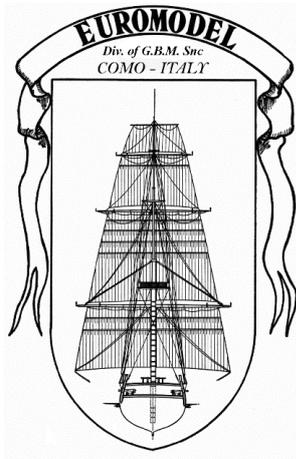


TRANSLATION LINKS

1. type into your browser ... **english+italian+glossary+nautical terms**
2. utilise the translation dictionary 'Nautical Terms & Expressions' from Euromodel website



An *interpretive* review
of the
Euromodel Kit

Royal William

1st. Rate English Vessel

Originally launched in 1670 as the 100-gun HMS Prince
Re-built and launched in 1692 as the HMS Royal William
Finally re-built again and ...

Launched 1719

Scale 1:72

**Checked the
*Essential Resource
Information File ?***

14.BOWSPRIT RIGGING

September 2021

This paper is based on the supplied drawings, external references, kit material – and an amount of extra material. It serves to *illustrate how this ship might be built. The level of complexity chosen is up to the individual*

This resource information was based on the original text supplied by Euromodel and then expanded in detail as the actual ship was constructed by MSW member piratepete007. [Additional & exceptional support was gratefully received from another MSW member **marktiedens**. My sincere thanks to him and other MSW members.]

Neither the author or Euromodel have any commercial interest in this information and it is published on the Euromodel web site in good faith for other persons who may wish to build this ship. Euromodel does not accept any responsibility for the contents that follow.

This is **not** an instructional manual but is a collaboration amongst a number of MSW members whose interpretations were based on the drawings and the supplied kit.

- Additional material used was dictated by personal choices.
- Greater simplification would be achieved by using the material as it is supplied.

Model Ship World Forum

I am indebted to those members who were, or are, involved in their own build of the Royal William and have allowed me to add photos from their posts – but not utilising their personal text - in the belief that the images could add both a stimulus and an interest to new builders of this ship. So my grateful thanks go to ... Brian C; Denis R; KeithW; marktiedens; Vince P, Ken3335

They have taken the RW build to a much higher level than intended by this kit.

Reference Texts

Fighting at Sea in the Eighteenth Century; The Art of Sailing Warfare by Sam Willis (2008)

Historic Ship Models by Wolfram zu Mondfeld (1989)

Seventeenth Century Rigging by R.C. Anderson (1955) [almost a complete copy of his earlier book *The Rigging of Ships in the Days of the Spritsail Topmast, 1600 – 1720* (1927)]

The Construction and Fitting of the English Man of War 1650-1850 by Peter Goodwin (1984)

The Masting and Rigging of English Ships of War 1625 – 1860 by James Lee (1984).



[To navigate through the contents – use ‘control + click’]

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Chapter 1: GENERALISATIONS

Plan Sheet Translations (13– 15)

Plan Sheet 13 – Foremast

fuori scala – **not to scale**

come bracci di destra – **on the right side (starboard)**

faccia poppiera – **looking towards the stern**

Fig. opposite passa perla cavatoia sull serpa e da volta sul parapetto di prora – **line passes over the Prow Deck, through the ornamentation between the middle rails of the bowsprit and back to the Focs’le railing.**



al paranco come per il pennone di trinchetto – **as for the tackle for the fore yard of the foremast**
alla ringhiera del castello – **to rail on the foc’sle deck**

faccia prodiera – **looking towards the bow**

come braccio di parrochetto – **to the fore topsail yard**

Plan Sheet 14 – Main Mast

fuori scala – **not to scale**

faccia poppiera – **facing aft**

faccia prodiera – **facing forwards**

ad anelli sulla coffa – **to rings on the topmast top**

legare alla ringhiera di sinistra – **tie to the railing on the left**

legare alla ringhiera di destra – **tie to the railing on the right**

per I riferimenti dei pennoni vedi tav. 3 – **for flag pole references, see Plan Sheet 3**

paranco come per pennone di maestra – **hoist as for the main lower yard**

Plan Sheet 15 – Mizzen Mast

faccia poppiera – **looking towards the stern**

faccia prodiera – **looking towards the bow**

fa dormiente sull ‘ultima sartia poppiera dell ‘ albero di maestra a destra e a sinistra – **the line is fixed on the last shroud of the Main Mast on both the right and left**

danne volta a 2 anelli sulla coffa – **allow for two rings on the top**

fanno dormienti sullo stroppo delle bigotte della coffa di bompresso – **make fixed onto the deadeye strop of the bowsprit top**

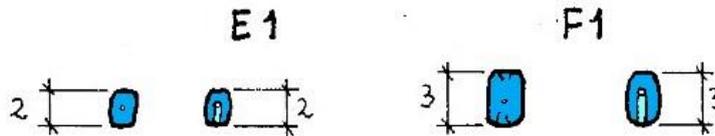
Il pennone di mezzana ha la sold funzione di poter tesdre la vela di belvedere - **mizzen flagpole has the only function of being able to tension the mizzen topsail.**

particolare dell’attacco della vela al pennone (inferitura) – **detail of the sail attachment to the flagpole**

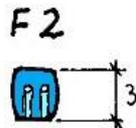
Blocks

N.B. The plan sheet shows a larger variation of block sizes than that provided in the kit. This kit has amalgamated a number of blocks with similar sizes together – e.g. E1 and F1 both use the same sized block.

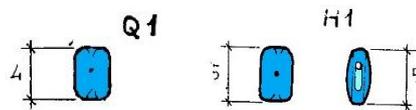
E1 + F1 : 3mm., 1 hole(160) - Bozzelli da mm. 3 a 1 foro (Art.22/026)



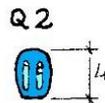
F2 : 3mm., 2 hole(5) - Bozzelli da mm. 3 a 2 foro (Art.22/031)



Q1+ H1 : 5mm., 1 hole (98) - Bozzelli da mm. 5 a 1 foro (Art.22/028)



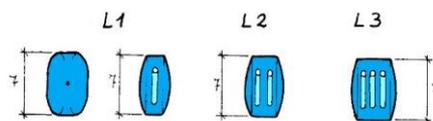
Q2 + H2 : 5mm., 2 hole (8) - Bozzelli da mm. 5 a 2 fori (Art.22/032)



L1 : 7mm., 1 hole (14) - Bozzelli da mm. 7 a 1 fori (Art.22/030)

L2 : 7mm., 2 hole (4) - Bozzelli da mm. 7 a 2 fori (Art.22/034)

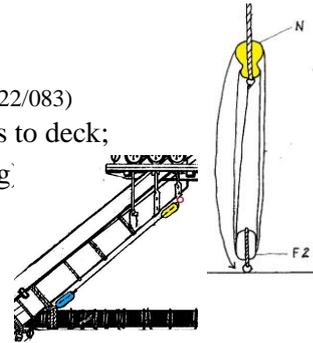
L3 : 7mm., 3 hole (16) - Bozzelli da mm. 7 a 3 fori (Art.22/039)



M + N :

Fiddle, 7 mm. (4) - Bozzelli a violino da mm. 7 (Art.22/083)

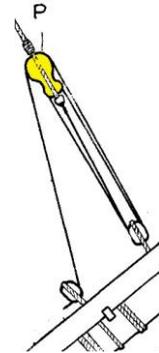
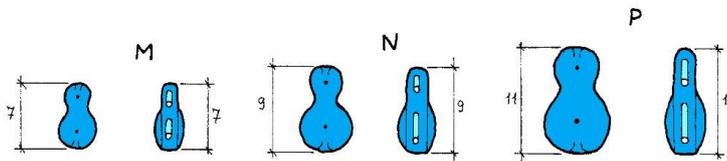
- mizzen & main topmast preventer stay halliards to deck;
- bowsprit (halliard to lower spritsail yard lashing)



P :

Fiddle, 11 mm. (1) - Bozzelli a violino da mm. 7 (Art.22/084)

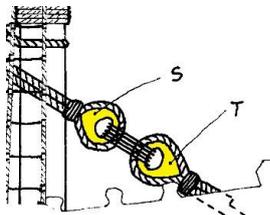
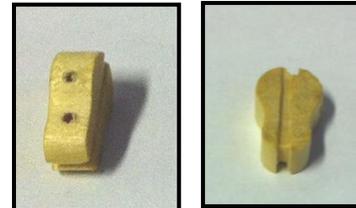
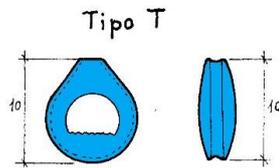
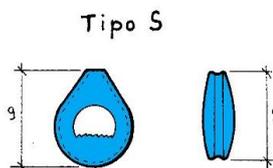
- bowsprit (lower fore topmast stay)



S + T :

Heart, 10 mm.(2) - Bozzelli a cuore da mm. 10 (Art.22/085)

- main stay



Euromodel supplies S & T as heart blocks; technically they are fiddle blocks but commercially difficult to source and the heart blocks can be rigged in a 'similar' manner.

Rigging Code

105	line 105 & point of attachment
H1	block, 5 mm. 1-hole
H1/3	rope line 3 that is rove through block H1
C3	cleat number 3
R3	ring through which rope line 3 passes
H2	not available in kit; a 2-hole block equivalent is shown as Q2



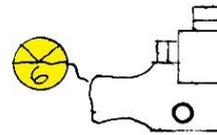
number of the belaying pin or cleat where the running rigging must be tied.



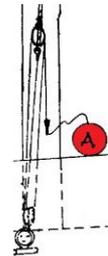
point where the rigging is *not* fixed but passing through.



rigging must be tied to the bitt marked by the number in the circle



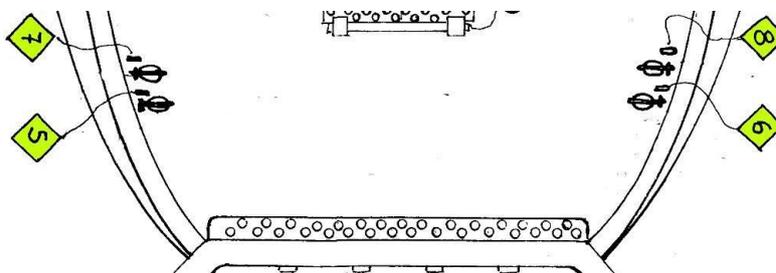
rigging is tied to the strap of the corresponding block



indicates the passage of running rigging (block or pass-through bulwarks, etc.) before being fastened/ seized.



indicates the sequential order of fixing of the rigging.



"3H,, 3 ("3H,, 4) code in brackets indicate the corresponding block on the opposite side of view shown in the plan.

"3H,, 1 ... "3H,, 2 ... "3H,, 3 ... "3H,, 4 number (coloured) indicates sequence of adding blocks

Line Names & Functions

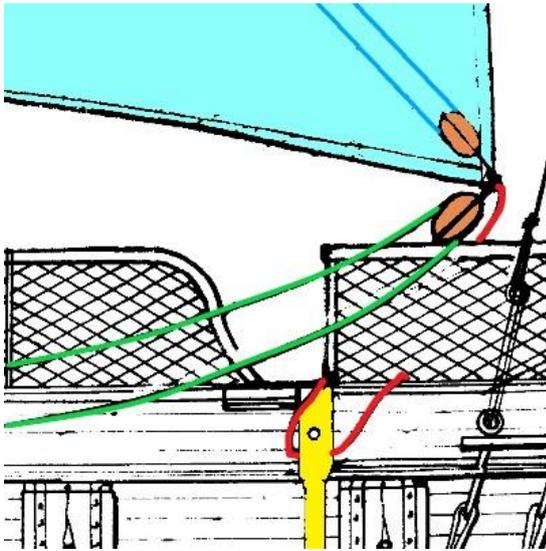


Figure 1: Main Course Sheet and Tack Lines

chesstree (yellow)

Sheet lines (green)

... attached to the outer clew on the foot of the sail to control the lower, moveable corner; released when furling the sail. The main course sheets extend aft almost the full length of the ship.

Tack line (red)

... a second line also attached to the clew along with the sheet, but the inboard end may be taken to a suitable point well forward of the sail and pulled taut to tighten the leech into some kind of leading edge; usually a single line rather than having blocks. This additional line on the clew allows for a far greater leverage on the sail when required. In Fig. 1, the main course tack passes over a sheave contained within a

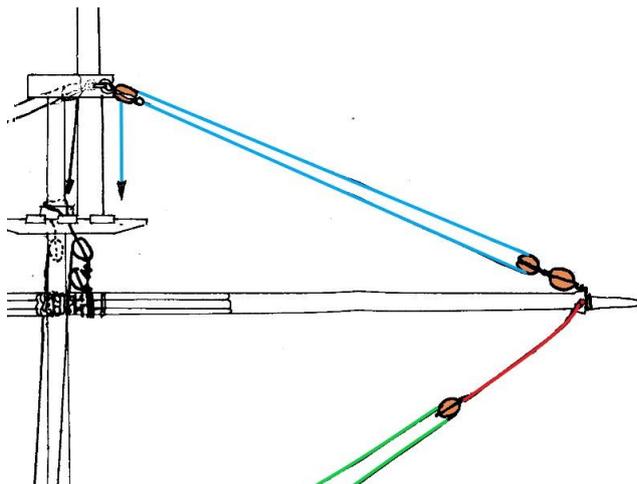


Figure 2: Fore Topsail Yard Brace and Lift

Brace lines (green)

... in pairs, they rotate the yard to allow the ship to sail at different angles to the wind.

Lift lines (blue)

...in pairs, they maintain the correct horizontal line of the yard; brace pendant shown in red.

Clew lines (dark blue) and **bunt lines** (purple)

... raise the sail up to the yard arm when furling – clew lines are attached to the bottom corners of the sail whilst the thinner buntlines are attached across the sail foot.

Leech lines (brown) and **leechleg lines** (green)

... pull the sail in and upwards during furling.

Bow lines (light blue)

... attached to sail cringles via bridles (red)

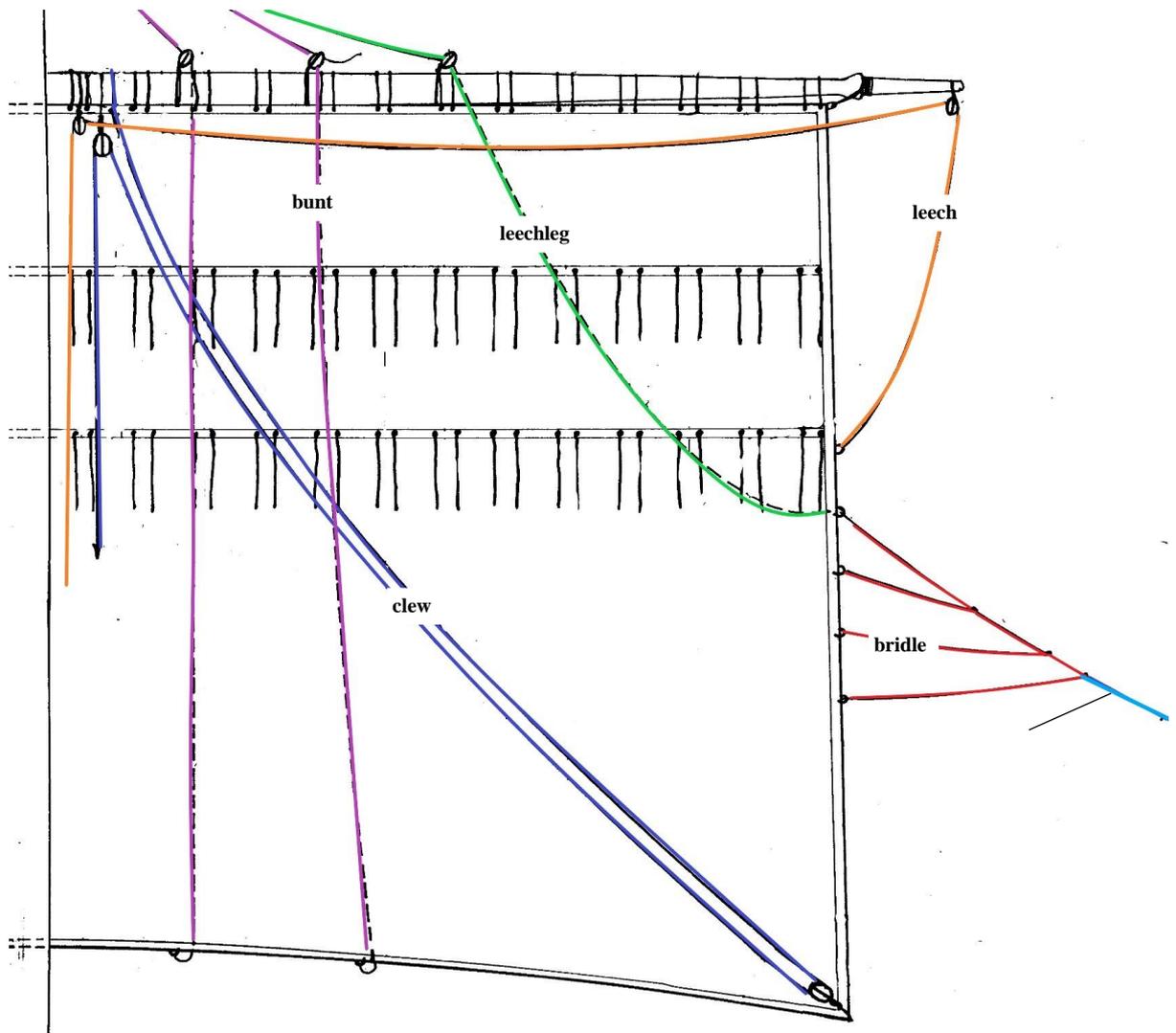


Figure 3: Running Lines

Chapter 2: BOWSPRIT STANDING RIGGING

Gammoning

Historically, the lashing used was approx. 0.38 – 0.4 the diameter of the main-stay [i.e. *0.8 mm*. c.f. 2.0 mm.]. In the drawings, it is shown as *1.0 mm*. c.f. 2.0 mm.



Figure 4: Single Gammoning

To prevent the gammoning from shifting aft down the there were usually five small cleats - one central and side. They were arranged to allow the gammoning to straight which meant that the fore end of the cleats above the aft end of the slit (Fig. 2 – red broken The drawings show only three cleats per gammoning.

thickness = rope diameter
length = slightly more than full width of gammoning

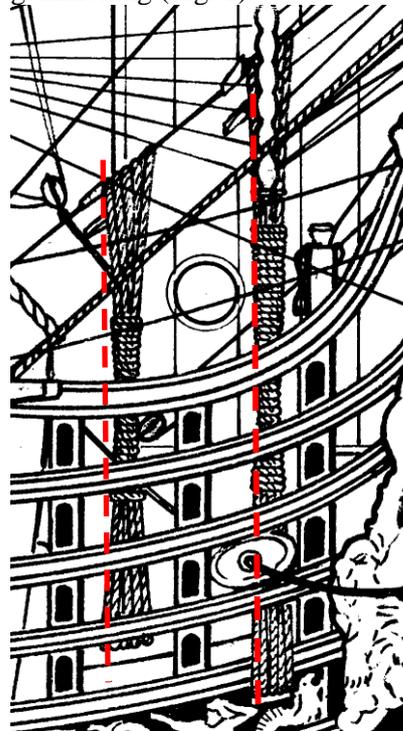
Gammoning binds the lower part of the bowsprit mast ship's stem involving *seven, eight or up to ten turns*. tension then enables the foremast stays in particular to supported.

Figs. 1 & 3 above show *six* turns and Fig. 2 shows



Figure 6: Double Gammoning

In the early stages of this build, provision should have been made for a second slit in the beakhead aft of the one already laser-cut to accomodate a second gammoning. It appears that this aspect is often overlooked leading to the inclusion of only one gammoning (Fig. 1).



bowsprit, two each run came lines).

to the This be

Figure 5: Cleat Alignment

five turns.

Of particular importance in Fig. 3 is the bowsprit racking or lashing block used to channel various lines down from the upper parts of the bowsprit in some ordered fashion. In this photo, small holes can be seen passing through the block.

Comparison of the block width shown in Fig. 3 with that in the drawing of Fig. 2 illustrates a difference in width. The builder may very well select a greater width due to the fragility in making the narrower form.

Gammoning Method:

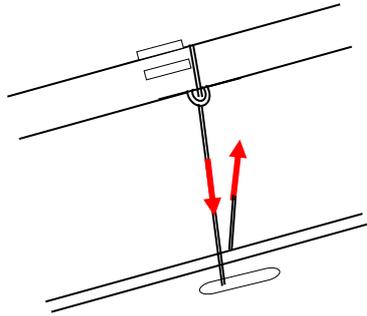


Figure 7: Beginning the Gammoning

- off the ship, a small eye is spliced into one end of the gammoning line
- the opposite end of the line is then reeved through the eye and tightened so that the eye splice lies immediately below the bowsprit mast.
- the line then passes through the gammoning hole in the stem and up around the bowsprit (Fig. 4).

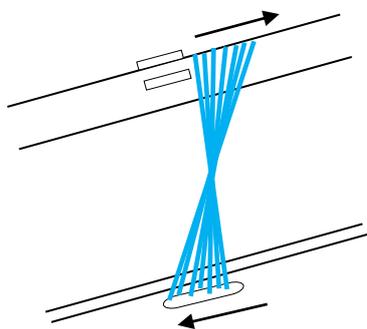


Figure 8: Successive Turns in Gammoning

- each successive turn lays forward on the bowsprit and aft in the stem (Fig. 5) and this is what gives the gammoning its unique twisting shape. The gammoning heaving should be taut (without being excessive) during this process.
- The line is then continued and used to frapp (circled around) the mid-point of the gammoning (Fig. 6). Lees [1948] states that the *number of turns on the frapping is equal to the number of turns around the bowsprit*. The frapping is pulled tight to pinch the gammoning in the middle - this means that the gammoning itself must not be too tight around the bowsprit, otherwise pulling the

frapping will not be possible and the gammoning won't look right.

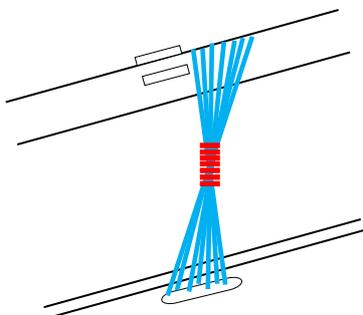


Figure 9: Frapping

Positioning of the slits and how they were used was quite variable over time without any hard and fast rule.

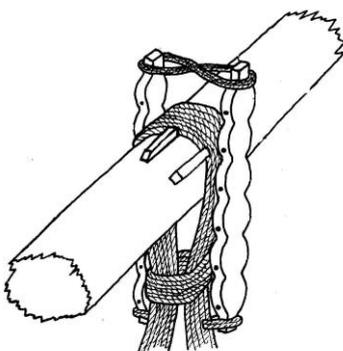


Figure 10: Gammon Rack Block

A special block – the gammon lashing or rack block – is seized on both sides of the forward gammon; this block has part of the running rigging reeved through it and can be clearly seen in Plan Sheet 01. In most builds of the Royal William – including that in the Euromodel Museum – this feature is either overlooked or omitted and yet it had a significant function.

Bobstays

To withstand the upward force on the bowsprit exerted by the stays and masts in general, bobstay lines under tension were usually employed beneath the bowsprit mast.



Figure 11: Bobstays & Shrouds

Fig. 9 shows the bobstay lines being seized close to the cutwater (leading edge of the stem).

Until the 1720's, bobstays were tensioned with *deadeyes*, but by the 1740's *blocks* were the norm. The two deadeyes are connected by a lanyard in the same way as for the shrouds except that the lanyard *starts and finishes at the fixed deadeye* (or block).

Example of Rigging Variation – the Royal William ...

Given the number of re-fits this ship had from 1670 to 1719, it is more than likely that on the bobstay rigging she started with deadeyes and finished with blocks. The build shown in Fig. 8 has deadeyes even though in the drawings, blocks are shown. Either case would be acceptable.

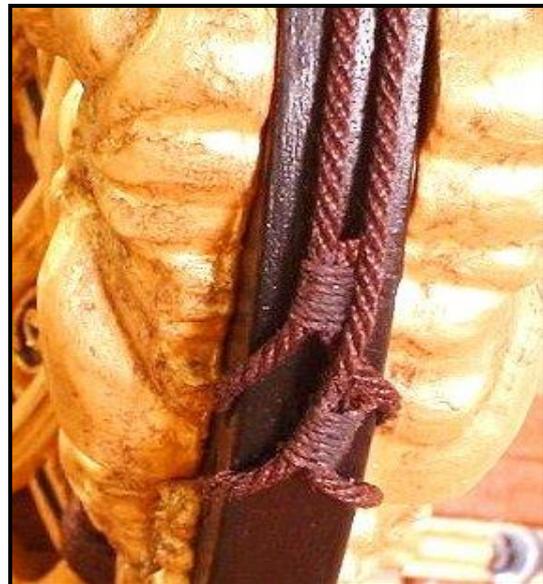


Figure 12: Bobstay Collars

Shrouds

From around 1720 (Mondfeld, 1989), one or two pairs of shrouds were added to give *lateral support* (Fig. 11). This rigging could rightly be expected on the Royal William which had its final re-fit in 1719.

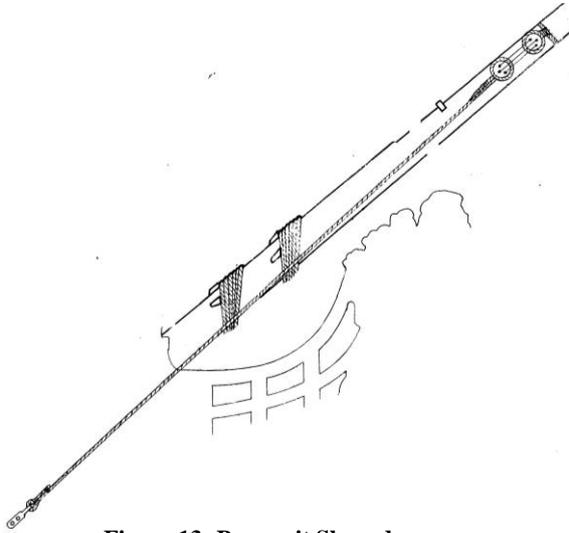


Figure 13: Bowsprit Shroud

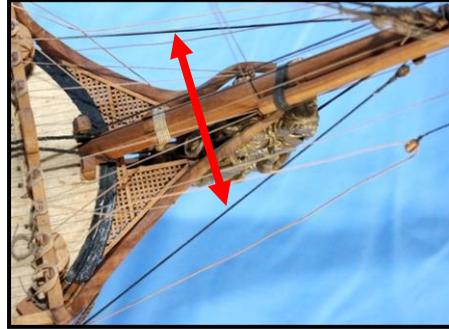


Figure 14: Shroud Lateral Support

Secured to the wales with eye bolts and hooks, they were initially set up with blocks but soon replaced by deadeyes (Fig. 13: broken white line for the shrouds, broken yellow line for the bobstays).



Figure 15: Bowsprit Shrouds

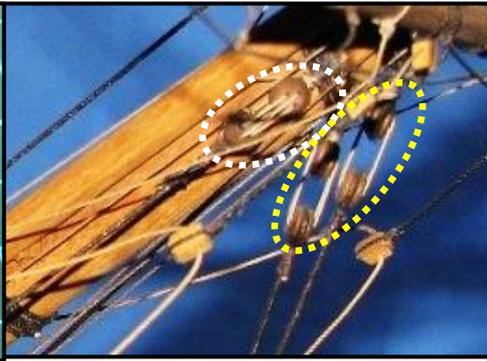


Figure 16: Deadeyes for Bobstays & Shrouds

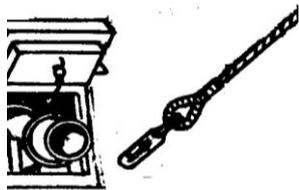


Figure 17: Shroud Attachment

Fig. 14 shows the shroud attached to a strake and *not* secured to the wales but the latter is historically correct. The traditional method was using an eye bolt and hook (Fig. 15) but again the drawing differs. The latter two points are up to the builder.



Figure 18: Hook Seized to Shroud Line

Chapter 2: BOWSPRIT RUNNING RIGGING



Figure 19: Bowsprit Rigging Overview



Figure 20: Bowsprit Top Rigging

Bowsprit Belaying Points

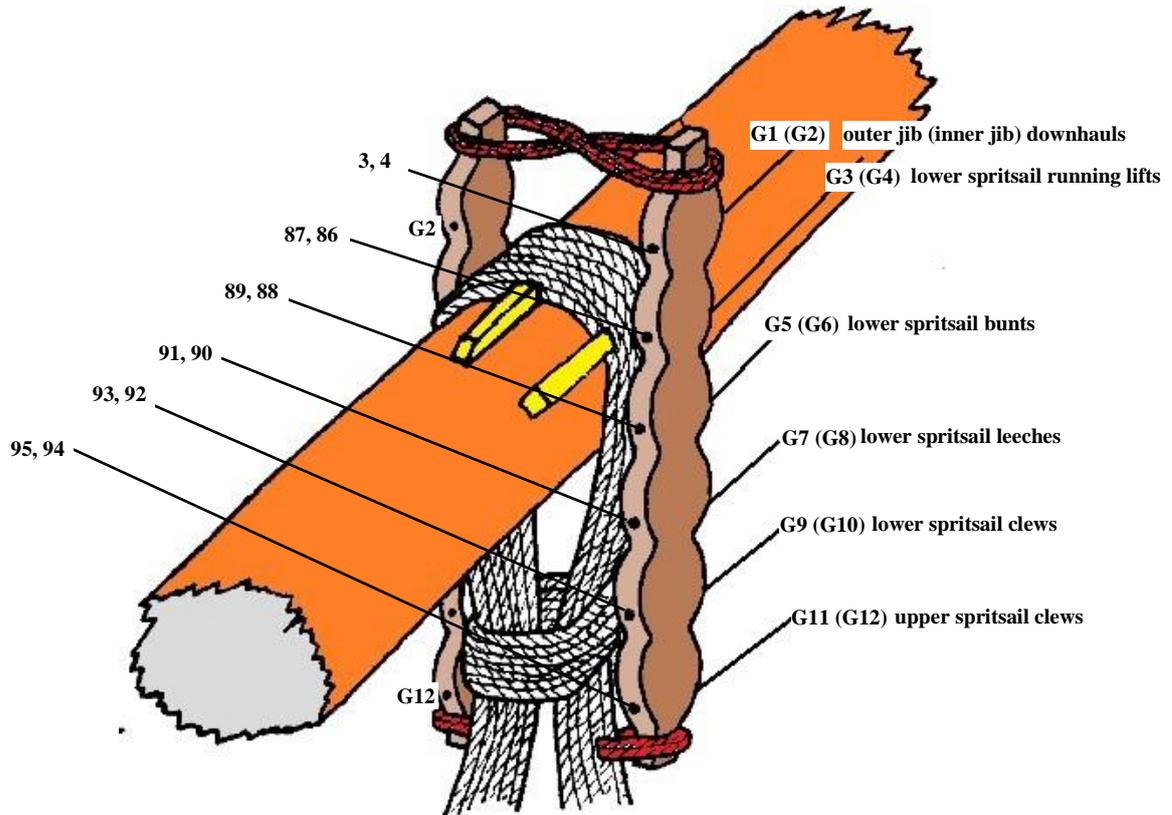


Figure 21: Racking Block Notations

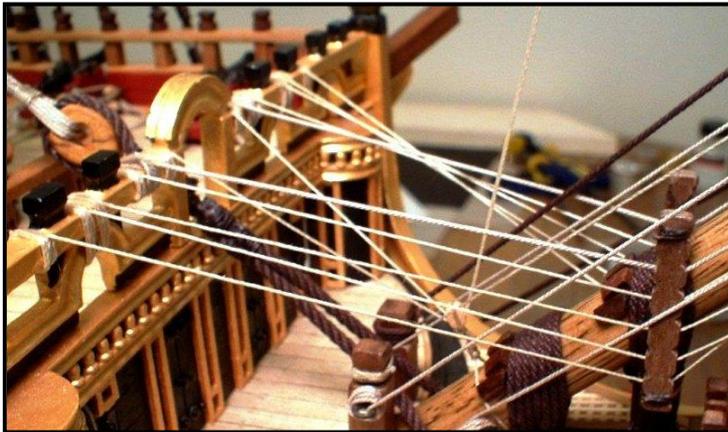


Figure 22: Rail Belaying Points Simplified

Whilst Fig. 23 above illustrates the required/ suggested belaying points on the front rail, Fig. 24 shows a simplified approach where the belaying points and cleats have been omitted and the various lines just seized to the rail.

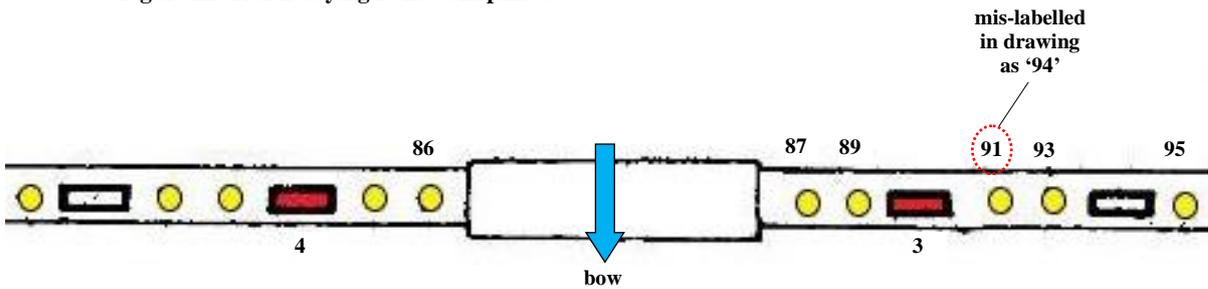


Figure 23: Belaying Points From Racking Block

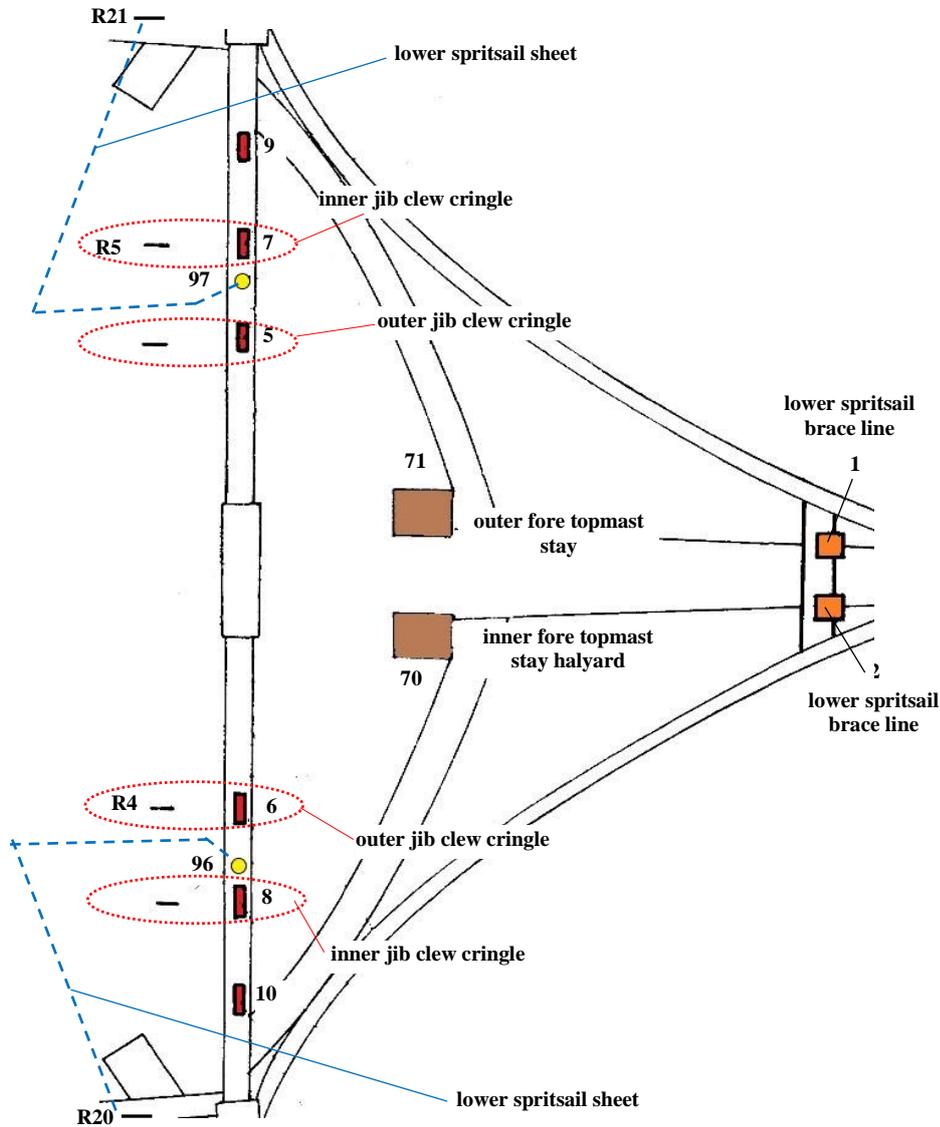


Figure 24: Additional Bowsprit Belaying Points

Lower Sprintsail

Rigging on this ship will always be open to interpretation given its initial launch as the *Prince* in 1670 and its rebuilds as the *Royal William* in 1692 and again in 1719. There appear to be some elements of rigging methods employed on the *Prince* that are retained on the *Royal William*.

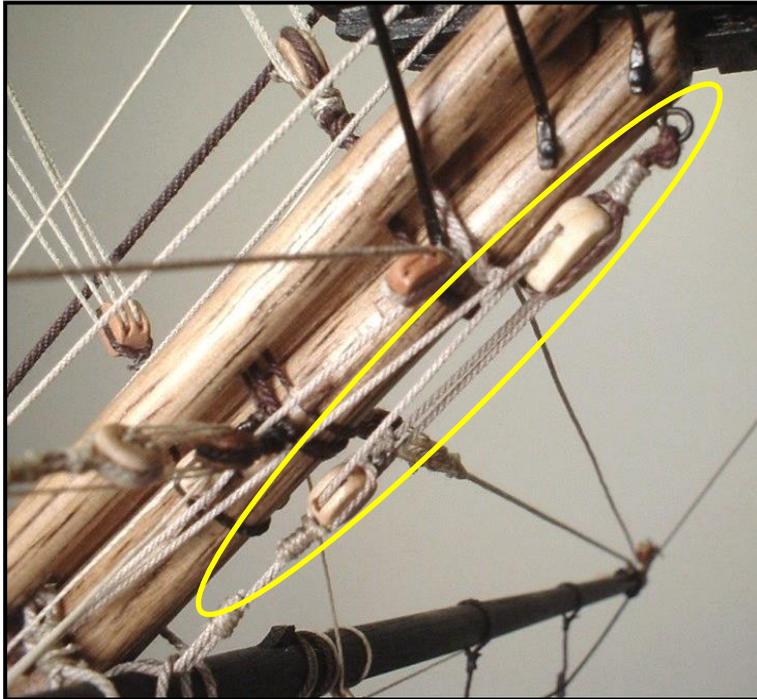


Figure 25: Yard Halliard

Yard Halliard

The lower spritsail yard was held by a sling and was more or less permanently attached to the bowsprit in the one position but could be adjusted with limited travel through the use of a halliard ... 7mm. fiddle block along with a 5 mm. 1-hole block ... [yellow, Fig. 25; see also Fig. 28].

The yard was controlled by lift and brace lines and the sail typically had sheet, clew and bunt lines.

Plan Sheet 1 (Fig. 26) suggests the use of two fiddle blocks and that is just viewed as another possibility.

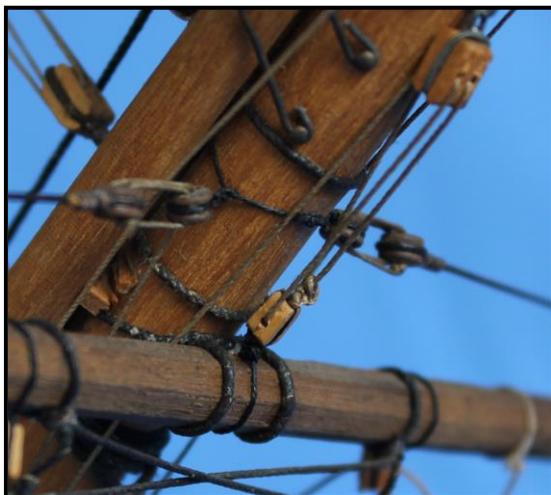


Figure 27: Halliard Blocks

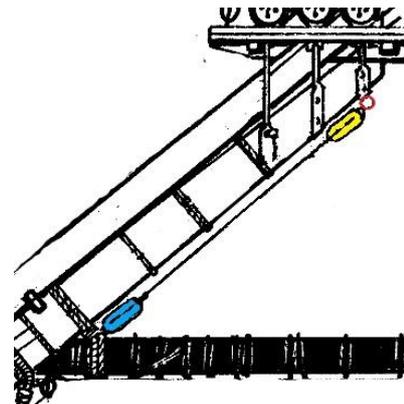


Figure 26: Halliard Fiddle Blocks

Fig. 27 shows the use of two basic blocks.

Yard Sling

Anderson (1955, 112) states that the rope thickness should be slightly less than that for the fore shrouds so 0.8 mm. was used.

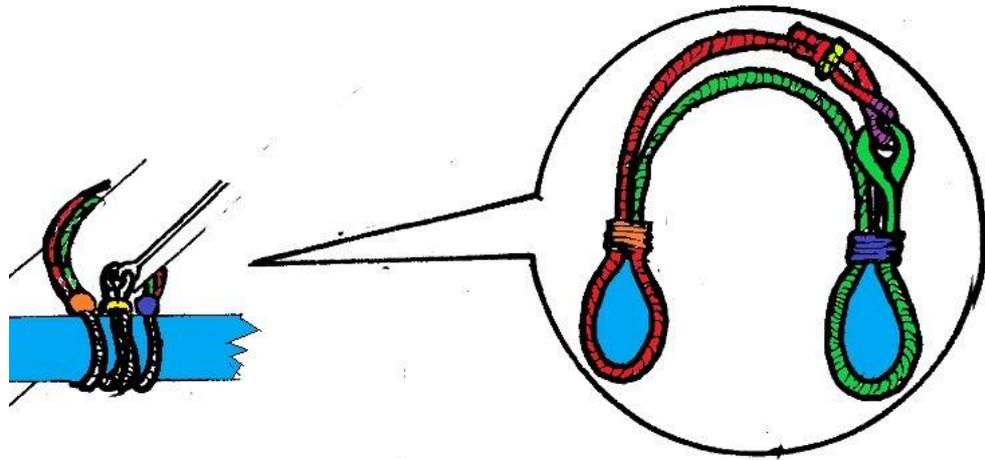


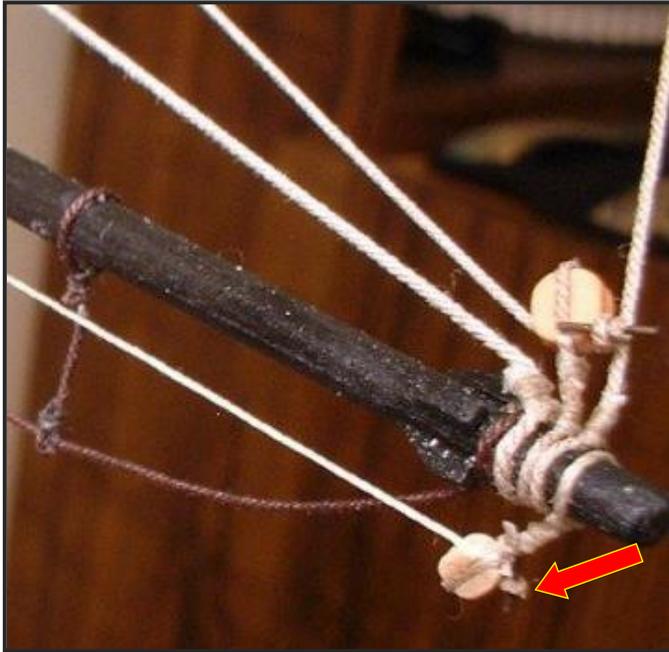
Figure 28: Producing the Yard Sling

The following steps are suggested by Anderson ...

1. Eye spliced in one end (purple).
2. Sling (red) passed around the yard (blue) and seized (orange) fairly close to the eye.
3. The rope (green) is then passed over the bowsprit and around the yard again.
4. It then has a second seizing (dark blue) close to the yard.
5. Then taken back (green) over the bowsprit and through the eye, to be seized to itself once more.

An additional step needs to be taken ...

6. Between the yard lashings, an additional length of rope is lashed and seized in order to accommodate the halliard – *this step could be carried out before the above five steps.*



Bunt, Leech & Clew Lines

Without sails, the rigging for these lines cannot be completed. Some builders opt to leave these lines and their blocks off the ship altogether although the traditionalists will complete the rigging rove through the last block concerned with a small length on the other side as shown in Fig. 27.

Refer back to Fig. 21 for rack rigging.

Figure 29: Incomplete Leech Rigging

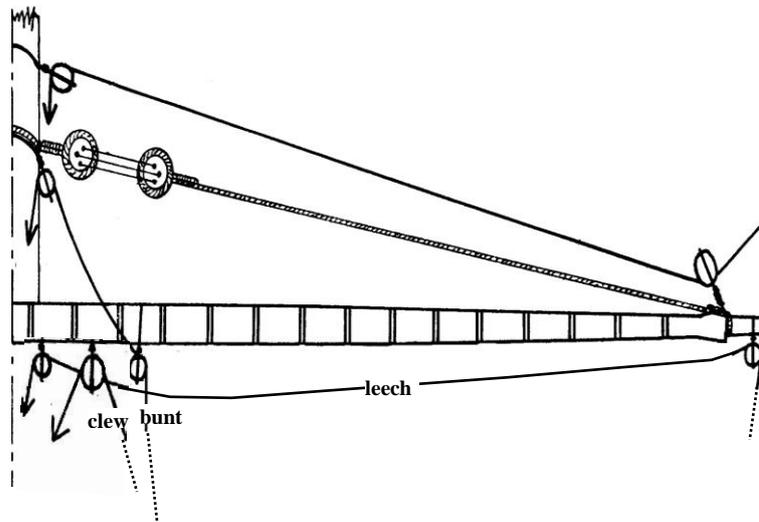


Figure 30: Incomplete Rigging Lines (where sails omitted)

lower spritsail rigging (cont.)

Lift Lines

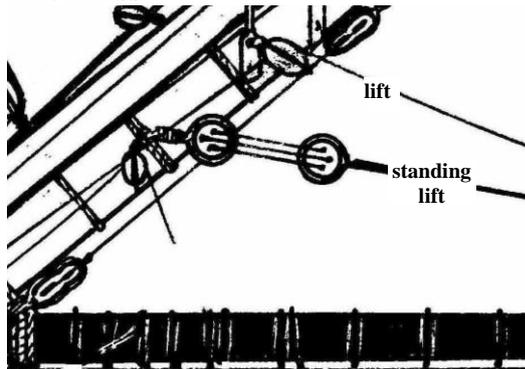


Figure 31: The Two Spritsail Lifts

A significant feature of rigging the spritsail yard is that there are two lifts – the *lift* and the *standing lift*.

The lifts doubled up in their function (Fig. 29) by acting as the spritsail topsail sheets which pass through the gammoning blocks to the focs’le rail.

The standing lifts were seized to the bowsprit through a pair of deadeyes attached to a strop just forward of the spritsail yard slings. These latter lifts (commonly referred to as ‘horses’ or ‘Flemish horses’) also served as lifelines when crew had to move out along the yard.

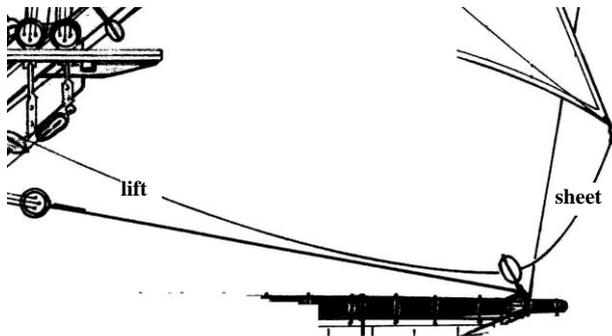


Figure 32: Dual Function

Refer back to Fig. 21 for rack rigging.

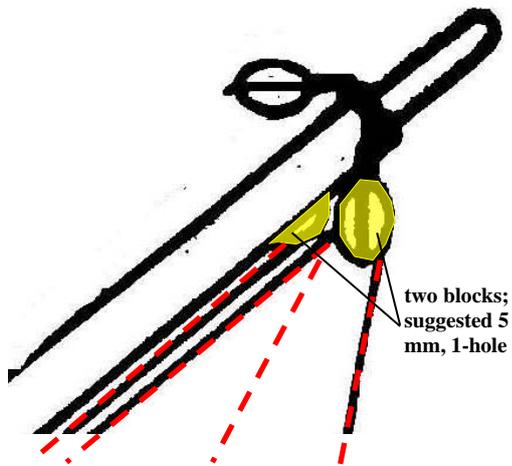


Figure 33: Possible Spritsail Brace Lines

Brace Lines

One thing that stands out in researching this topic is the non-conformity amongst different ships in rigging the spritsail. So no criticism of Euromodel is warranted and the brace lines – if that is what they - are shown in Fig. 31. My interpretation is that the lines pass back to the small bollards ‘1’ and ‘2’ forward of the prow deck (Fig. 24).

However, the following style of rigging was the most typical around 1690 and could therefore have been part of the Royal William. For the enthusiast, this may be of sufficient interest to modify the supplied drawing of Plan Sheet 1. “The standing part is secured to the yard with an eye and a seizing just inside the standing lift. The brace then runs through a block on a short pendant from the forestay about level with the bowsprit end. It returns to the pendant block and then goes through another block on the fore-stay at the level of the fore yard. After that it goes through a pair of blocks at the two ends of the fore trestle-trees and finally through a leading-block on the fore-stay, to be belayed on the bulwarks just abaft the forecandle bulkhead” [Anderson, R.C., 114, 1955]

The following diagram shows the typical rigging that could have been found on the Royal William for the starboard spritsail brace.

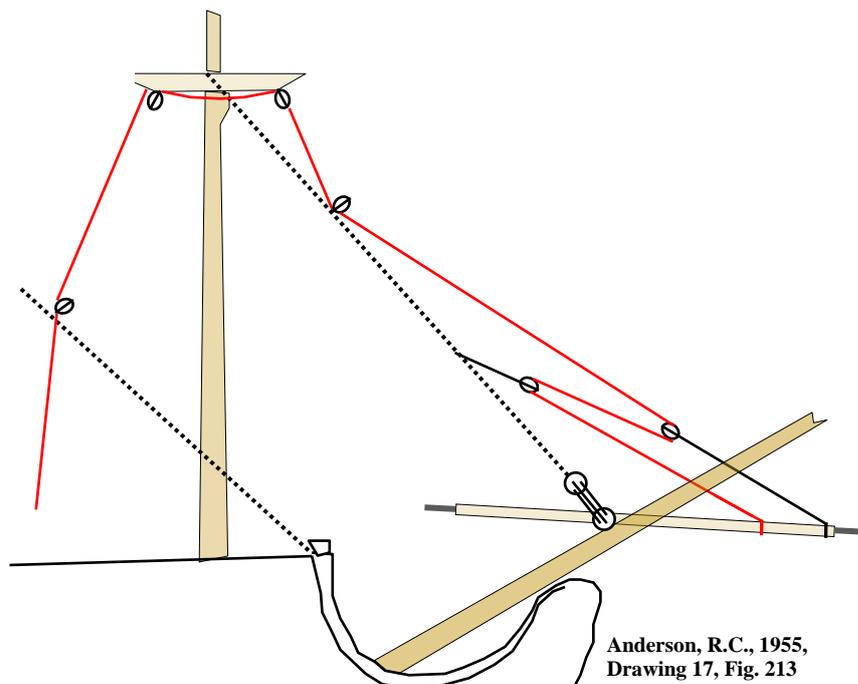


Figure 34: Spritsail Brace Typical of 1690

Sheet

When furled, the clew would draw that whole corner inboard and up against the yard, taking the sheet with it. The sheet, kept out of the way and out of the water, was belayed in a temporary position further along the yard (Fig. 33) and taken back down the bowsprit to the focs'le rail (positions 96/97).

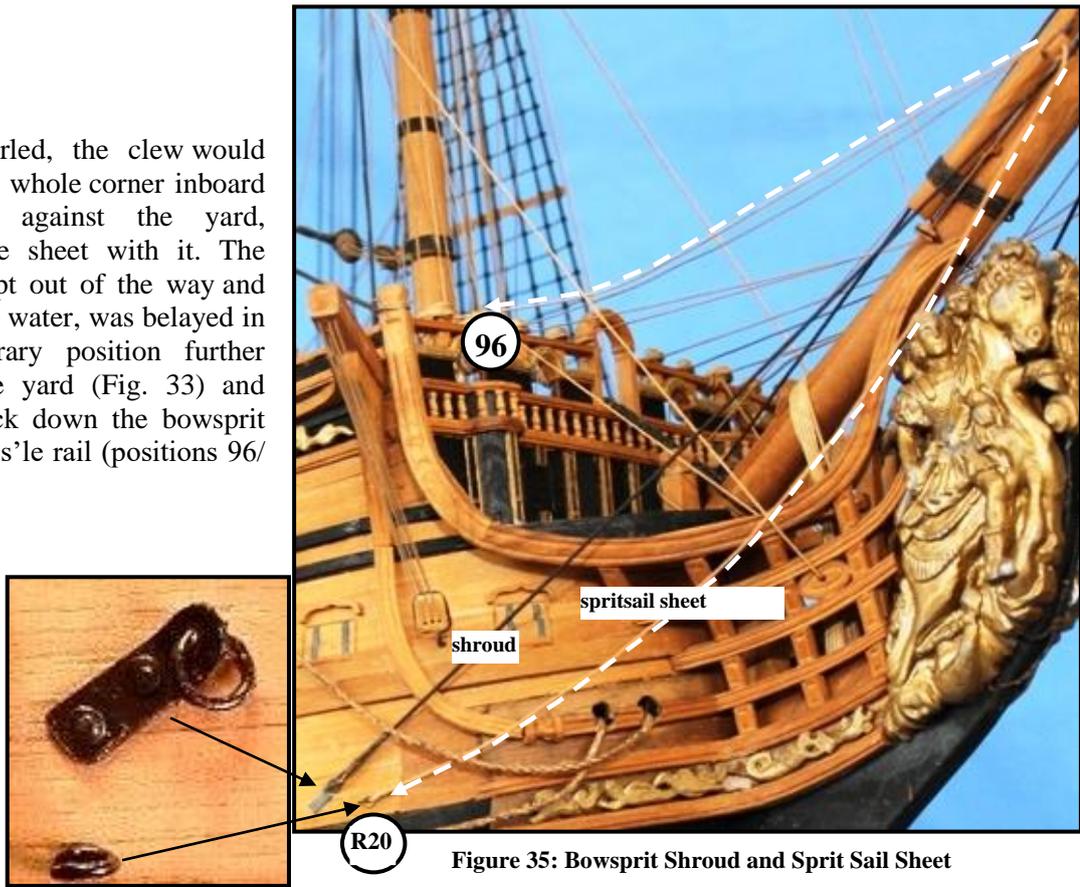


Figure 35: Bowsprit Shroud and Sprit Sail Sheet

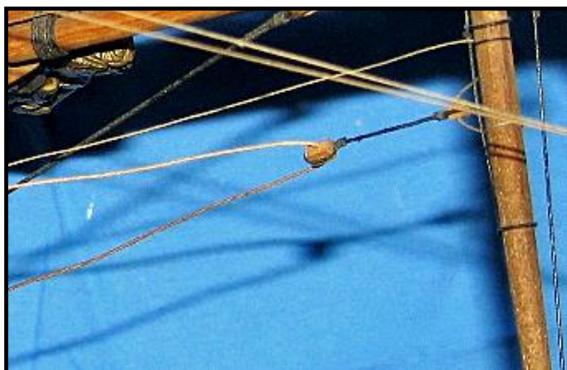


Figure 37: Spritsail Sheet (not in use)

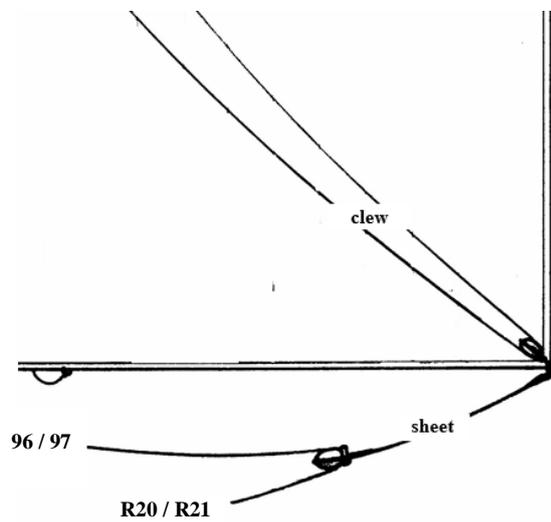


Figure 36: Spritsail Sheet (in use)

Upper Spritsail

Clew Line

There are no bunt or leech lines for this smaller sail. As already discussed for the spritsail, the rigging for the upper spritsail clew line cannot be completed without a sail.

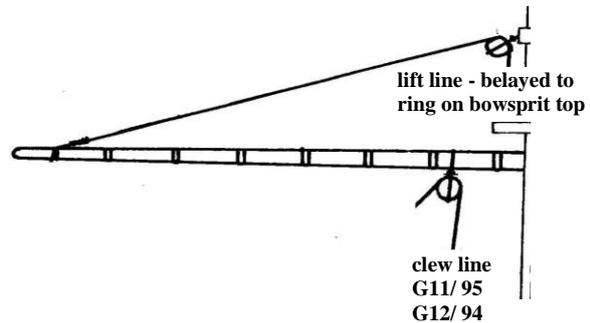


Figure 38: Upper Spritsail Clew and Lift Lines

Lift Line

Information is shown in Fig. 36

Brace Lines

English ships based their upper spritsail yard running braces on the fore stay (in this case the fore preventer stay – Fig. 37, points 103 & 104) and had short pendants on the yard. The standing part was belayed to block 101 (Fig. 37)

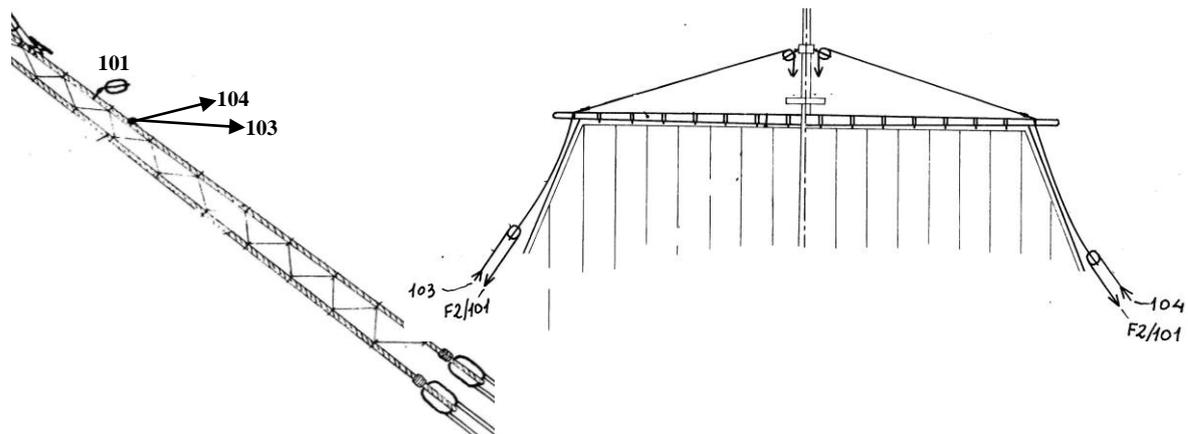


Figure 39: Brace Lines for Upper Spritsail Yard

Points of Contention

Whilst the drawings indicate that points of attachment (103 & 104) are to the preventer stay, it is often argued that the preventer stay was not a permanent fixture of the rigging and most likely only rigged prior to engaging the enemy – its function being to prevent the fore stay from falling to the deck if damaged in conflict. On the other hand, many like to include the preventer stay along with the snaking. Following the former point, such blocks would be located on the fore stay rather than the fore preventer stay ?

- attachment points 103 & 104 should be on the lower fore stay.
- similarly, block 101 should be on the fore stay.

The two running brace lines (yellow) were roved through block 101 (shown in Plan Sheet 11 & in Figs. 38 & 39). They were then led down to a pair of single blocks fixed to eye bolts on the bowsprit slightly forward of the gammoning and from there to the foc'sle rail close to the collar of the main stay (this latter portion of the brace lines cannot be easily identified in the image shown but an examination of Plan Sheet 1 gives perhaps an answer.



Figure 40: Upper Spritsail Yard Running Brace Lines

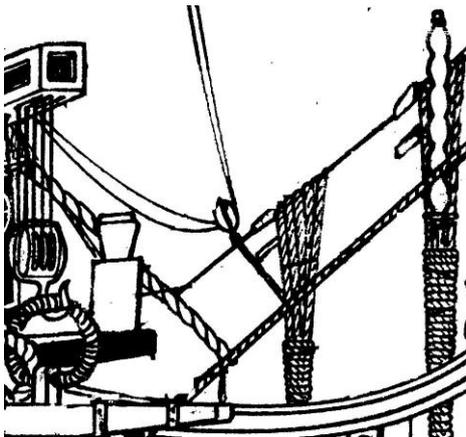


Figure 41: Brace Lines from Upper Spritsail Yard

From Plan Sheet 1, a block is shown which could be a continuation of the running brace line of the upper spritsail yard downwards from block 101 on the forestay. From the previous comment, the single block shown here could actually be two single blocks side by side. The problem is that generally these blocks are mounted forward of the gammoning and not aft – but rigging methods varied enormously so this is probably correct.

Fig. 39 *does* suggest blocks mounted on the bowsprit aft of the gammoning.

Sheet Line

Peculiar to this style of rigging, the sheet line also serves as the lift line for the spritsail below (as discussed earlier). With the sail furled (i.e. not included), this line would have to be handled in the same manner as for the spritsail.