

CHALLENGER OF RECORD & DEFENDER AMERICA'S CUP 36

Interpretation 043 of AC75 Class Rule Version 1.9 issued 20th March 2020

Rules References:

19 Headsails

19.1 The components that may make up a **jib** are limited to:

- (a) a maximum of one **sail skin**;
- (b) up to 8 **battens**, which can terminate on any sail edge, and shall not be adjusted while the **jib** is hoisted;
- (c) **sail hardware**;
- (d) **luff** attachment devices permitted in Rule 19.8;
- (e) **head pennants**;
- (f) soft fairings around a **head pennant** and that part of the forestay adjacent to a **head pennant**;
- (g) components of an **ILS**; and
- (h) **woollies**.

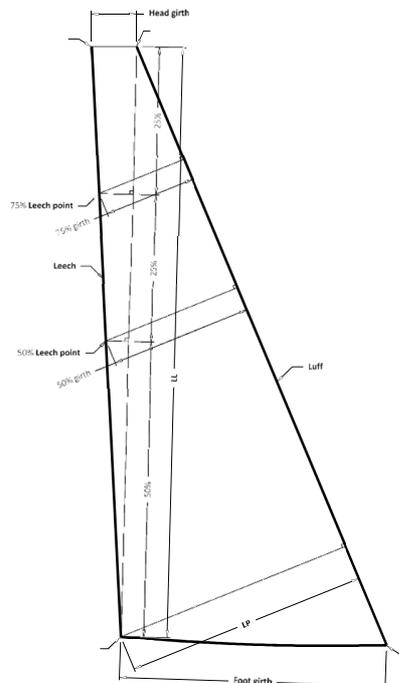


Figure 19.1: **Headsail** Measurement

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- 19.3 Fairings permitted in Rules 19.1 (f) and 19.2 (e) shall be capable of being folded flat along their leading edge and shall have a maximum internal width of 100 mm measured perpendicular to the leading edge.
- 19.9 Other than within 100 mm of **supplied rigging** fittings, **luff** pockets of **headsails**, shall be:
- (a) capable of being folded flat along the leading edge; and
 - (b) no more than 150 mm wide, when measured internally, perpendicular to the **luff**.
- 19.14 Maximum **headsail** measurements shall be as follows:

	Jibs with LL ≤ 18.0 m	Jibs with LL > 18.0m	Code zeros
LP	7.050 m	7.050 m	12.000 m
50% girth	0.59 LP	(0.869-0.0155 LL) LP	0.58 LP
75% girth	0.40 LP	(0.859-0.0255 LL) LP	0.31 LP
Head girth	0.17 LP	(0.699-0.0294 LL) LP	0.120 m

35 Definitions

- 35.44 **Head**
The top edge of a **sail skin**.
- 35.46 **Head pennant**
A cable used as an extension of a halyard to accommodate a sail with reduced **luff** length.
- 35.47 **Head point**
The intersection or projected intersection of the **luff** and **head** of a **sail skin**. The intersection shall be projected when the **luff** or **head** curvature reduces below a radius of 1.0 m.
- 35.71 **Luff**
The forward edge of a **sail skin**.
- 35.98 **Sail skin**
A thin and predominantly flexible membrane of a **headsail** or **mainsail**. **Sail skins** include stickers, branding, **batten** pockets, **luff** pockets as well as any reinforcements such as edge tapes or corner patches.

Further references:

1. Oxford English Dictionary definition:

Cable

1. a. A strong thick rope, originally of hemp or other fibre, now also of strands of iron wire.

2.

3. a. spec. (Nautical) The strong thick rope to which a ship's anchor is fastened; and by transference, anything used for the same purpose, as a chain of iron links (**chain cable**).

2. Interpretation 037.

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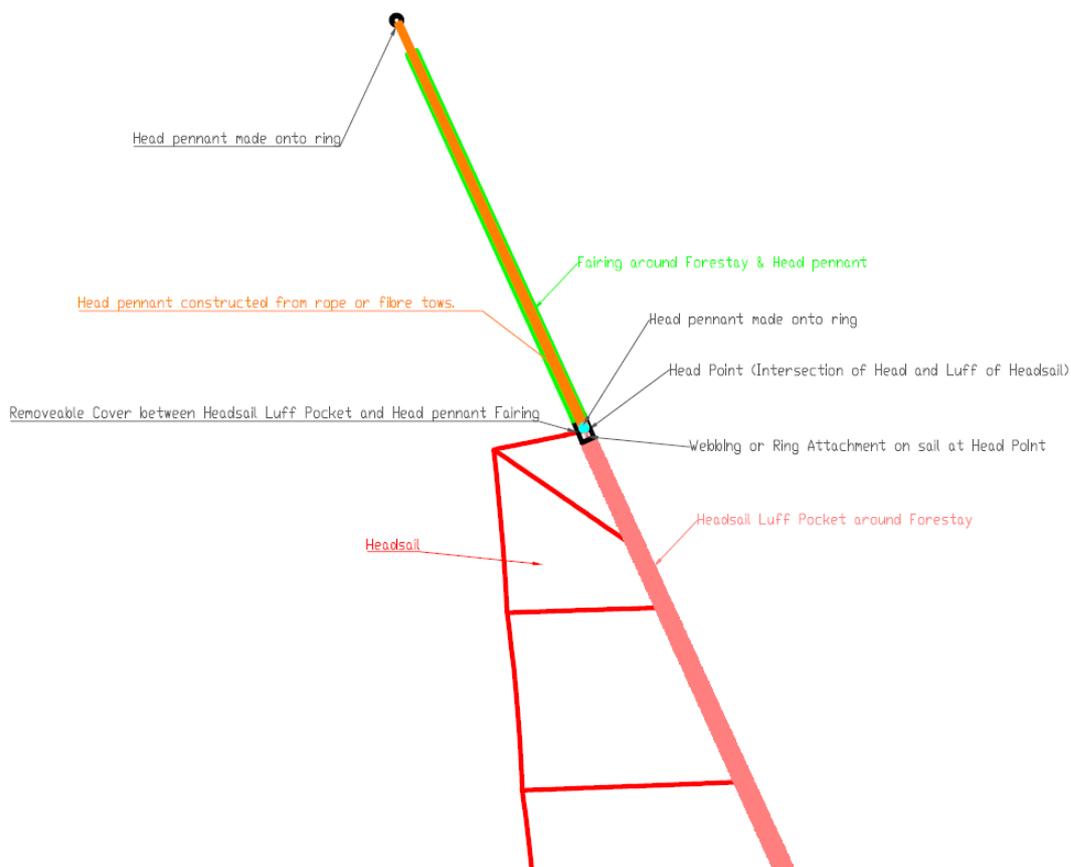
Background:

For headsails that are not full hoist, a pennant is required to extend the luff of the sail to a point where the jib halyard lock can be engaged to avoid having different halyards for different headsails.

Consider the following four variations of Head Pennant execution:

Version A:

- The **sail skin** of the sail finishes at the intersection of **head** and **luff** of the sail.
- The **head pennant** is a strop constructed from conventional rope or unidirectional fibre with a braided cover, which is attached to the **head** of the sail with a lashing, shackle, or similar means.
- A **luff pocket** extends from the **foot** of the **headsail** to the **head point** of the **headsail**.
- A **fairing** covers the **head pennant** and forestay from approximately 200mm above the **head point** up to the connection point of the halyard – as permitted by Rule 19.3.
- A removable fairing connects the **headsail luff pocket** to the **head pennant** fairing.

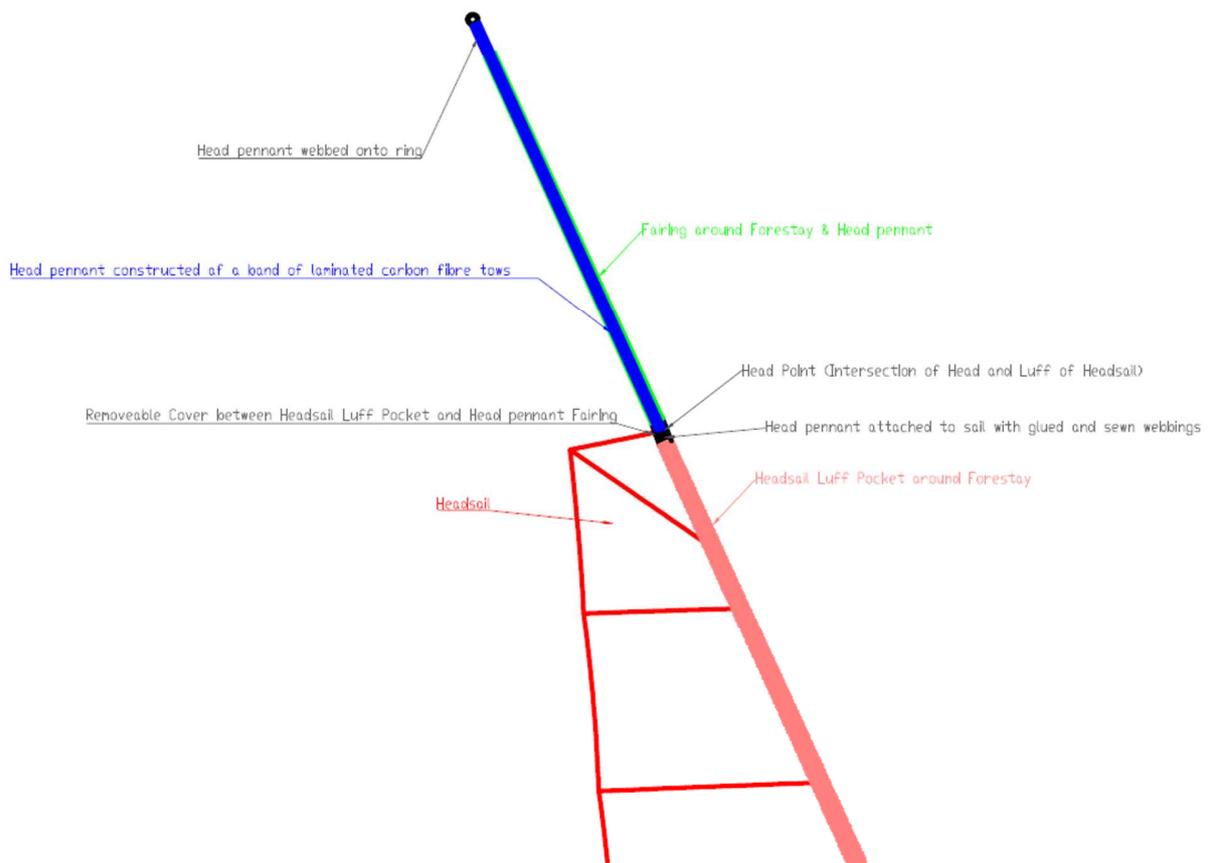


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Version B:

- The **sail skin** of the sail finishes at the intersection of **head** and **luff** of the sail.
- The **head pennant** is a band of material laminated from predominantly carbon fibre tows laminated with various films into a thick, flat band, which is attached with glued and sewn webbings to the head of the sail.
- A **luff pocket** extends from the **foot** of the **headsail** to the **head point** of the **headsail**.
- A **fairing** covers the **head pennant** and forestay from approximately 200mm above the **head point** up to the connection point of the halyard – as permitted by Rule 19.3.
- A removable fairing connects the **headsail luff pocket** to the **head pennant** fairing.



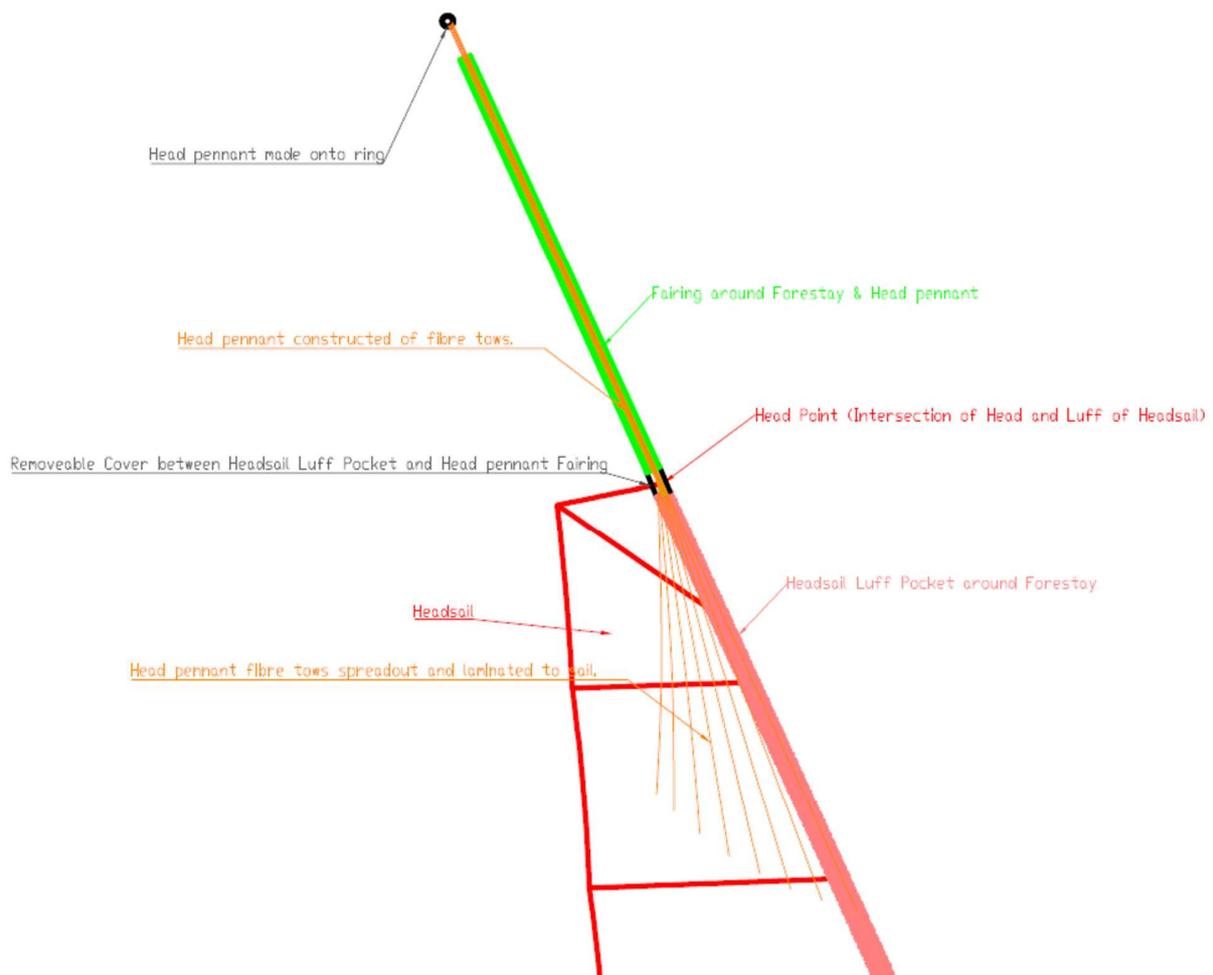
VERSION B

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Version C:

- The **sail skin** of the sail finishes at the intersection of **head** and **luff** of the sail.
- The **head pennant** is a bundle of unidirectional resin impregnated carbon fibre tows, with a braided cover. At the lower end, the carbon fibre tows are spread out and laminated to the **head** of the sail.
- A **luff pocket** extends from the **foot** of the **headsail** to the **head point** of the **headsail**.
- A **fairing** covers the **head pennant** and forestay from approximately 200mm above the **head point** up to the connection point of the halyard – as permitted by Rule 19.3.
- A removable fairing connects the **headsail luff pocket** to the **head pennant** fairing.



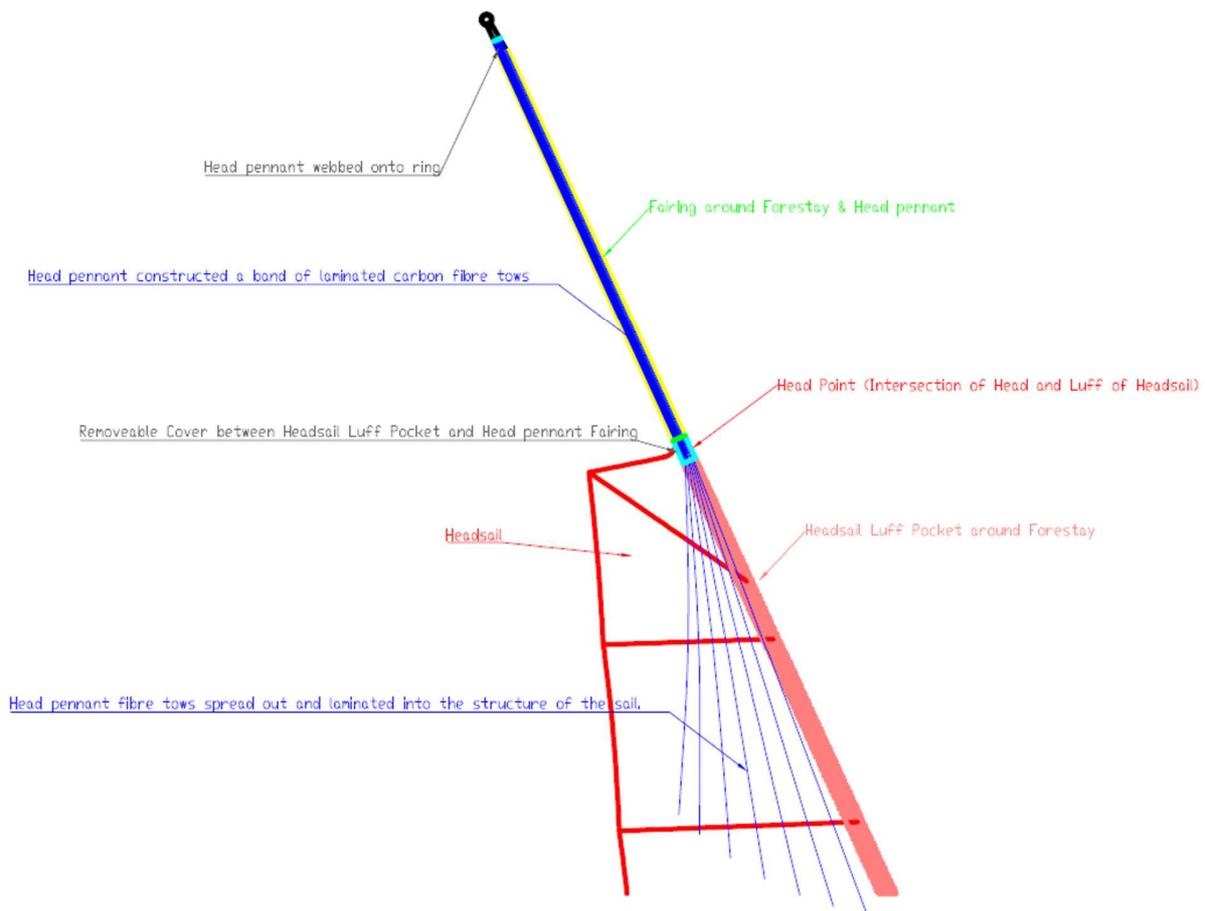
VERSION C

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Version D:

- The **sail skin** of the sail finishes at the intersection of **head** and **luff** of the sail.
- The **head pennant** is a band of material laminated from predominantly carbon fibre tows laminated with various films and layer groups into a thick, flat band. At the lower end the tows are spread out and laminated into the structure of the sail.
- A **luff pocket** extends from the **foot** of the **headsail** to the **head point** of the **headsail**.
- A **fairing** covers the **head pennant** and forestay from approximately 200mm above the **head point** up to the connection point of the halyard – as permitted by Rule 19.3.
- A removable **fairing** connects the **headsail luff pocket** to the **head pennant** fairing.



VERSION D

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Questions:

- 1) Version A:
 - a. Is this version compliant with the **AC75 Class Rule**?
 - b. If it is not, which Rule(s) is/are infringed?
 - c. Is the location of the **head point** correct?
- 2) Version B:
 - a. Is this version compliant with the **AC75 Class Rule**?
 - b. If it is not, which Rule(s) is/are infringed?
 - c. Is the location of the **head point** correct?
- 3) Version C:
 - a. Is this version compliant with the **AC75 Class Rule**?
 - b. If it is not, which Rule(s) is/are infringed?
 - c. Is the location of the **head point** correct?
- 4) Version D:
 - a. Is this version compliant with the **AC75 Class Rule**?
 - b. If it is not, which Rule(s) is/are infringed?
 - c. Is the location of the **head point** correct?

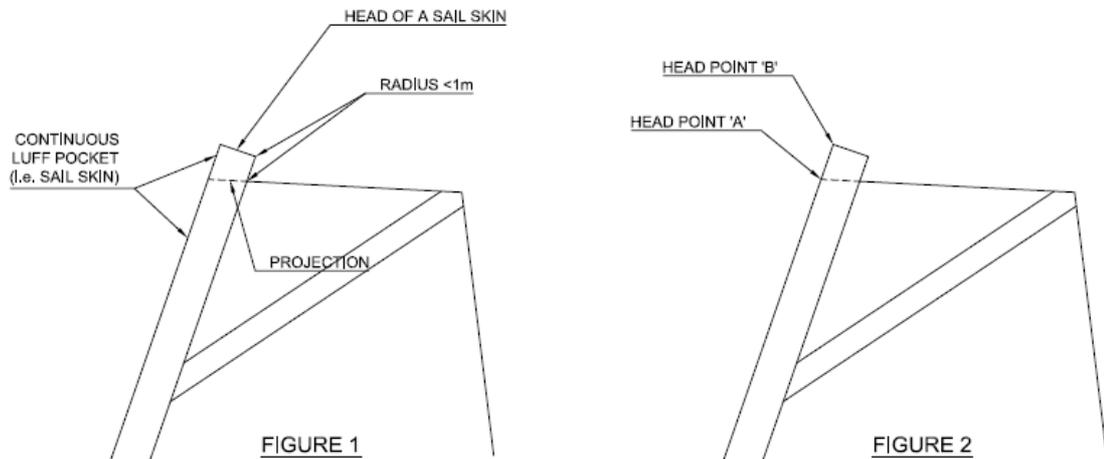
Interpretation:

A) Head Point:

- 19.1 The components that make up a **jib** are limited to:
(a) a maximum of one **sail skin**;
(d) **luff attachment devices** permitted in rule 19.8
- 35.47 **Head point**
The intersection or projected intersection of the **luff** and **head** of a **sail skin**. The intersection shall be projected when the **luff** or **head** curvature reduces below a radius of 1.0 m.
- 35.98 **Sail skin**
A thin and predominantly flexible membrane of a **headsail** or **mainsail**. **Sail skins** include stickers, branding, **batten** pockets, **luff pockets** as well as any reinforcements such as edge tapes or corner patches.

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Should the luff pocket extend past the head of the **sail** as shown in both of the above figures (even if the **luff** pocket is considered being part of the **sail skin** as per 35.98), the radius in parts of the resulting contour will be below 1.0 m (as indicated in figure 1) . Consequently, the projected **head point** (between **luff** and **head of sail skin**) shall be used, following the wording of rule 35.47. For such a configuration, **head point "A"** (indicated in Figure 2) is the correct **head point**.

B) Luff pocket and head pennant fairing:

As long as **luff** pocket and **head pennant** fairing fulfill their restrictions/limitations (rule 19.3 and 19.9), they could even be constituted as continuous arrangement. In that case, the **head point** measurement according to clause A) would not be affected. The cover above the **head point** would be the "**head pennant fairing**" and the cover below the **head point** would be the "**luff pocket**"; and be in association with Interpretation 037 ("upper and lower rudder").

C) Head pennant:

12.8 Rigging shall be nominally round and shall not be faired, except as permitted by Rules 19.1 (f) and 19.2 (e). This Rule does not apply to **supplied rigging** or the bobstay permitted by Rule 17.4.

The **head pennant** is a piece of rigging, as rule 12.8 implies by specifically listing relating exemptions. Thus, the **head pennant** must be a nominally round (rule 12.8) cable (rule 35.46) in section, except as required, or being unavoidable, at, and in direct proximity of the end attachment.

There is no rule that prohibits a continuity of the **head pennant** onto/into the sail or a physical split and that part of the assembly above the sail **head** is the **head pennant**.

D) Definitions:

The OED definition of cable is:

1. a. A strong thick rope, originally of hemp or other fibre, now also of strands of iron wire.

The OED definition of rope is:

1. a. A length of thick strong cord, made by twisting together strands of hemp, sisal, Manila, cotton, nylon, wire, or other similar material, typically used for pulling a heavy load or for tying up a bulky object, and esp. forming the major part of the rigging of a sailing vessel or used to assist a climber.

Both definitions are considered somewhat outdated, when applied to modern yacht racing. In lack of (further) available appropriate definitions, the **Rules Committee** considers a (rigging) cable to be a structural element to transmit mainly tensile forces and be ineffective in compression; a bundle of fibres;

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braided, twisted or unidirectional, which may be or may not be stabilised by an impregnation matrix, and/or with or without a cover.

Answers:

1.
 - a. Yes.
 - b. Not applicable.
 - c. Yes, but see above Interpretation clauses for clarity.
2.
 - a. No.
 - b. The head pennant is not round, which rule 12.8 implies.
 - c. Yes, but see above Interpretation clauses for clarity.
3.
 - a. Yes.
 - b. Not applicable
 - c. Yes, but see above Interpretation clauses for clarity.
4.
 - a. No.
 - b. The head pennant is not round, which rule 12.8 implies.
 - c. Yes, but see above Interpretation clauses for clarity.

END.