KRAKEN SAILS

MAINSAIL MEASUREMENT WORKSHEET

Date _____

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. 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

_____

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

_____

Phone

_____

Boat make and model

_____

Boat name

_____

Year built

_____

Sail number

_____

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 MAINSAIL RIGGED?

In-mast or in-boom furling? Those need different measurements. Contact us before you go further.

How does the sail attach to the mast?

- ☐ Slides (small slides or slugs on the sail run up a track or groove)
- ☐ Cars (larger cars with bearings run on a track)
- ☐ Bolt rope (a rope sewn into the sail feeds straight into a groove)

How does the bottom edge attach to the boom?

- ☐ Loose foot (attached only at the front and back corners)
- ☐ Attached (a rope or slides run along the boom)

How many reefs do you want?

☐ 0 ☐ 1 ☐ 2 ☐ 3

How is the front corner held down when you reef?

- ☐ Hooks (a ring on the sail goes over a hook or horn at the front of the boom)
- ☐ Single-line (one line from the cockpit pulls down the front and the back together)
- ☐ Tack line (a separate line pulls the front corner down) ☐ Not sure

Does your mast have black measurement bands? Racing boats often have a black band painted near the top of the mast, one at the boom and one near the end of the boom.

☐ No ☐ Yes

What kind of backstay do you have?

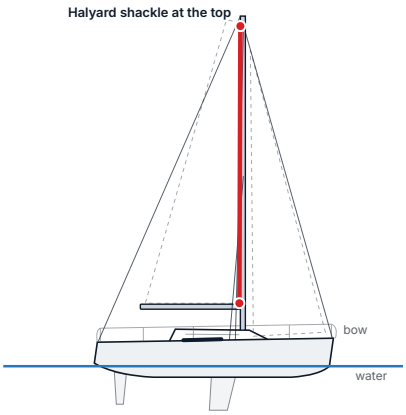
- ☐ Fixed (a wire from the top of the mast to the stern that is not adjusted)
- ☐ Adjustable (a backstay you tighten and ease while sailing)
- ☐ Running (running backstays that you swap each tack) ☐ None (no backstay)

Do you have a stack pack? A stack pack is a boom bag with lazy jacks that the sail drops into.

☐ None ☐ In position (i have one and I am keeping it) ☐ To order (i would like a new one)

UP THE MAST

SEND THE TAPE UP THE BACK OF THE MAST



1. Drop the mainsail and unclip the main halyard from it.
2. Set the boom level, at the height it normally sits when you are sailing.
3. Attach the long tape to the **bar of the halyard shackle**, and tie a mousing line or a spare sheet to the shackle so you can pull it back down.
4. Check where the zero of your tape sits against the shackle bar, and write it in the box below.
5. Hoist until the shackle stops at the top, or reaches the black band if your mast has one. Cleat it.

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

_____ **mm**

Halyard shackle: pin diameter Measure both of these now, before the shackle goes up.

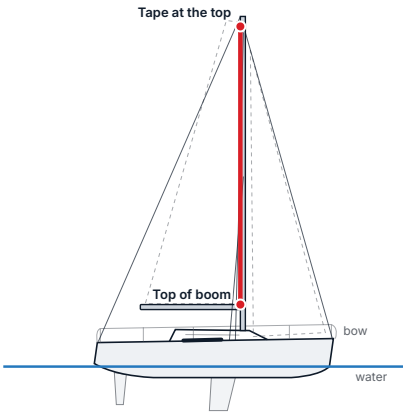
_____ **mm**

Halyard shackle: inside width of the opening

_____ **mm**

M1a

TOP OF THE HOIST DOWN TO THE TOP OF THE BOOM



1. Pull the tape down the back of the mast.
2. Read it at the **top surface of the boom**, right at the mast.

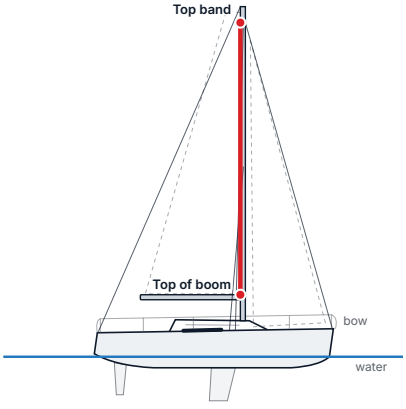
The tack fitting is measured from the top of the boom later on, and we work out the luff length from the two.

_____ **metres**

P

TOP BLACK BAND DOWN TO THE TOP OF THE BOOM

MASTS WITH BLACK BANDS



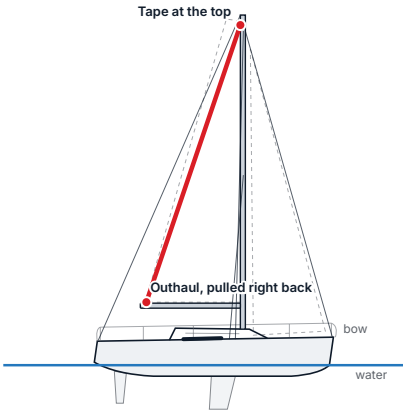
1. Ease the halyard down until the bar of the shackle is level with the **lower edge of the top black band**.
2. Read the tape at the top surface of the boom again.

_____ **metres**

M2 TOP OF THE HOIST TO THE BACK END OF THE BOOM

1. Pull the outhaul (the fitting that holds the back corner of the sail) as far back along the boom as it goes.
2. With the boom level, read the tape at the outhaul shackle.

_____ **metres**

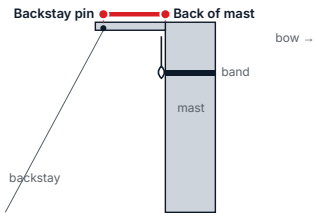


M5 ROUGHLY HOW LONG IS THE CRANE AT THE TOP OF THE MAST?

BOATS WITH A BACKSTAY

1. At the very top of the mast the backstay attaches to a short arm called the crane.
2. From the deck, estimate how far the backstay pin sits behind the back of the mast. **A good guess is fine.**

_____ **metres**



BRING THE TAPE DOWN

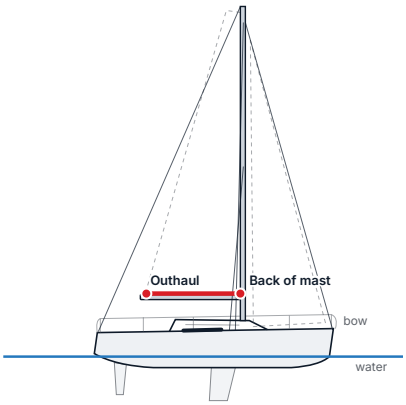
1. Pull the halyard and tape down with the mousing line.
2. The rest is measured along the boom and at the mast.

ALONG THE BOOM

M3 BACK OF THE MAST TO THE OUTHAUL, PULLED RIGHT BACK

1. Pull the outhaul as far back along the boom as it goes.
2. Measure along the top of the boom from the back face of the mast to the outhaul shackle.

_____ **metres**

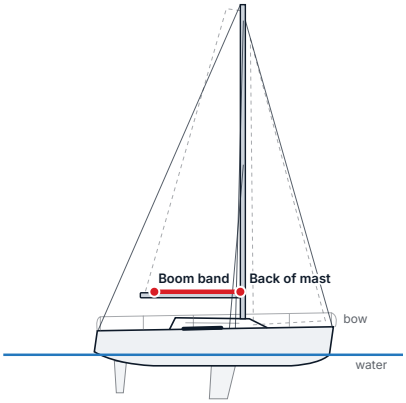


E BACK OF THE MAST TO THE BLACK BAND ON THE BOOM

BOOMS WITH A BLACK BAND

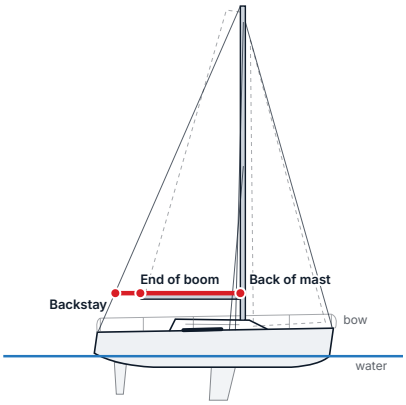
Measure along the boom from the back face of the mast to the front edge of the black band near the end of the boom.

_____ **metres**



M4 END OF THE BOOM TO THE BACKSTAY BOATS WITH A BACKSTAY

1. With the boom on the centreline and level, measure the boom from the back face of the mast to its very end.
2. Then measure the gap from the end of the boom straight back to the backstay wire.



Back of the mast to the very end of the boom

_____ **metres**

End of the boom to the backstay

_____ **metres**

Write each part. We add them up.

PHOTO: THE BACK END OF THE BOOM

Take a photo of the end of the boom from the side, showing the outhaul and where the back corner of the sail attaches.

☐ The back end of the boom taken

AT THE MAST

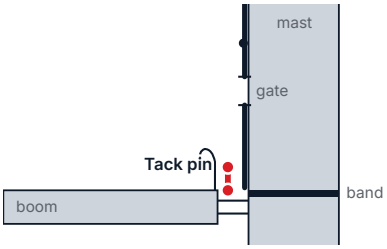
NEXT: THE FITTINGS WHERE THE BOOM MEETS THE MAST

1. Use the short tape for these small measurements.
2. Heights are measured up from the **top of the boom**. Distances back are measured from the **back face of the mast**.

M6 HEIGHT OF THE TACK PIN ABOVE THE BOOM

Measure straight up from the top of the boom to the centre of the tack pin.

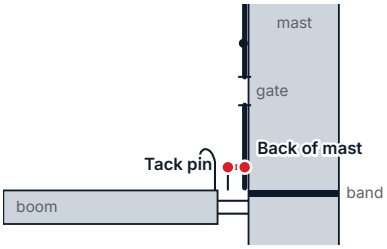
A shackle instead of a fixed pin? Hold it up at about 45°, as if the sail were pulling on it, and measure to the inside of the shackle.



_____ **mm**

M11 HOW FAR THE TACK PIN SITS BEHIND THE MAST

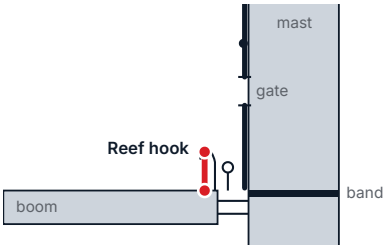
Measure level from the back face of the mast to the centre of the tack pin.



_____ **mm**

M7 HEIGHT OF THE REEF HOOK ABOVE THE BOOM BOATS WITH REEF HOOKS

1. Reef hooks are the curved horns beside the tack pin that hold the sail when it is reefed.
2. Measure straight up from the top of the boom to the inside of the hook.

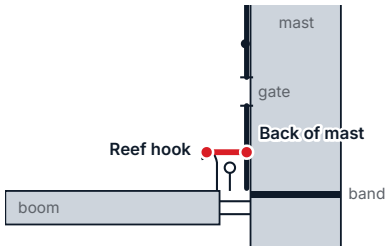


_____ **mm**

M12 HOW FAR THE REEF HOOK SITS BEHIND THE MAST BOATS WITH REEF HOOKS

Measure level from the back face of the mast to the inside of the reef hook.

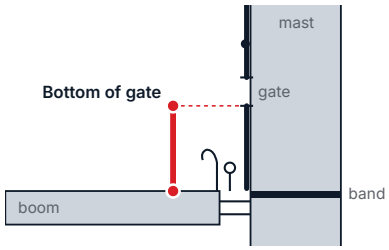
_____ mm



M8 TOP OF THE BOOM UP TO THE BOTTOM OF THE MAST GATE

1. The **gate** is the opening in the mast track where the sail or its slides feed in.
2. Measure from the top of the boom up to the bottom of that opening.

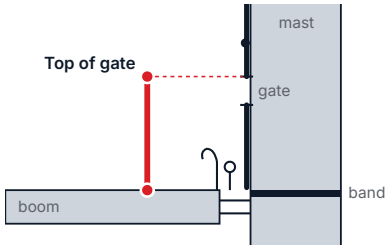
_____ mm



M9 TOP OF THE BOOM UP TO THE TOP OF THE MAST GATE

Measure from the top of the boom up to the top of the opening.

_____ mm



M10 TOP OF THE BOOM UP TO THE SLIDE STOP SAILS WITH SLIDES OR CARS

1. The slide stop is the pin or clamp above the gate that keeps the slides from dropping out when the sail is lowered.
2. Measure from the top of the boom up to the top of it.

_____ mm

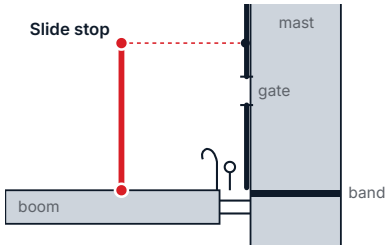


PHOTO: WHERE THE BOOM MEETS THE MAST

Take a photo from the side showing the front of the boom, the tack fitting and the bottom of the mast track.

☐ Where the boom meets the mast taken

FITTINGS

HOW THE SAIL ATTACHES TO THE MAST

1. If you can read a part number on the slides of your current sail, that is all we need.
2. If not, measure one slide using the letters in the picture, and add a photo of it below.



Thickness of the rope along the front edge Measure the rope on your current sail, or the width of the round groove in the mast.

_____ **mm**

Slides at the battens

_____

Slides between the battens

_____

Slide at the top of the sail

_____

☐ Photo of a slide from your current sail, next to a tape taken

Do you use a cunningham? A line that pulls the front edge of the sail down, just above the tack.

☐ No ☐ Yes ☐ Not sure

Cunningham fitting on the sail

☐ Not sure / same as my current sail ☐ Web loop on starboard

☐ Web loop on port ☐ Eye ☐ Eye + web

HOW THE SAIL ATTACHES TO THE BOOM

Thickness of the rope along the bottom edge Or the part number of the slides, in the final comments.

_____ **mm**

How is the back corner held to the boom?

☐ Velcro strap (a strap that wraps around the boom) ☐ Belt (a webbing strap with a buckle)

☐ Slug or slide (a slide in the boom track) ☐ Outhaul car only (just the shackle on the outhaul)

☐ Not sure (send us a photo)

☐ Photo of how the back corner attaches taken

Part number of the clew slide

_____

YOUR REEFING SAILS WITH REEFS

For each reef, tell us which side of the sail the reef line runs on.

Number of reef lines rigged on the boom

Reef 1: which side of the sail is the reef line on?

☐ Port ☐ Starboard ☐ Both ☐ Not sure

Reef 1: back of the mast to the reef line Measure level from the back face of the mast to the reef line where it comes up past the boom. If your current sail sets well, you can measure this on the sail instead: from the front edge to the reef eye.

_____ **mm**

Reef 2: which side of the sail is the reef line on?

☐ Port ☐ Starboard ☐ Both ☐ Not sure

Reef 2: back of the mast to the reef line Measure level from the back face of the mast to the reef line where it comes up past the boom. If your current sail sets well, you can measure this on the sail instead: from the front edge to the reef eye.

_____ **mm**

Reef 3: which side of the sail is the reef line on?

☐ Port ☐ Starboard ☐ Both ☐ Not sure

Reef 3: back of the mast to the reef line Measure level from the back face of the mast to the reef line where it comes up past the boom. If your current sail sets well, you can measure this on the sail instead: from the front edge to the reef eye.

_____ **mm**

YOUR MAST

ABOUT YOUR MAST

Answer what you can. Leave anything you do not know blank.

Not sure about bend? A photo is better than a guess. See the photo list at the end.

Mast maker and section

What is the mast made of?

☐ Alu ☐ Carbon ☐ Wood

Where does the forestay meet the mast?

☐ Mast head (right at the top) ☐ Fractional (part-way down from the top)

How many sets of spreaders? Spreaders are the horizontal arms that hold the shrouds out from the mast.

Do the spreaders angle back?

☐ Swept (they angle towards the stern) ☐ Inline (they point straight out sideways)

Do you have a babystay? A short inner stay from the mast to the foredeck.

☐ No ☐ Yes

Does the back edge of your current mainsail touch the backstay when you tack?

☐ No (it clears the backstay) ☐ Just (it brushes past) ☐ Yes (it has to be pulled through)

☐ Not sure

Mast rake

Pre-bend

Maximum bend

YOUR OLD SAIL

YOUR OLD MAINSAIL

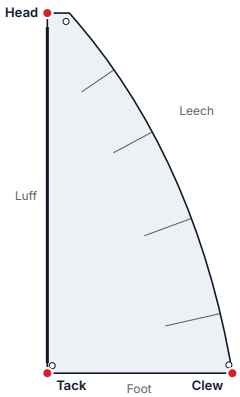
1. **This part is optional.** If you still have the sail you are replacing, its measurements help us design the new one. They are also what a rating or handicap certificate is based on.
2. It is done off the boat, with the sail laid out flat. You can do it on another day.
3. If the sail has a measurement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

LAY THE SAIL OUT FLAT

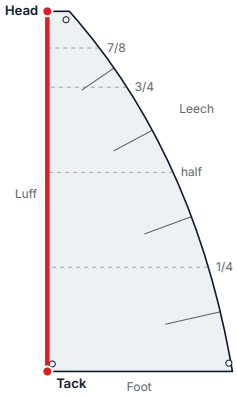


1. The sail must be **dry** and lying on a **flat surface**.
2. For each measurement, pull the sail just tight enough to take the **wrinkles out along the line you are measuring**. Do not stretch it.
3. Keep the tape **straight** from one point to the other. Where the edge of the sail curves, let it 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, by the mast. **Clew**: the bottom back corner, at the end of the boom.
6. Leave the battens in.

- 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.

Old sail

LUFF: THE FRONT EDGE, HEAD TO TACK



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

A rating certificate uses the mast and boom for this, not the sail. We still want the sail's own length for the design.

_____ **metres**

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 back corner of the **head** to the **clew**.
3. The leech of a mainsail curves outwards. Keep the tape straight and let the cloth curve away from it.

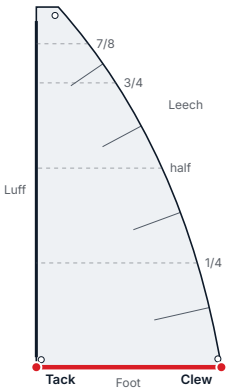
_____ **metres**

Old sail

FOOT: THE BOTTOM EDGE, TACK TO CLEW

1. The **foot** is the bottom edge of the sail, the one along the boom.
2. Measure in a straight line from the **tack** to the **clew**.

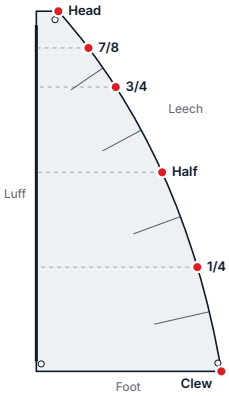
_____ **metres**



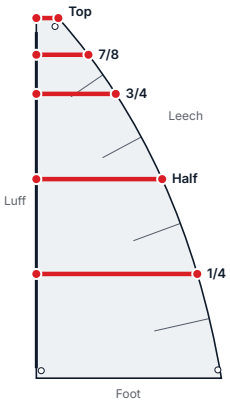
MARK THE LEECH BY FOLDING

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.



WIDTHS: EACH MARK STRAIGHT ACROSS TO THE LUFF



1. From each mark on the leech, measure the **shortest distance** across to the luff.
2. Hold the zero on the mark, slide the other end up and down the luff, and take the smallest reading.
3. Measure to the front edge of the sail, including the rope along the luff, but not the slides.
4. If the leech dips in between the battens, measure as if a straight line bridged the dip.

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 top of the sail, square to the luff, from the front of the luff to the back edge of the leech. Include the headboard.

_____ **metres**

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 MAST FROM DIRECTLY SIDE-ON

From the dock or another boat, stand level with the mast and photograph the whole mast from **directly side-on**. This shows us how your mast bends.

- ☐ Mast side-on, backstay slack taken
- ☐ Mast side-on, backstay pulled on hard taken

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.

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