of the lower vang block.

TOP TIP: The correct vang tension for normal conditions would allow the trailing edge of the mainsail (leech) to blade open slightly at its tip (like a propeller) while preventing the boom from "skying" upwards excessively when the sail is filled.



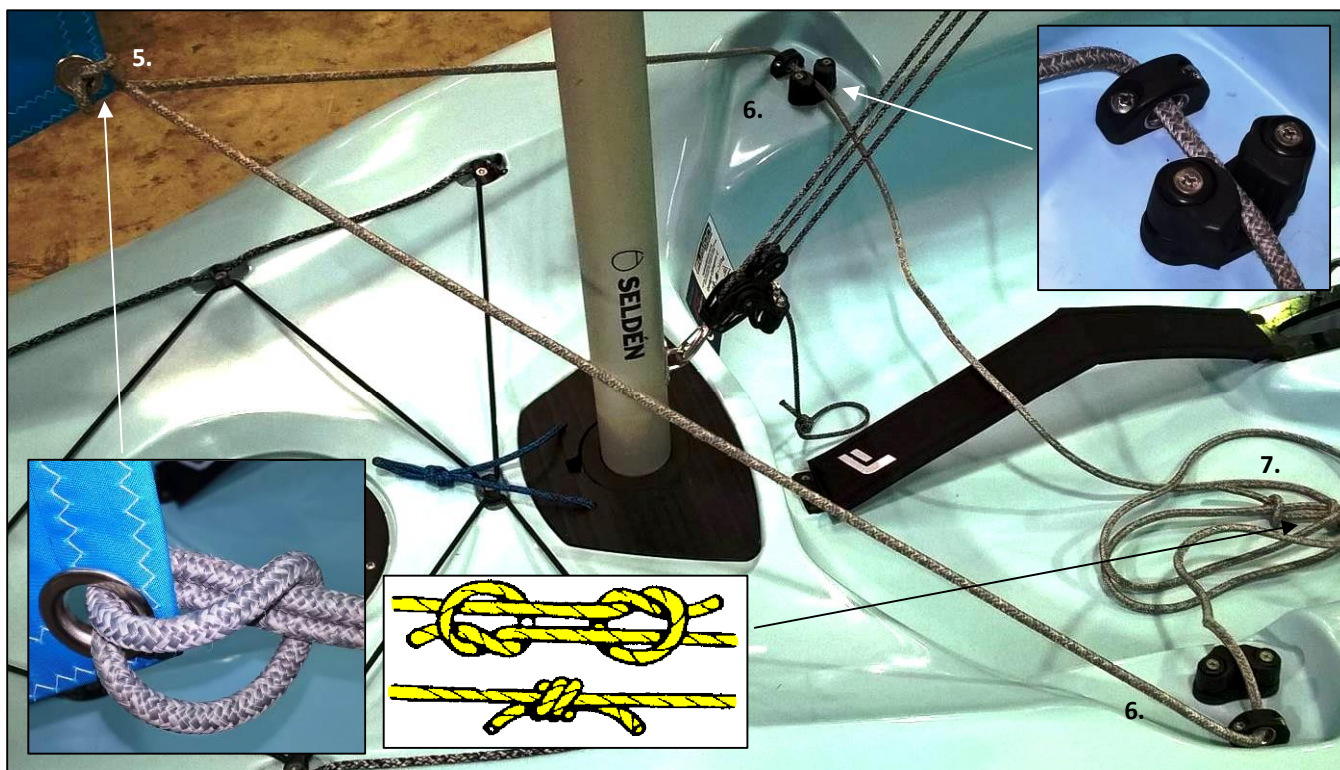
9. Rigging and Raising the Jib

1. Fasten the snap hook to the jib tack (forward lower corner) using the rigging link.
2. Hook the jib tack to the bow eye as shown.
3. Tie the jib halyard (previously tied on the cunnigham D ring - for safe keeping) to the head (upper corner) of the jib using a bow line loop.
4. Hoist the jib and cleat the halyard securely in the cleat before stowing the free end of the halyard in the pocket on the port (left) hand side of the mainsail tack.
5. Tie the jib sheet onto the jib clew (aft/rear lower corner) by taking the centre of the sheet and passing it through the clew cringle before passing the two free ends back through the loop formed.



6. Thread one loose end of the jib sheet **either side of the mast** and through the port and starboard jib sheet fairleads in an outboard to inboard direction as shown.
7. Finally tie the two loose sheet ends together using a fisherman's knot

TOP TIP: This eliminates twisting, knotting and potential unthreading of the jib sheets when in use.



TOP TIP: The jib can be rolled, folded in half and stored under the deck storage elastics as shown when sailing. The sheets needn't be untied at any point during this exercise and the jib tack snap hook can be clipped on for further security upon completion.

With this in mind, the jib can be raised and lowered as conditions change during your Fusion adventure!



10. Cockpit Drain Bung

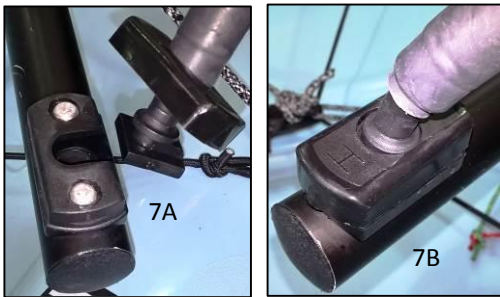


WARNING: The cockpit drain bung should NOT be used unless total crew weight in your Fusion exceeds 175kg's!

Background: Fusion is completely self-draining (even when static) at less than 175kg's crew weight.

11. Fitting the Rudder

1. Lower the rudder heads pintle pins onto the rudder gudgeons situated on the stern/transom of the boat.
2. Ensure the integral rudder gudgeon clip (blue) is successfully engaged resulting in the rudder head automatically "clicking" in to place securely.
3. Fit the secondary rudder retaining split ring through the upper pintle pin.
4. Insert the aft/rear end of the tiller arm tube in to the rudder head travelling in a forward to aft/rearward direction while passing underneath the traveller line.
5. Line up the tiller arm retaining screw hole with its corresponding hole on the uppermost aft/rear surface of the rudder head.
6. Locate the tiller arm retaining screw, driving it carefully through both the rudder head and the tiller arm.



7. Clip the tiller extension to its mounting bracket on the uppermost forward surface of the tiller arm.
8. 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 forwards.

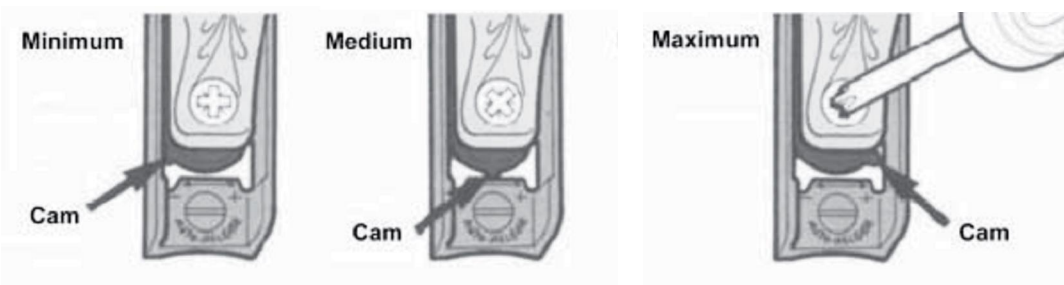


Background: The auto-release cleat on the Fusion tiller arm provides the best solution to the problem of how to lock-down a rudder blade yet allow it to flip up if it hits the bottom or a solid obstacle in the water.

TOP TIP: Once tripped the Fusion tiller arm cleat can be reset in seconds simply by pushing the cleat back down into its base until you hear it "click". The cleat is also fitted with an adjustable cam to enable the release tension to be set to suit your local conditions.

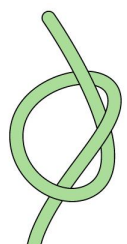
Setting the Release Load:

1. Test release load with the "cam" at minimum setting.
2. To increase the release load use a screwdriver to rotate the "cam" incrementally towards maximum.



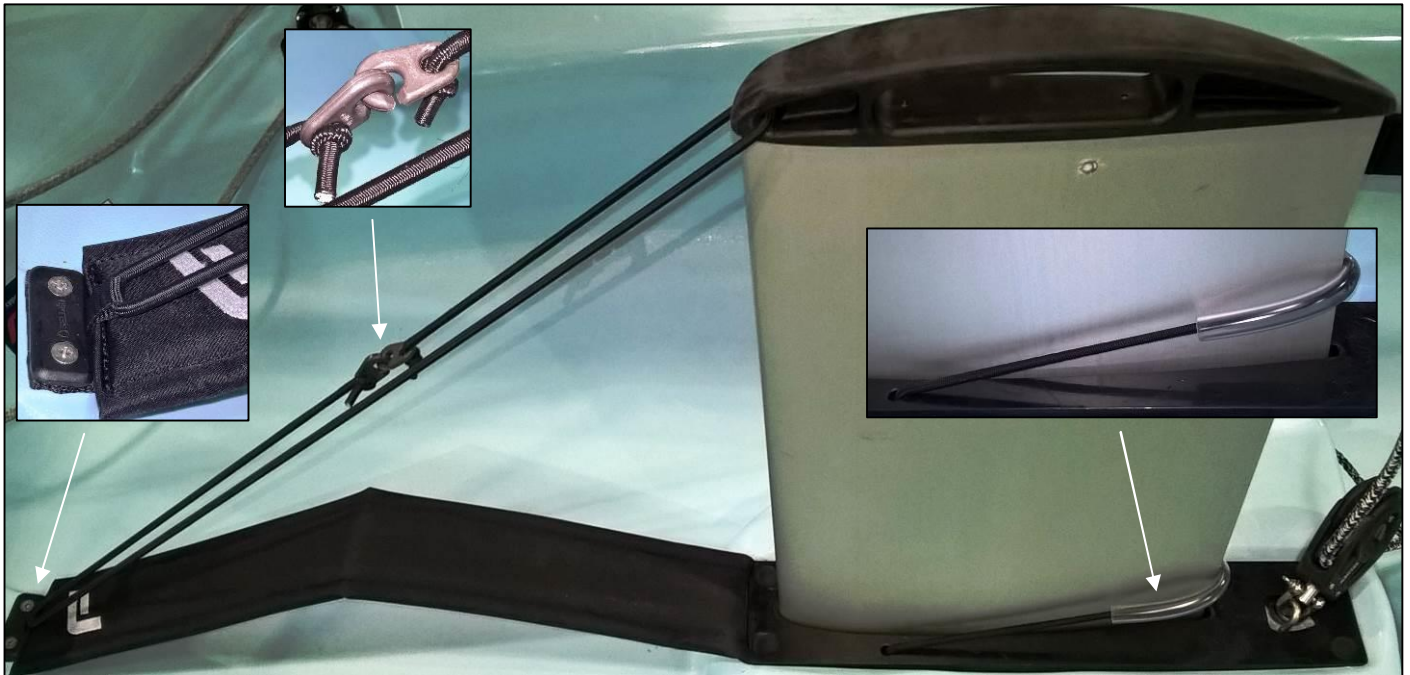
12. Fitting the Daggerboard

1. Put a sister clip on one end of the daggerboard shock cord before tying an overhand knot at the end of the shockcord to prevent loss.
2. Pass the other end of the shock cord:
 - a. Through the hole in the upper forward edge of the daggerboard
 - b. Through the webbing loop at the forward end of the front toe strap.
3. Put a sister clip on the loose end of the daggerboard shock cord before tying an overhand knot at the end of the shockcord to prevent loss.
4. Finally fasten the sister clips together to close the daggerboard elastic loop as shown.



TOP TIP: When putting the daggerboard in the case, (upon launching) make sure the elasticated clear plastic loop (Integral to the daggerboard case) is positioned **BEHIND** the daggerboard. In this event, when the daggerboard is pushed fully down (in deep water) the elasticated plastic loop can easily be flicked over the top of the daggerboard to prevent it riding or floating up.

WARNING: If the daggerboard is not secured correctly and fully retracts during capsize, the boat will invert resulting in a risk of entrapment.



13. Mainsail Reefing and Stowing the Mainsail

In strong winds, if you are unsure whether you can cope with the conditions, it is always best to reef the sail to reduce its area.



1. Ease the vang and unhook the lower vang block from the eye bracket on the aft lower face of the mast immediately above the mast deck plate.
2. Un-cleat the outhaul control line
3. Rotate the mast through 720 degrees (two complete turns) in a clockwise direction.
4. Re-attach the lower vang block to the eye bracket on the aft face of the mast.
5. Re-tension tension the clew out haul to the desired amount and secure it in the cleat on the boom.
6. Finally re-tension the vang to the desired amount before engaging the line back in the cleat jaws.



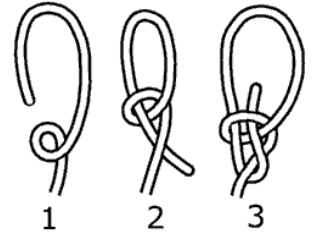
TOP TIP: For convenience after sailing, the mainsail can temporarily be stowed by wrapping the sail around the mast in a clockwise direction before positioning the clews webbing strap over the integral plastic sail hook.

WARNING: If your Fusion is not being used for more than a day or so, its sails should be stowed dry and clean in the bags provided in order to avoid degradation.

14. Adding a Painter/Towing in a Line

Painter - To tow your Fusion on the water, tie it to a jetty, buoy or its trolley, a painter should be fitted as follows:

1. Use a 3 metre long, 7mm or 8mm diameter rope for the painter. (A smaller diameter rope may damage the hull)
2. Thread one end through the hole at the top of the bow and then through the centre of the bow eye before tying it directly to the loop in the centre of the painter bridle (rope that exits the mast deck plate) using a bowline.
3. Pull the painter taut from other end and tie an overhand knot immediately in front of the bow to prevent unthreading.



Towing in a Line – Follow the above guidance but use a 6 metre, 7mm or 8mm diameter rope for the painter.

1. Thread the painter of the towed boat through one of the towing fairlead holes in the stern of the boat ahead. (In a stern to bow direction)
2. Tie a bowline loop around either the daggerboard handle (with the board down in the case) or the mast.



15. Top Cover

TOP TIP: If the topmast is balanced with one end in the "V" of the foredeck and the other in the middle of the transoms upper surface, a perfect apex roof is formed when a top cover is put on the boat!

In this scenario, water cannot pool heavily in the cover when the boat is stored outdoors for an extended period of time!



16. Launching and Basic Safety on the Water

Before You Go Sailing:

1. Check you are wearing suitable clothing and safety equipment for the conditions and time of year
2. If possible take a phone, GPS or VHF with you.
3. Always wear a buoyancy aid or life jacket
4. Make sure a third party knows where you are sailing and how many of you are sailing.
5. Check the weather forecast
6. Check the time of high and low tides if applicable.
7. Seek advice on local conditions if sailing in a new area.
8. Always check the condition of your craft before setting off.
9. **Check for overhead cables when rigging, launching and recovering.**
10. The use of a Fusion Sailboats supplied Fusion mast head float is highly advisable. (This device will assist in the prevention of complete inversion in the event of capsizing)

Launching

1. Raise the rig with the boat facing into the wind.
2. Take the boat into the water with the bow facing into the wind.
3. When there is enough water below you, lower the daggerboard and rudder fully.
4. Cleat the rudder downhaul in the cleat on the tiller.
5. The rudder and the daggerboard should be raised before coming ashore.

On The Water

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

17. Care, Maintenance and Service

Before rigging your boat, read and familiarize yourself with the rigging manual. Failure to adhere to the following guidelines could invalidate your warranty.

Maintenance

- Keep all 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 nothing serious, staining can be removed with a fine abrasive or oxalic acid/gel.
- 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 similar dry silicone based spray. Do not use oil.
- Inspect shackles, pins and clevis rings, use electrical tape to stop snagging and to prevent them from coming undone.
- When refastening screws do not over tighten as this may strip the thread, do not reuse nyloc nuts more than three times.
- Damaged or worn parts should be replaced.
- Sails should be thoroughly washed down with fresh water, dried and stored in a dry place.

Trailers and Trolleys

- Trailers and trolleys supplied by Fusion Sailboats are designed to store and transport the hull in the best possible manner to avoid damage. Please do not transport your Fusion Sailboats product on a trailer or trolley that has not been specifically designed for the product. Hulls damaged via the use of an incorrectly designed or wrongly set up trolley or trailer are not covered under warranty.
- It is highly recommended that a trolley is used to launch and recover your boat. Dragging your hull up onto a beach or slip way will wear away the polyethylene and damage the boat.
- The hull should not be stored directly on a pebble beach, wooden battens or in any other locally point loaded scenario (such as on scaffold or wood batten boat racks) as the hull may become permanently dented or warped.
- Trailers should be rinsed with fresh water and checked at regular intervals. It is recommended that trailers be serviced annually. Trailer road base should never be immersed in water.
- When securing your boat to a trailer for transport be very careful that ratchet straps and ropes are not over tightened and that there is sufficient padding under the strap or rope to prevent the hull/deck from being damaged through abrasion or pressure.
- Top covers must not be allowed to “flap” when driving at speed. This can abrade the surface of the hull and damage it. It is recommended if you are towing and plan to use your top cover that an under cover is fitted to prevent cover flap damage to the top sides of the hull.

Storage

- Your boat should always be tied down securely to the ground when not in use.
- UV light will cause fading to hull and components over time. A storage cover is recommended to reduce UV degradation.
- Do not leave the rig under tension when not sailing or during storage.
- Hulls, hardware, ropes, rudders, daggerboards, spars, sails or any other equipment must not be stored wet in bags from whomever they are supplied. (To include Fusion Sailboats) Failure to do this will cause corrosion, mould, blistering, print through, warping and other damage.

On Water Towing

- Towing your Fusion Sailboats product at high speed (10 – 20 knots) behind a rib or power boat can seriously damage the hull. Boats damaged in this manner are not covered by the warranty. Fusion Sailboats recommends a maximum towing speed of 6 knots.

Repairs

- Repairs to the polyethylene hull should only be undertaken by persons with the relevant equipment and skills. Please contact Fusion Sailboats for advice.

18. CE Certification



HPI Verification Services

Examination Report

This is to certify that the product listed below conforms to the requirements of the
Recreational Craft and Personal Watercraft Directive
2013/53/EU, Module A1 - Annex II of Decision 768/2008/EC

Certificate Number HPIVS/R1176-001-I-01
Date of Issue 10-Nov-2016

Manufacturer Fusion Sailboats
Unit 102, Tenth Avenue
Deeside Ind. Park
Deeside
CH5 2UA
United Kingdom

Product Description Fusion Dinghy

Description of Product	Rigid Hull, Cruising boat - Planing - Sail	
Design Category	C	No of hulls: 1
Length (m)	Max. (L _{MAX}): 3.65	Hull (L _H): 3.65
Beam (m)	Max. (B _{MAX}): 1.45	Hull (B _H): 1.45
Maximum Load	People: 3	Mass (kg): 235
Displacement (kg)	Light Craft: 90	Max. (M _{LDC}): 325
Maximum Power	kW: 0	HP / mHP: 0 / 0

Check this certificate is genuine
This report confirms that HPiVS have assessed the craft against ER 3.2 'Stability' & 3.3 'Flotation'. The manufacturer is responsible for compiling Technical Documentation for all the other requirements.



Managing Director

Technical Manager

This certificate is the property of HPI Verification Services Ltd. & may not be amended or issued to others.
The manufacturer must inform HPI Verification Services of any changes that affect any of the assessed Essential Requirements. Failure to do this will invalidate the Certificate.



EU Notified Body No. 1521
Company registered in England #7217086

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Tel +44 1491 822818
Fax +44 700 600 6831
Email enquiries@eucertification.com
www.eucertification.com

HPI Verification Services Ltd.
The Manor House
Howbery Park, Wallingford
OX10 8BA, United Kingdom