

# CHALLENGER OF RECORD & DEFENDER

## AMERICA'S CUP 36

### Interpretation 023

of

### AC75 Class Rule Version 1.5 issued 22<sup>nd</sup> August 2019

#### Rule References:

13.1 Each **foil** must comprise:

- (a) a **foil arm** and a **foil wing**, which must form a single **linear component**;
- (b) two **foil flaps**, each of which must be a **linear component**; and
- (c) one or more **foil** systems.

13.2 For the purposes of Rules 5 and 10:

- (a) a **foil** does not include the metal **foil arm** head, fasteners attaching the **foil arm** head to the **foil arm**, any **foil arm drum**, or any other components inside the **hull IGES** that are disconnected from a **foil** when it is removed from the **yacht**;
- (b) except for parts of **foil** systems, any material that does not move relative to a **foil flap** must be part of that **foil flap**; and
- (c) except for the **foil arm stock**, **foil flaps** and **foil** systems, any material within the region described in Rule 13.4 must be part of the **foil wing**.

13.4 With the **foil arm** lowered to its minimum **cant** angle, and at all **foil flap** rotation angles and twists, the **foil wing** and **foil flaps**, **projected** to **TRP**, must lie entirely within the area shaded in Figure 13.1.

15.3 For the purposes of Rule 15:

(a) a “cross-section” is defined locally at any spanwise location along the **rondure** of the **foil wing** as a section through a **foil wing** and **foil flap**, on a plane perpendicular to the **rondure** at that spanwise location; and

#### 35.36 **Foil wing**

Part of a **foil** that, in conjunction with a maximum of two **foil flaps**, produces most of the **foil's** lifting force.

#### 35.93 **Rondure**

A line formed by the leading edge of an appendage **projected** on to **TRP**.

#### Context:

Rule 13.1 defines the components of a foil. Rule 13.2 (c) specifies for the purpose of Rules 5 and 10 that any material within the “region” described in Rule 13.4 must be part of the foil wing. The “region” cited in rule 13.2 (c) is the hatched foil wing box in figure 13.1.

Rule 15.3 defines a “cross section” for the purpose of rule 15, using the defined terms **rondure** and **foil wing**. Rule 35.36 defines the **foil wing** as the part of a **foil** that in conjunction with a maximum of two **foil flaps**, produces most of the **foil's** lifting force.

The figures below show the front view and a perspective view of a foil. The black / grey part indicates the visible part of the **foil arm stock**, the red part the visible part of the **foil arm** that is not part of

# CHALLENGER OF RECORD & DEFENDER

## AMERICA'S CUP 36

the **foil arm stock** and the turquoise part indicates **foil wing** and **foil flaps**. The yellow line shows the leading edge of the turquoise part and the green line its projection onto TRP.

At the connection between the red and the turquoise part the leading edge of the turquoise part is further forward than the most forward edge of the red part (see Figure 2).

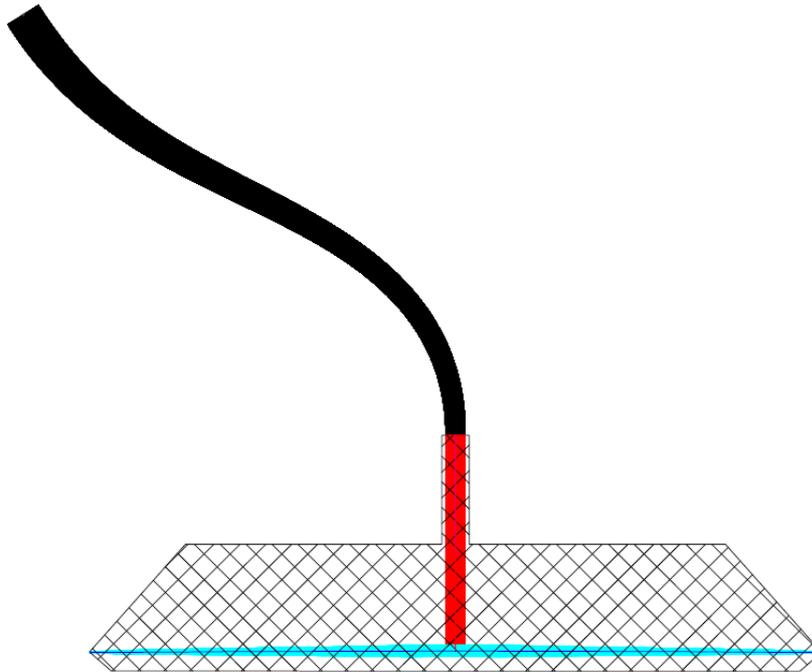
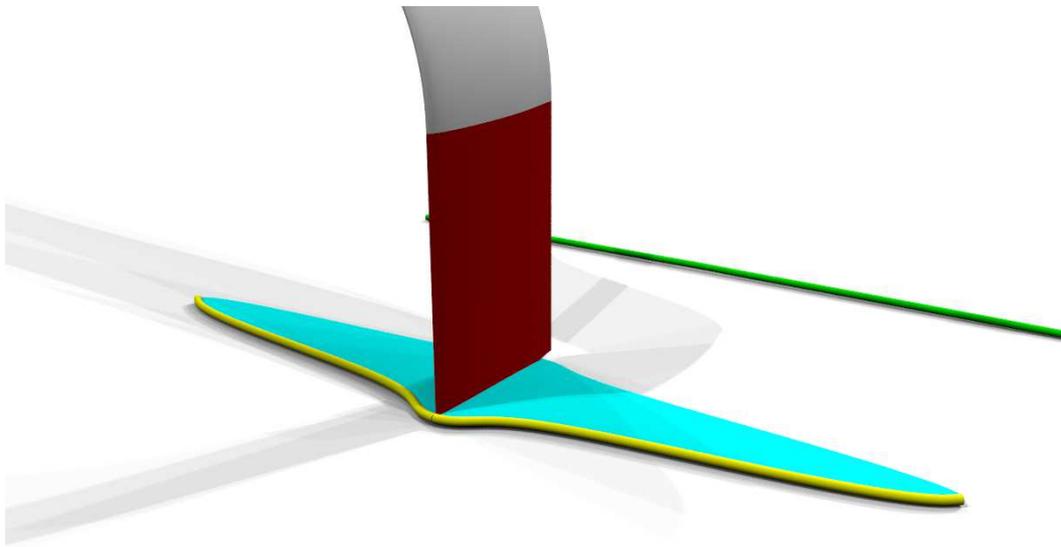


Figure 1: Schematic front view of a foil, in black the visible part of the foil arm stock, in red the free part of the foil arm, in turquoise foil wing and foil flaps. The hatched area represents the area shaded in figure 13.1 of the AC75 Class Rules.

# CHALLENGER OF RECORD & DEFENDER

## AMERICA'S CUP 36



**Figure 2: Perspective of the foil in Figure 1. In grey the visible part of the foil arm stock, in red the free part of the foil arm, in turquoise foil wing and foil flaps, in yellow the leading edge of the foil wing and in green the rondure.**

The yellow (thick) line in Figure 2 shows at each position the leading edge (“forward edge”, OED) of the turquoise part.

### Questions:

1. The red part in the figures above is inside the region described in rule 13.4, and it is not part of the **foil arm stock, foil flaps** or **foil system**. It does not produce a significant amount of lifting force. We therefore assume that for the purpose of rule 15 this part is not part of the **foil wing**. Is this assumption correct?
2. If the answer to question 1 is “NO”, can the Rules Committee provide guidance and cite the relevant rules why this part should be considered **foil wing** for the purpose of rule 15?
3. If the answer to question 1 is “YES” we assume that the **rondure** for the foil in figure 1 does not contain the projection onto **TRP** of the leading edge of the red part in figures 1 and 2. Is this assumption correct?
4. If the answer to question 3 is “NO”, can the Rules Committee provide guidance and cite the relevant rules how the **rondure** for that foil should look like.
5. If the answer to question 1 is “NO” we equally assume that the **rondure** for the foil in figures 1 and 2 does not contain the projection onto **TRP** of the leading edge of the red part in figures 1 and 2 since the yellow line in figure 2 describes at each position along the foil wing the leading edge of the foil wing (turquoise part is further forward than the red part). Is this assumption correct?
6. If the answer to question 5 is “NO”, can the Rules Committee provide guidance and cite the relevant rules how the **rondure** for that foil should look like.

# CHALLENGER OF RECORD & DEFENDER

## AMERICA'S CUP 36

### Interpretation:

This interpretation relates also to the technical drawing, mentioned under rule 14.4, the drawing “ODA Surface Finish Allowance and **Foil Arm Fairing** Limitations”.

### Answers:

1. No. For the purpose of rule 15:

The red part as drawn in Fig. 2 is located inside the dashed region shown in Rule Fig. 13.1., available for **foil wing** including junction/attachment. Given the premises in the question, the red part can only be **foil arm fairing**. Drawing “ODA Surface Finish Allowance and **Foil Arm Fairing** Limitations” does not permit **foil arm fairing** in this location rendering this proposal non-compliant.

2. Any fairing below a location as specified in drawing “ODA Surface Finish Allowance and Foil Arm Fairing Limitations” (and thus inside the dashed area shown in Rule Fig. 13.1) is assigned to the **foil wing**.
3. In rule 35.93 for the definition of **rondure**, the singular “line” is defined in relation to the singular “the leading edge of an appendage...”.

The **AC75 Class Rule** nowhere limits an appendage, i.e. **foil** or **foil wing**, to have a single leading edge.

With an appendage, having more than one single leading edge, each of those leading edges has “a line” formed by *that* leading edge **projected** on to **TRP**, thus forming a **rondure**. This can create multiple lines and thus multiple **rondures** for one appendage while respecting rule 35.93 for an appendage.

If in doubt, and/or where, due to the circumstances of particular geometric situations (e.g. the existence of bulbous elements in an appendage without a definable leading edge), the **Rules Committee** recommend this be clarified via a detailed request for interpretation.

4. For the purpose of rule 15, the term “**rondure**” only has implications for the **foil wing** (see also answer 1.).

Thus, the **rondures** of the region of the part shown in Fig. 2, consist of projection lines of the leading edges of the lower horizontal part (green line) and of that of the vertical red part, which is dedicated to being **foil wing** (see answer 2).

5. No. See answers 3 and 4.
6. See answer 4.

END