KRAKEN SAILS

# HEADSAIL MEASUREMENT WORKSHEET

Date _____

**This sheet is for:** ☐ Headsail on the forestay ☐ Solent ☐ Staysail

## HOW TO USE THIS

1. Work through the boxes in order. Each one has a picture showing where the tape goes, marked in red.
2. Each box shows its unit. Everything is in **metres**, to two decimal places (for example 4.35), or in **millimetres** for fittings and tape offsets. There are no centimetres. If your tape is in feet and inches, write those clearly instead (46' 7") and we will convert them.
3. Do not do any sums. Where a box asks for a full width or for parts, write what the tape says.
4. If you cannot measure something, leave it blank and carry on. We will sort it out with you.
5. Measuring for a solent or staysail as well? Print one copy of this worksheet for each sail and tick which one it is at the top. Wherever it says forestay, use the stay that sail sets on.
6. Photograph or scan the finished pages and email them back to us with your photos.

## WHAT YOU NEED

- A long tape measure, 30 m (100 ft) or more for most keelboats. A fibreglass builder's tape is fine.
- A short steel tape for the small measurements, and calipers if you have them.
- A helper. One person holds the tape, the other reads it.
- A mousing line or a spare sheet, longer than your mast, to pull the halyard back down.
- A ball of string.
- A calm day, with the boat floating as it normally does.

# BEFORE YOU START

## ABOUT YOU AND YOUR BOAT

**Which units is your tape measure in?**

☐ Metric (metres and millimetres) ☐ Imperial (feet and inches)

**Your name**

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**Email** We send you a copy of your measurements. We only use your details for your sail.

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**Phone**

---

**Boat make and model**

---

**Boat name**

---

**Year built**

---

**Sail number**

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**Do you race under a rating or class rule?** Choose all that apply.

☐ None, cruising ☐ IRC ☐ ORC ☐ AMS ☐ PHRF ☐ ORR ☐ IMS ☐ CHS ☐ One Design

☐ Not sure

## WHAT ARE YOU MEASURING?

Not sure? Choose My boat. The guide offers the old sail as an optional extra for each sail you measure for.

**What would you like to measure?**

☐ My boat (the rig and deck, so we can design a new sail to fit. You can add your old sail's measurements along the way.)

☐ An old sail only (the sail is off the boat and you can lay it out flat. We work from the sail itself.)

### ABOUT YOUR RIG

Two quick questions so we know what your boat has.

With three stays, we call the one just behind the forestay the solent and the one behind that the staysail.

**How many stays in front of the mast carry a sail?**

☐ 1 (just the forestay. Most boats) ☐ 2 (the forestay and one inner stay)

☐ 3 (the forestay and two inner stays)

**What is the inner stay?**

☐ Solent (just behind the forestay, running to near the top of the mast)

☐ Staysail (further back on the foredeck and lower on the mast: a cutter stay or a removable inner forestay)

**Do you fly, or want, any of these?** These are sails that are not attached to a stay. Tick all that apply, or leave it blank.

☐ Code sail (a flat reaching sail on its own furler: code zero, screecher, FRO)

☐ Asymmetric spinnaker (a gennaker or A-sail, tacked to the bow, a prodder or a bowsprit)

☐ Symmetric spinnaker (a traditional kite flown from a spinnaker pole)

## YOUR SETUP

### HOW IS YOUR HEADSAIL RIGGED?

More than one track? Measure the one this sail will sheet to. If you are not sure, tell us in the final comments.

**How does the front edge of the sail attach?**

☐ Furler (the sail rolls up around the forestay and stays up)

☐ Foil (the sail slides up a grooved track on the forestay and comes down after sailing)

☐ Hanks (the sail clips onto the forestay wire)

**Where do the sheets lead to on deck?**

☐ Track (a track each side with a car that slides forward and back)

☐ Self-tacking (one track across the boat in front of the mast)

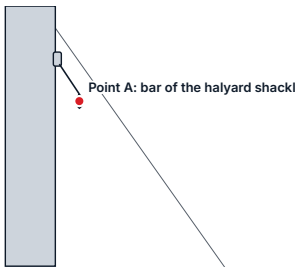
☐ Fixed point (a block or ring that does not move)

**Do you have inhaulers?**

☐ No (most cruising boats do not) ☐ Yes (a ring or block that pulls the sheet in towards the mast)

# UP THE MAST

## SEND THE TAPE UP THE MAST




1. **Furler:** unroll and lower the sail, then unclip the halyard from the furler's top swivel. **Foil or hanks:** take the sail off.
2. Attach the end of the long tape to the **bar of the halyard shackle**, the part the sail hangs from. That way every measurement includes the shackle.
3. Tie a **mousing line or a spare sheet** to the shackle as well. This is how you pull the halyard back down, so it must reach the deck with the halyard at the top.
4. Check where the zero of your tape sits against the shackle bar, and write it in the box below.
5. Hoist the halyard until it stops, then cleat it. This top position is called **max hoist**. The next measurements are all read off the tape from here.

Pull the tape firm but not hard, and keep it clear of the spreaders.

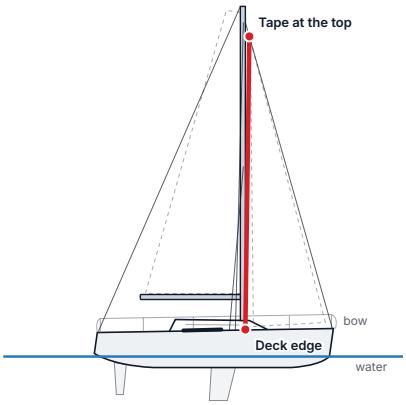
**What does the tape read at the inside of the shackle bar?** Write 0 if the zero of the tape sits exactly on the bar. If the zero ends up 20 mm above the bar, write 20. If it hangs 20 mm below the bar, write -20. We do the sums.

_____ **mm**

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**H1**

## TOP OF THE HOIST TO THE DECK EDGE BESIDE THE MAST



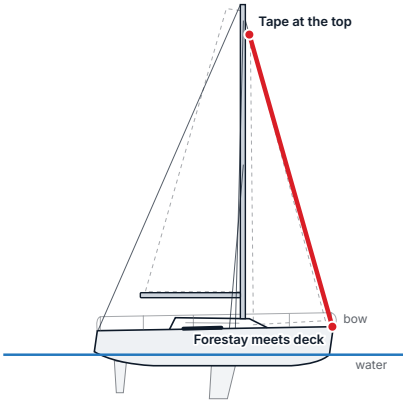

1. Take the tape out to the **side of the boat**, level with the mast.
2. Read it at the deck edge (the gunwale, where the deck meets the hull side).

_____ **metres**

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**H3**

## TOP OF THE HOIST TO WHERE THE FORESTAY MEETS THE DECK




1. Walk the tape to the bow.
2. Read it at the point where the forestay (the wire or furler at the front) meets the deck.

_____ **metres**

## H4 TOP OF THE HOIST TO THE TACK FITTING

1. The tack fitting is where the bottom front corner of the sail attaches: the shackle on top of the furler drum, or the hook or shackle at the bow.
2. Read the tape at the inside of that fitting, where the sail would pull against it.

_____ **metres**

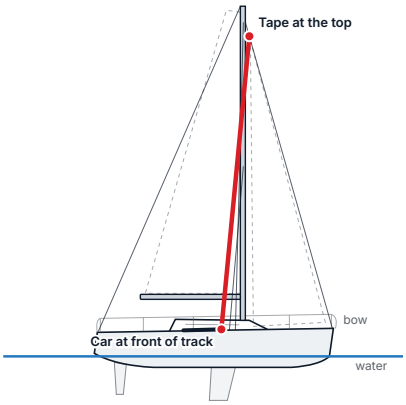



## H5 TOP OF THE HOIST TO THE FRONT END OF THE SHEET TRACK

1. Slide the sheet car to the very **front** of its track.
2. Read the tape at the car, where the sheet runs through it.

Fixed sheeting point instead of a track? Measure to that point.

_____ **metres**

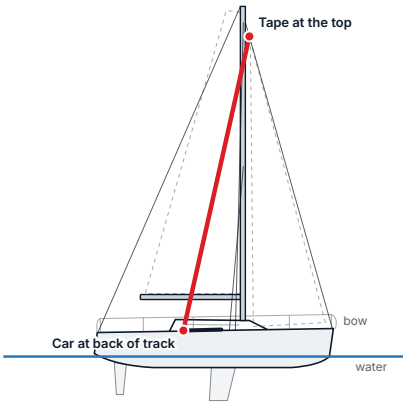



## H6 TOP OF THE HOIST TO THE BACK END OF THE SHEET TRACK

BOATS WITH A SHEET TRACK

1. Slide the car to the very **back** of the track.
2. Read the tape at the car again.

_____ **metres**

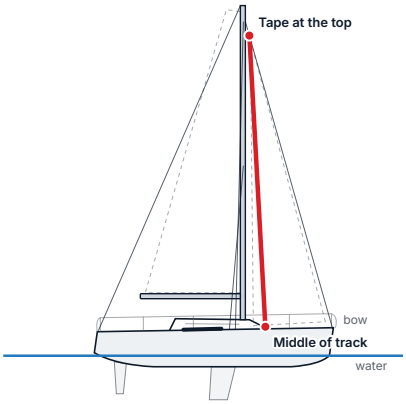



## H5 ST TOP OF THE HOIST TO THE MIDDLE OF THE SELF-TACKING TRACK

SELF-TACKING TRACK

1. Slide the car to the **middle** of the track, on the centreline of the boat.
2. Read the tape at the car, where the sheet attaches.

_____ **metres**

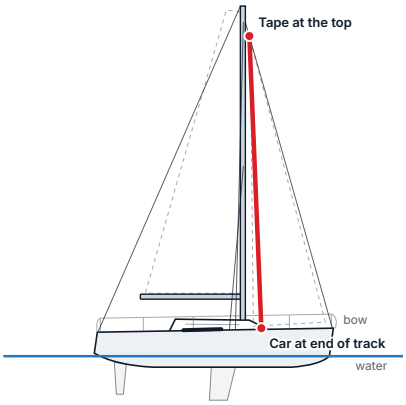


## H6 ST TOP OF THE HOIST TO THE END OF THE SELF-TACKING TRACK

SELF-TACKING TRACK

1. Slide the car right out to the stop at **one end** of the track.
2. Read the tape at the car again.

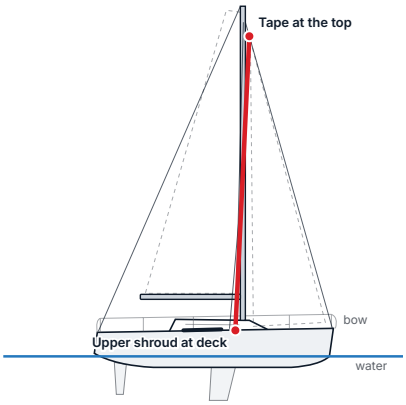
_____ **metres**




## H7 TOP OF THE HOIST TO THE BASE OF THE UPPER SHROUD

1. Shrouds are the wires that hold the mast up sideways. The **upper** shroud is the one that goes to the top of the mast.
2. Read the tape where that wire meets the deck.

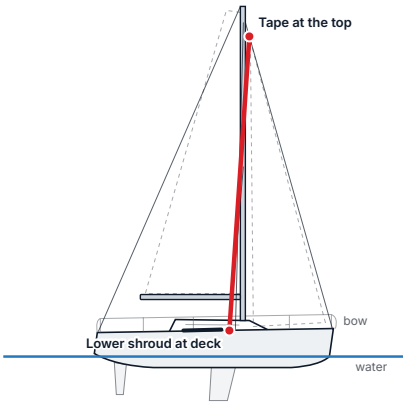
_____ **metres**




## H8 TOP OF THE HOIST TO THE BASE OF THE LOWER SHROUD

1. The **lower** shroud stops part-way up the mast, under the spreaders.
2. Read the tape where it meets the deck. If there are two lowers each side, use the front one.

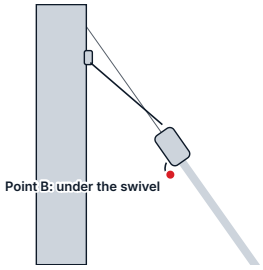
_____ **metres**




## MOVE THE TAPE TO THE FURLER SWIVEL

FURLING BOATS

1. Lower the halyard and clip it back onto the furler's top swivel.
2. Attach the tape to the **bottom** of the swivel, where the top of the sail attaches. Keep the mousing line on.
3. The tape is now attached differently, so check where its zero sits and write it in the box below.
4. Hoist the swivel to where it normally sits with the sail up.




**What does the tape read at the swivel's attachment point?** Write 0 if the zero of the tape sits exactly where the sail attaches, 20 if the zero is 20 mm above it, -20 if it hangs 20 mm below.

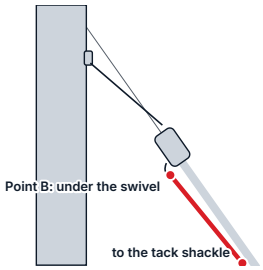
_____ **mm**

## H10 FURLER TOP SWIVEL TO THE TACK SHACKLE FURLING BOATS

1. Hold the tack shackle on the drum up, and pull the tape down to it.
2. Read the tape as if it were attached to the tack shackle and the sail were pulling up on it.

This is the longest the front edge of your new sail can be, so take it twice.

_____ **metres**




### BRING THE TAPE DOWN

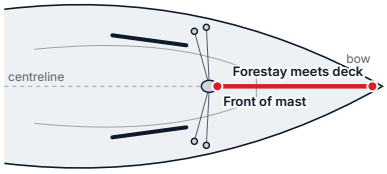
1. Use the mousing line to pull the halyard and tape back down.
2. The rest of the headsail measurements are taken on deck.

# ON DECK

## H11 FORESTAY AT THE DECK TO THE FRONT OF THE MAST

1. Hook the tape where the forestay meets the deck.
2. Run it straight back, level, to the **front face of the mast**.

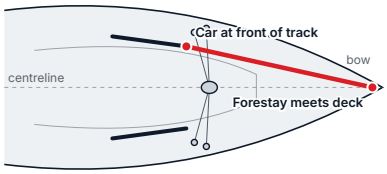
_____ **metres**




## H12 FORESTAY AT THE DECK TO THE FRONT END OF THE SHEET TRACK

1. Keep the tape hooked at the forestay.
2. Measure in a straight line to the car at the **front** of the track (or to your fixed sheeting point).

_____ **metres**

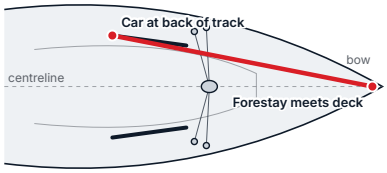



## H13 FORESTAY AT THE DECK TO THE BACK END OF THE SHEET TRACK

BOATS WITH A SHEET TRACK

1. Slide the car to the **back** of the track.
2. Measure from the forestay to the car in a straight line.

_____ **metres**

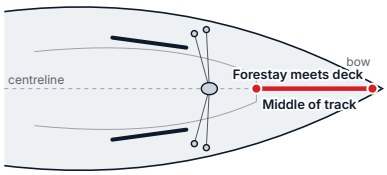



## H12 ST FORESTAY AT THE DECK TO THE MIDDLE OF THE SELF-TACKING TRACK

SELF-TACKING TRACK

1. Hook the tape where the forestay meets the deck.
2. Measure straight back to the car in the middle of the track.

_____ **metres**

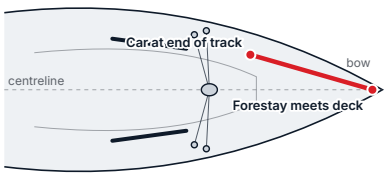



## H13 ST FORESTAY AT THE DECK TO THE END OF THE SELF-TACKING TRACK

SELF-TACKING TRACK

1. Slide the car out to the stop at one end of the track.
2. Measure from the forestay to the car in a straight line.

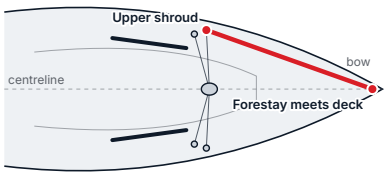
_____ **metres**



## H14 FORESTAY AT THE DECK TO THE BASE OF THE UPPER SHROUD

Measure from the forestay to where the upper shroud (the wire that goes to the top of the mast) meets the deck.

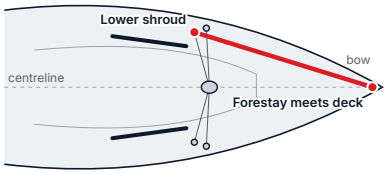
_____ **metres**




## H15 FORESTAY AT THE DECK TO THE BASE OF THE LOWER SHROUD

Measure from the forestay to where the lower shroud meets the deck.

_____ **metres**



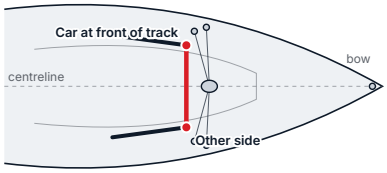

## H16 WIDTH ACROSS THE BOAT AT THE FRONT END OF THE TRACK

1. Measure **right across the boat**, from the fitting on one side to the matching fitting on the other side.
2. Write the full width. We do the sums.

**Across the boat, car to car (cars at the front)**

_____ **metres**

Write the full width. We halve it.




## H17 ST WIDTH OF THE SELF-TACKING TRACK, END TO END SELF-TACKING TRACK

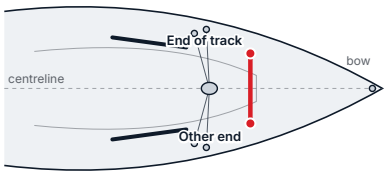
1. Measure **straight across the boat** from where the car stops at one end of the track to where it stops at the other.
2. Write the full width. We do the sums.

Curved track? Measure straight across between the two ends, not around the curve.

**Along the track, end stop to end stop**

_____ **metres**

Write the full width. We halve it.




## H17 WIDTH ACROSS THE BOAT AT THE BACK END OF THE TRACK

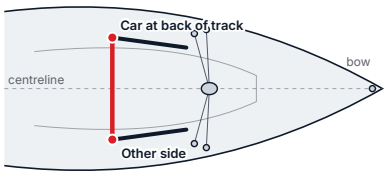
BOATS WITH A SHEET TRACK

1. Measure **right across the boat**, from the fitting on one side to the matching fitting on the other side.
2. Write the full width. We do the sums.

**Across the boat, car to car (cars at the back)**

_____ **metres**

Write the full width. We halve it.



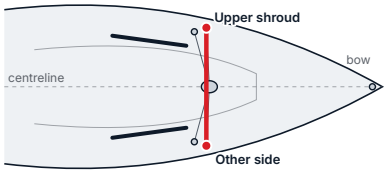

## H18 WIDTH ACROSS THE BOAT BETWEEN THE UPPER SHROUDS

1. Measure **right across the boat**, from the fitting on one side to the matching fitting on the other side.
2. Write the full width. We do the sums.

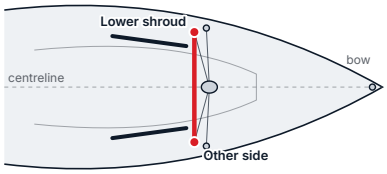
**Across the boat, upper shroud to upper shroud**

_____ **metres**

Write the full width. We halve it.



## H19 WIDTH ACROSS THE BOAT BETWEEN THE LOWER SHROUDS




1. Measure **right across the boat**, from the fitting on one side to the matching fitting on the other side.
2. Write the full width. We do the sums.

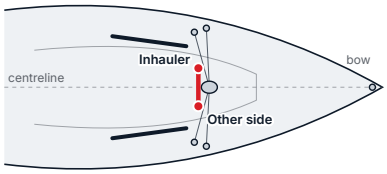
**Across the boat, lower shroud to lower shroud**

_____ **metres**

Write the full width. We halve it.

## H20 WIDTH ACROSS THE BOAT BETWEEN THE INHAULERS

BOATS WITH INHAULERS




1. Measure **right across the boat**, from the fitting on one side to the matching fitting on the other side.
2. Write the full width. We do the sums.

**Across the boat, inhauler to inhauler, pulled fully in**

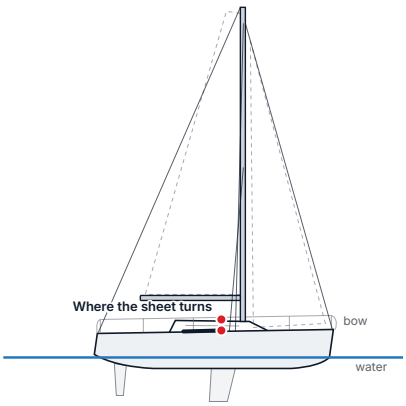
_____ **metres**

Write the full width. We halve it.

## H20b HEIGHT OF THE SHEETING POINT ABOVE THE DECK

1. Look at the car or block the sheet runs through.
2. Measure from the deck (or the track) up to the point where the sheet turns through it.

_____ **mm**




### PHOTO: THE SHEET TRACK AND CAR

While you are here, take a photo of the sheet track with the car on it, from above.

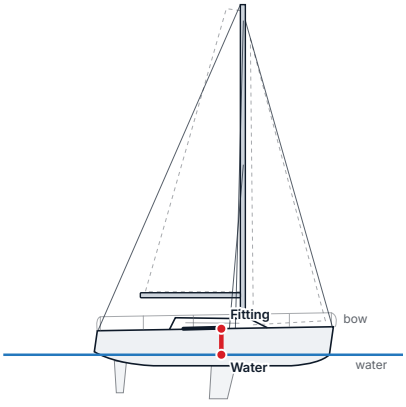
☐ The sheet track and car taken

# HEIGHT ABOVE THE WATER

### NEXT: HEIGHTS ABOVE THE WATER

1. **Why these matter:** everything so far is measured from one part of the boat to another. These heights tie it all to one flat reference, the water, so we can place your rig accurately on a side-on drawing.
2. Each one is done in two short parts: from the fitting down to the **gunwale** (the deck edge), then from the gunwale straight down to the **water**.
3. Write both parts. We do the sums.
4. Do this in flat water, with the boat sitting as it normally does and nobody standing right on the bow.

A small weight on the end of the tape helps it hang straight down to the water.



## H21 FRONT END OF THE TRACK DOWN TO THE WATER

1. Put the car at the front of the track.
2. Measure the height of the car above the gunwale beside it, then from the gunwale down to the water.

Car level with the gunwale? Write 0 for the first part.

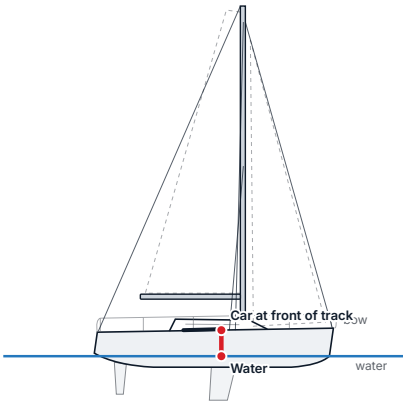
**Car down to the gunwale**

_____ **mm**

**Gunwale down to the water**

_____ **metres**

Write each part. We add them up.




## H22 ST END OF THE SELF-TACKING TRACK DOWN TO THE WATER

SELF-TACKING TRACK

1. Put the car at one end of the track.
2. Measure how high the car sits above the gunwale beside it (a string across the boat helps), then from the gunwale down to the water.

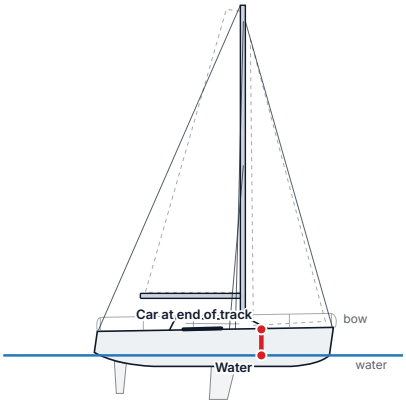
**Car at the end of the track down to gunwale level**

_____ **mm**

**Gunwale down to the water**

_____ **metres**

Write each part. We add them up.




## H22 BACK END OF THE TRACK DOWN TO THE WATER

BOATS WITH A SHEET TRACK

1. Put the car at the back of the track.
2. Measure the height of the car above the gunwale beside it, then from the gunwale down to the water.

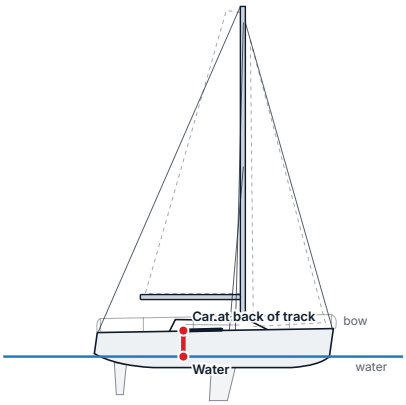
**Car down to the gunwale**

_____ **mm**

**Gunwale down to the water**

_____ **metres**

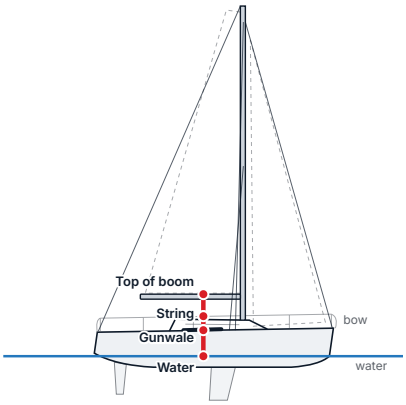
Write each part. We add them up.



## H23a TOP OF THE BOOM DOWN TO THE WATER

1. Tie a string tight across the boat from lifeline to lifeline, beside the mast.
2. Measure from the **top of the boom**, at the mast, straight down to the string.
3. Measure from the string down to the gunwale, then from the gunwale down to the water.

This fixes the height of the boom, which is what matters for the sail. No lifelines? Lay a batten across the cabin top and treat it like the lifeline height.




**Top of the boom down to the string**

_____ **metres**

**String down to the gunwale**

_____ **metres**

**Gunwale down to the water**

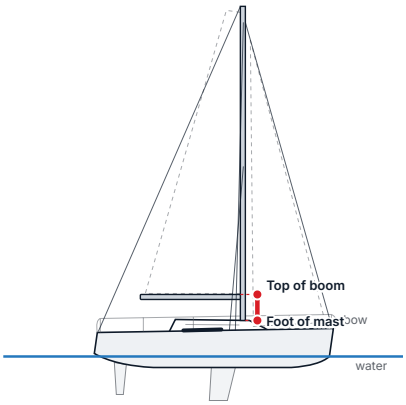
_____ **metres**

Write each part. We add them up.

## H23 TOP OF THE BOOM DOWN TO THE FOOT OF THE MAST

1. Measure straight down the mast from the **top of the boom** to the **foot of the mast**, where it sits on the deck or cabin top.
2. We take this off the last measurement to work out how high the foot of the mast is above the water.

_____ **metres**




## H24 FORESTAY AT THE DECK DOWN TO THE WATER

Measure from where the forestay meets the deck down to the gunwale, then from the gunwale straight down to the water.

Fitting level with the gunwale? Write 0 for the first part.

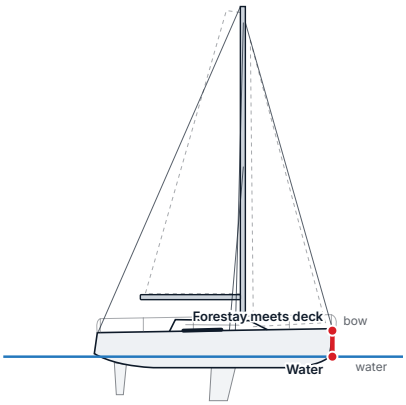
**Forestay fitting down to the gunwale**

_____ **mm**

**Gunwale down to the water**

_____ **metres**

Write each part. We add them up.

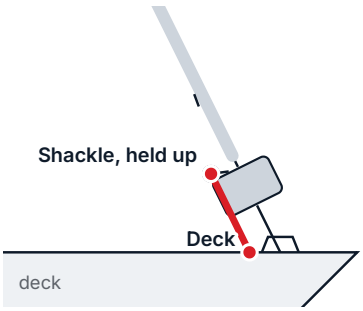


# AT THE BOW

## Note — DECK UP TO THE TACK SHACKLE (FURLING BOATS)

1. Use the short tape for these small bow measurements.
2. Hold the shackle on top of the drum up, as if the sail were pulling on it.
3. Measure from the deck up to the inside of the shackle, keeping the tape **parallel with the forestay**, not straight up.

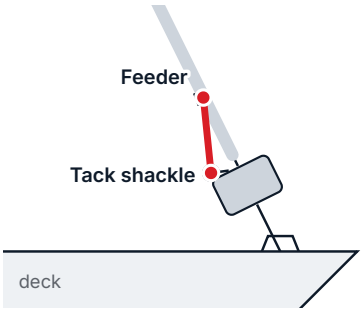
_____ mm




## H25 — TACK FITTING UP TO THE FEEDER (FURLER OR FOIL)

1. The **feeder** is the opening in the foil where the edge of the sail slides in.
2. Measure from the tack fitting up to the bottom of that opening.

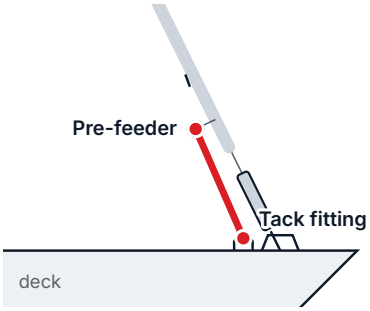
_____ mm




## H26 — TACK FITTING UP TO THE PRE-FEEDER (FOIL WITHOUT A FURLER)

1. The **pre-feeder** is the small ring or roller below the feeder that guides the sail in.
2. Measure from the tack fitting up to it. No pre-feeder? Leave it blank.

_____ mm

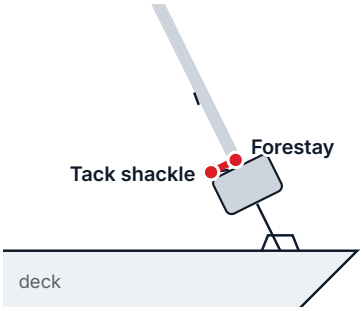



## H27 — HOW FAR THE TACK FITTING SITS BEHIND THE FORESTAY

1. Hold the tack shackle up at about 45°, as if the sail were pulling on it.
2. Measure squarely across from the **centre of the forestay** to the inside of the shackle, where the sail bears on it.

A fixed horn or pin? Measure from the centre of the forestay to the centre of the pin.

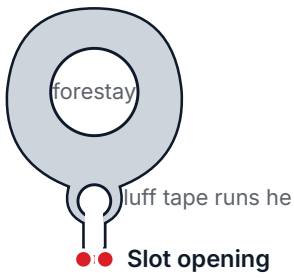
_____ mm




## H28 — WIDTH OF THE SLOT IN THE FOIL (FURLER OR FOIL)

1. Look at the foil where the sail feeds in. The edge of the sail slides up a narrow **slot**.
2. Measure the width of that slot opening. Calipers are best, or use drill bits as gauges. This tells us what size luff tape will fit.

_____ mm

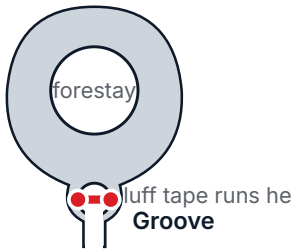


## H28b INSIDE DIAMETER OF THE GROOVE FURLER OR FOIL

1. Behind the slot, the luff tape runs in a round **groove**. If you can reach it, measure how wide that groove is inside.
2. Drill bits make handy gauges for this and for the slot: find the largest bit whose shank just slides in, and write down its size.

Cannot reach it? Leave it blank.

_____ **mm**




### PHOTO: THE BOW FITTING, FROM THE SIDE

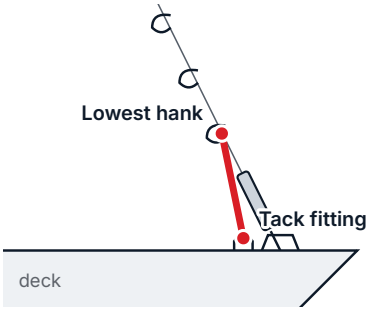
Take a photo from the side showing the deck, the tack fitting and the bottom of the forestay or furler.

☐ The bow fitting, from the side taken

## H29 TACK FITTING UP TO THE LOWEST HANK POSITION HANKED SAILS

1. Find the lowest point on the forestay wire where a hank can clip on, just above the turnbuckle or end fitting.
2. Measure from the tack fitting up to that point.

_____ **mm**




### ABOUT YOUR FURLER FURLING BOATS

**Furler make and model** Usually printed on the drum.

☐ Photo of the label on the furler drum taken

**Thickness of the luff tape on your current sail** The luff tape is the round cord along the front edge of the sail. Measure it with calipers in a few different spots.

**Spot 1** _____ **mm**

**Spot 2** _____ **mm**

**Spot 3** _____ **mm**

**Luff tape size, if you know it**

☐ Not sure ☐ #5 (4.8 mm) ☐ #6 (5.3 mm) ☐ #7 (6.3 mm) ☐ #8 (7.1 mm)

☐ Other (tell us in the final comments)

**On your current sail, has the luff tape ever:** Tick any that apply. Leave both blank if it has been fine.

☐ Pulled out of the track (it came out sideways) ☐ Been too tight to hoist (hard to pull up the track)

**Colour of the sun cover** The coloured strip that shows when the sail is rolled up.

**Which side is the sun cover on?** Unroll your current sail a little and see which side the coloured strip is sewn on.

☐ Port (left side, looking forward) ☐ Starboard (right side, looking forward)

☐ Not sure (we will check with you)

☐ Photo of the sun cover on your current sail taken

### ABOUT YOUR FORESTAY FOIL OR HANKS

**Foil make and model**

---

**Thickness of the luff tape on your current sail** The luff tape is the round cord along the front edge of the sail. Measure it with calipers in a few different spots.

**Spot 1** mm **Spot 2** mm **Spot 3** mm

**Luff tape size, if you know it**

☐ Not sure ☐ #5 (4.8 mm) ☐ #6 (5.3 mm) ☐ #7 (6.3 mm) ☐ #8 (7.1 mm)
☐ Other (tell us in the final comments)

**On your current sail, has the luff tape ever:** Tick any that apply. Leave both blank if it has been fine.

☐ Pulled out of the track (it came out sideways) ☐ Been too tight to hoist (hard to pull up the track)

**Forestay wire diameter** The thickness of the wire or rod itself.

mm

**What does the bottom front corner of the sail attach to?**

☐ Horn (two curved prongs the sail ring hooks over) ☐ Bail (a fixed metal loop)
☐ Shackle (a D shackle or snap shackle) ☐ Plate (a flat plate with a hole or pin)
☐ Not sure (send us a photo)

☐ Photo of the tack fitting taken

## YOUR OLD SAIL

### YOUR OLD HEADSAIL

1. **This part is optional.** If you still have the sail you are replacing, its measurements help us design the new one. They are also what a rating or handicap certificate is based on.
2. It is done off the boat, with the sail laid out flat. You can do it on another day.
3. If the sail has a measurement stamp, or you have a rating certificate that lists it, a photo of that is enough.

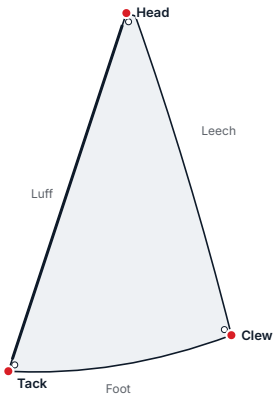
**Do you want to give us the measurements of your old sail?**

☐ Yes (i will lay it out and measure it)
☐ Photo only (it has a measurement stamp, or my rating certificate lists it) ☐ No (skip this part)

**What do you call this sail?**

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## LAY THE SAIL OUT FLAT



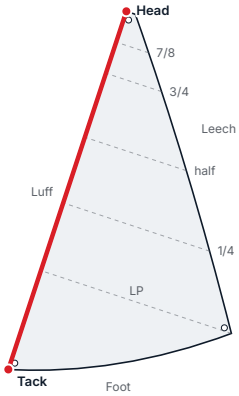

1. The sail must be **dry** and lying on a **flat surface**.
2. For each measurement, pull the sail just tight enough to take the **wrinkles out along the line you are measuring**. Do not stretch it.
3. Keep the tape **straight** from one point to the other. Where the edge of the sail curves, let it curve away from the tape.
4. Measure to the corners of the **cloth**, where the two edges of the sail would meet. Do not measure to the ring, the eye or a webbing strap.
5. The three corners have names. **Head**: the top corner. **Tack**: the bottom front corner, which attaches at the bow. **Clew**: the bottom back corner, where the sheets tie on.

- The sail, dry, and a clean flat space big enough to spread it right out: a lawn, a dock or a hall floor.
- A tape measure longer than the longest edge of the sail.
- A helper to hold the other end of the tape.
- Masking tape or a soft pencil, to mark points on the sail.

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HLU

## LUFF: THE FRONT EDGE, HEAD TO TACK




1. The **luff** is the front edge of the sail, the one that runs up the forestay.
2. Pull the luff out straight.
3. Measure in a straight line from the **head** to the **tack**.

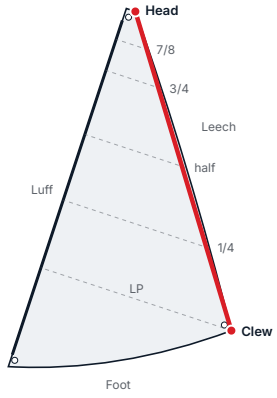
Rope or tape sewn along the luff? Pull it just straight and measure the sail from corner to corner.

_____ **metres**

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Old sail

## LEECH: THE BACK EDGE, HEAD TO CLEW



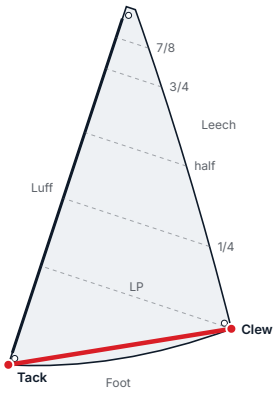

1. The **leech** is the back edge of the sail.
2. Measure in a straight line from the **head** to the **clew**.
3. If the edge curves in or out, keep the tape straight and let the cloth curve away from it.

_____ **metres**

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Old sail

## FOOT: THE BOTTOM EDGE, TACK TO CLEW



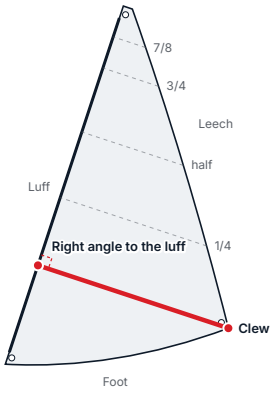

1. The **foot** is the bottom edge of the sail.
2. Measure in a straight line from the **tack** to the **clew**.
3. If the foot curves down below the line between the corners, keep the tape straight from corner to corner.

A rating certificate does not list the foot, but we need it to design your sail.

_____ **metres**

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## HLP LP: THE CLEW STRAIGHT ACROSS TO THE LUFF



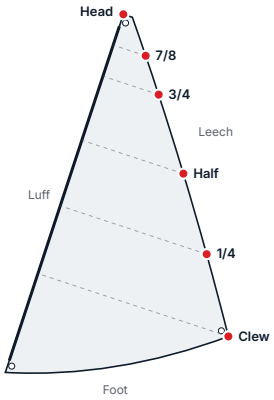

1. **What is LP?** LP stands for luff perpendicular. It is the **shortest distance from the clew to the luff**. The shortest line always meets the luff at a right angle, which is where the name comes from.
2. LP is the number that says how big a headsail is. A “135% genoa” has an LP that is 135% of the distance from the forestay to the front of the mast.
3. Pull the luff out straight and have your helper hold it there.
4. Hold the zero of the tape on the **clew**. Take the other end across to the luff and slide it up and down the luff. The **smallest reading** you can get is the LP.

Measure to the front edge of the sail, including any rope or tape along the luff.

_____ **metres**

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## MARK THE LEECH BY FOLDING

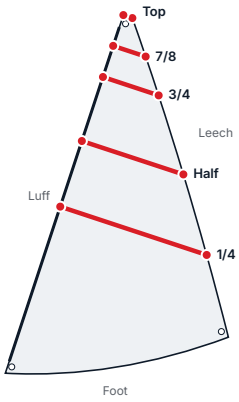



1. The widths in the next box are measured from set points on the leech. You find them by folding, so there is nothing to work out.
2. **Half:** fold the head down to the clew. Pull both halves of the leech tight so the edges lie on top of each other. The fold is the half-way point. Mark it on the leech.
3. **Three-quarter:** fold the head down to the half mark, and mark the new fold.
4. **Seven-eighths:** fold the head down to the three-quarter mark, and mark the new fold.
5. **Quarter:** fold the clew up to the half mark, and mark the new fold.

A small piece of masking tape on the edge of the leech makes a good mark and peels off afterwards.

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### WIDTHS: EACH MARK STRAIGHT ACROSS TO THE LUFF




1. Each width is measured the same way as LP: from the mark on the leech, the **shortest distance** across to the luff.
2. Hold the zero on the mark, slide the other end along the luff, and take the smallest reading.
3. Pull the wrinkles out along the line before you read the tape.

Short of time? Half and three-quarter are the two that matter most. Leave the others blank if you cannot get them.

**Half width** From the half mark.

_____ **metres**

**Three-quarter width** From the three-quarter mark, the second one down from the head.

_____ **metres**

**Quarter width** From the quarter mark, the one nearest the clew.

_____ **metres**

**Upper width** From the seven-eighths mark, the one nearest the head.

_____ **metres**

**Top width** Straight across the very top of the sail, from the luff to the leech. It is small, often no wider than your hand.

_____ **mm**

### PHOTOS AND NOTES FOR THIS SAIL

Before you fold the sail up, take a photo of it laid flat, from far enough back to get the whole sail in.

- ☐ The whole sail, laid flat taken
- ☐ The measurement stamp or your rating certificate, if there is one taken

**Is there anything you want different on the new sail?**

## FINISH

### PHOTO: THE WHOLE BOAT FROM THE SIDE

One last photo: the whole boat from the side, from the dock or another boat.

- ☐ Whole boat from the side taken

## FINAL COMMENTS

Anything unusual about your boat, anything you were unsure of, or how you use the boat.

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Numbers in red match the numbering on the sailmaker's production form. Boxes tagged with a label (for example "Furling boats") only apply to those boats.