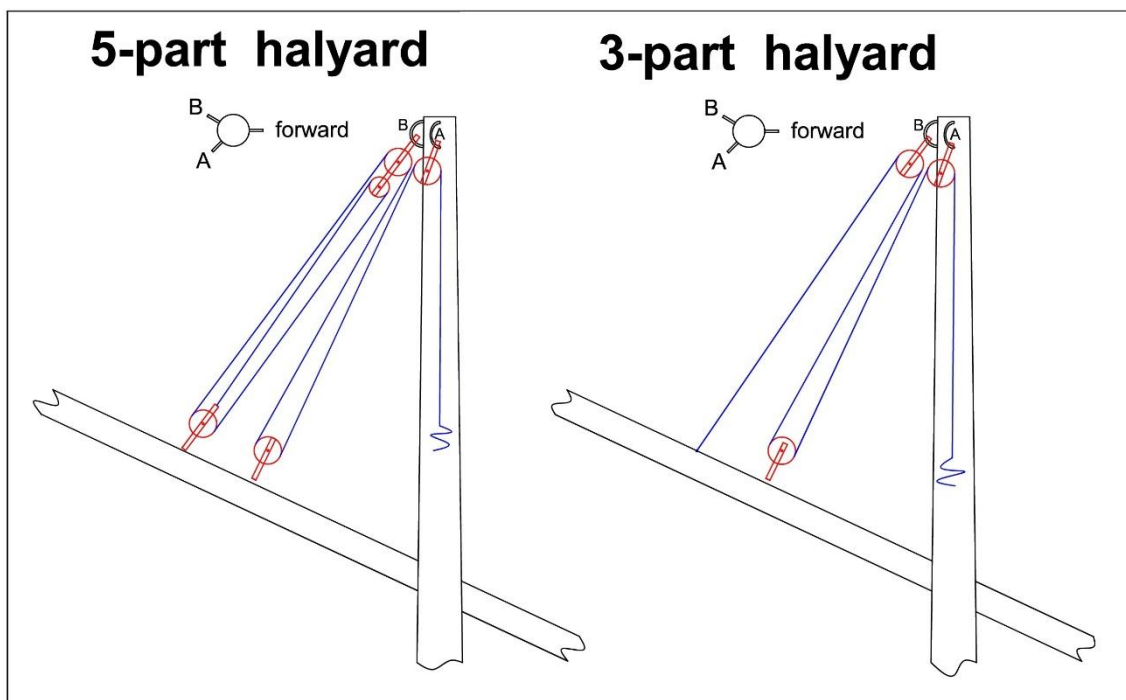


Friction in halyard and sheet

..experience gained from my junk-rigged boats...

I let you have a look at my boats in chronological order.

Halyards first...



20200914. .. the most common halyards in use on my later boats...

My first junk, *Malena* had a 4-part purchase halyard from 8mm braided line. This let me haul up the 32sqm sail by hand, even though the blocks used were old, plain and not exactly oversize. It helped that I was still in my thirties. Since then I have used only odd number purchase, as the end of the halyard will then be terminated on the yard (= easy replacement). I had three different sails on *Malena*, but all with the same yard and halyard. Despite the cheap blocks, the sail mostly came down without needing any downhaul help.

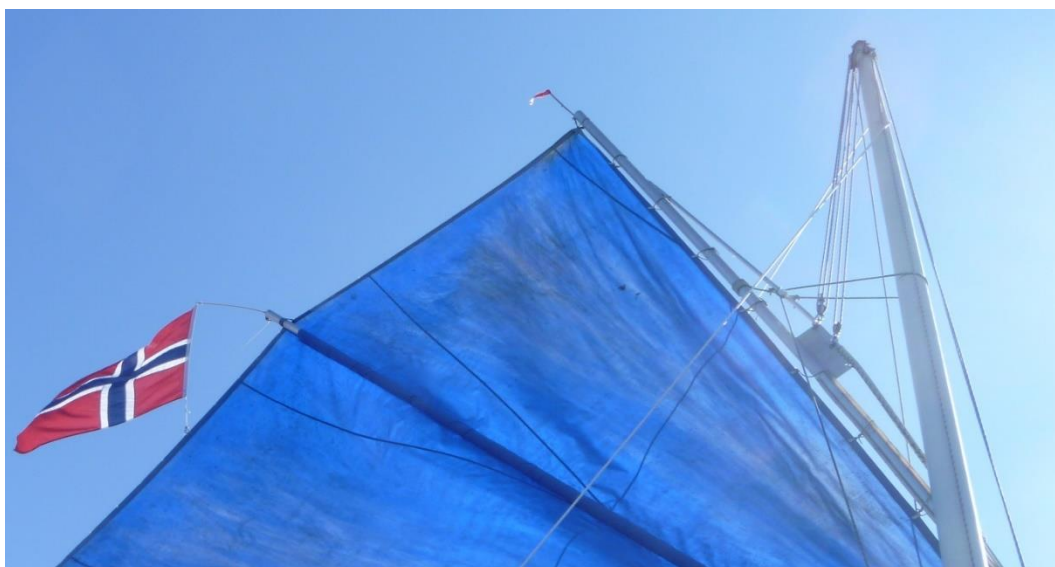


***Malena* in 1992 with her second sail**

On Johanna, with JR from 2002, I went for a 5-part, 10mm halyard. The blocks were new but could have been bigger. I remember that our then honorary secretary, **Robin Blain**, commented on them being rather small. Still, it let me hoist the five first panels by hand. After a little break while stuffing the halyard in its bag, I could wind up the two last panels with a 1-speed self-tailing winch. Positioning that winch high up as I did, allowed the halyard to go directly to the turning block at the mast. This was raised sufficiently above deck to prevent the line from rubbing on the cabin top. I believe this good position, which lets me stand on the wide cockpit bench, explains how I could hoist those five panels of the sail by hand.



11th December 2004, a chilly outing... I later had a new, not so wide sprayhood made so the shown halyard could be used with that sprayhood raised.



20110815 more details on Johanna. Note the lightweight braced yard, a big improvement.

I've found it useful to spread the halyard over two sling points on the yard. This helps it from developing twist. For double blocks, I use "fiddle blocks".

Even with a 5-part halyard, with that light yard and with not optimal blocks, the sail could be crash-dumped - just. When dropping sail, I just let the halyard go. The halyard, stowed in a bag right below that winch, would fly out at great speed. Then, as the yard approached the sail bundle and the sail became lighter and lighter, the friction was enough to ensure a soft landing without me touching the halyard.

Only in 2011 did I add an electric winch handle, but by then I was in my fifties...



20110505 The brand new Winchrite...

Johanna was sold in 2014.

Enter Broreemann with a 10sqm JR in 2009.

Not much to tell about this one, regarding the halyard (8mm?). It was 1-part and let me raise or lower the 10sqm sail in seconds - ridiculously easy...



20111008, *Broreemann's* 10sqm sail only needs a 1-part halyard - sooo easy...

Frøken Sørensen (FS) got a JR in 2013.

With a sail area of 20sqm, I went for a 3-part halyard of 8mm braided line. This suited perfectly well and the sail could be hoisted easily, even with the 220g/sqm sail weighing in at 6.5kg. With decent blocks and with only four of them for the halyard to run through, lowering the sail was easy. Still a joy to handle...



20130824 *Frøken Sørensen's* 20sqm sail using a 3-part, 8mm halyard.

Frøken Sørensen performed well in almost all respects: Only in the very lightest wind was that rather heavy sailcloth a bit reluctant to inflate properly. I sold her in 2016, after test-sailing *Ingeborg* with her new rig...

Finally, my present boat, *Ingeborg*, with a JR since 2016.

Ingeborg received her 35sqm sail from the same roll as *Frøken Sørensen* did. This sail weighed in at over 12kg, so I pondered on whether to choose a 3-part or 5-part halyard. In the end I settled on 5-part, but this time I dug a bit deeper in my wallet and used 60mm ball-bearing blocks from Seldén on 8(?)mm rope. This time I also lead the halyard plus YHP and THP aft to the cockpit via starboard side deck. The halyard now ends on the genoa winch on that side. This adds one turning block and is not quite as good for manual hoisting, but thanks to the high-quality blocks, it is still doable. To get the last few panels up, I either use my (second) Winchrite, or I bring out my home-made Halyard Hauler...



20160731 *Ingeborg's* cockpit. The original genoa winches have been put back in use.



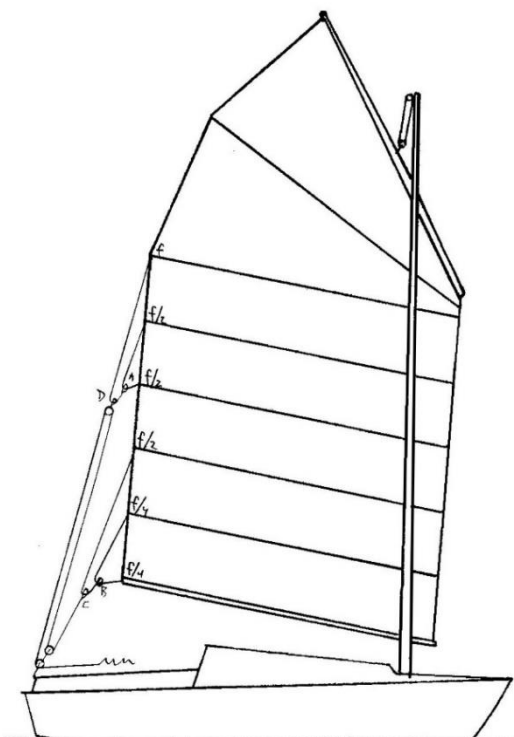
20190405 My secret weapon, the *Halyard Hauler*...



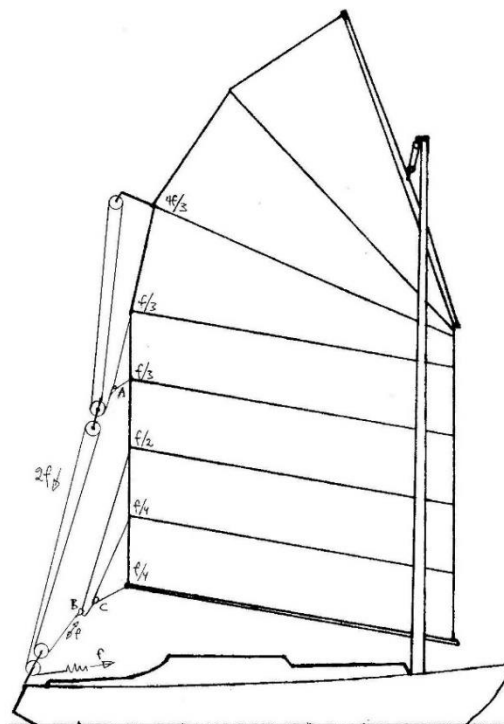
20190611 The 5-part halyard on Ingeborg. The forward slingpoint has slipped aft a bit.

The sheets...

... I have used only two different sheet layouts for the seven-panel sails that I have had; they are the Pilmer sheet and the Johanna sheet.



Malena with Pilmer sheet



Johanna with Johanna sheet

The Johanna sheet is a variation of the Pilmer sheet, where the sheet force has been increased by 33% on the top sheeted batten, to reduce twist in the sail.

In other words, the four last boats from *Johanna* via *Broremann* to *FS* and *Ingeborg*, all share this Johanna sheet setup. To my surprise, I found that I could handle *Johanna's* 48sqm sail quite easily with only a 3-part purchase, as long as I had a snubbing winch to help me in a sudden gybe or similar. I also took care to lead the sheet on *Johanna* and *Ingeborg* so that I could put some body weight behind my pull.



Jan. 2008. Johanna's sheet arrangement with a snubbing winch placed just forward of the sheet blocks.

(..OK, I did initially try *Johanna* with a 5-part sheet, back in 2003, but then I found a problem: The heavy sail simply got too much for me to hoist. The remedy was to modify the sheet to 3-part, and in addition, that heavy pine yard was replaced with the lightweight braced yard, shown on page 2...)

In addition to making the sail tolerable to hoist, the reduced sheet resistance lets the sail square out in super-light winds.

Choice of line for sheet and halyard...

I initially used sheets and halyards (always from braided lines) with an outer layer of multifilament material. This gave the best grip for my hands. However, this type of rope got quite ragged rather soon. When I replaced *Johanna*'s halyard, I went for monofilament rope. This is a bit slippery, so I now use sail gloves to compensate. That halyard appeared to last better, and as a bonus, I found that it ran more easily through the blocks. I therefore stick with monofilament ropes on later boats, both for halyards and sheets.

Conclusion...

- **For halyards**, I think I could use a single part halyard on sails maybe up to 15-20sqm. I think a 3-part halyard could work well enough up to 30-40sqm, and with a 5-part halyard I could deal with the larger sails, with or without help from winches, manual or electric. Using good, and possibly over-size blocks would be helpful to reduce friction in the case of large sails.
- **For sheets**, it appears to me that 3-part sheets can handle up to 50sqm sails, at least if one uses a snubber winch on sails over 35sqm. If I were to rig with a sail bigger than 50sqm, I would split the sheet into an upper and lower part. This has worked very well on the 70sqm mainsail of *Samson* in Stavanger (soon to be on its way to Poland). The other big advantage with 3-part sheeting is that it takes almost no wind to swing out the sail, as long as the mast has no aft rake. And also there is less spaghetti in the cockpit...

I guess that is just about all I know about this subject. I hope some of you may find some of it useful.

Stavanger, 20231130
Arne Kverneland

PS:

Thanks to Graeme Kenyon for proofreading this and gently making my Stavanger English a bit easier to read.