

CHALLENGER OF RECORD & DEFENDER AMERICA'S CUP 36

Interpretation 089 of AC75 Class Rule Version 1.27 issued 15th January 2021

Rule References:

- 21.2 No **control system** or part thereof shall be capable of using feedback from the **yacht state** to control a **control surface**, except:
- (a) motion of a **control function** may be restricted where permitted by Rule 21.3;
 - (b) one or more **force input devices** may be connected **mechanically** and/or through an **HCC** to a single **control surface**; forces acting on that **control surface** can only be transmitted to those **force input devices**;
 - (c) one or more **force input devices** may be connected **mechanically** and/or through an **HCC** to common mechanical drive trains or common pressure supply lines that provide power to multiple **control surfaces**; forces acting on those **control surfaces** can be transmitted through those mechanical drive trains or pressure supply lines to those **force input devices**;
 - (d) as permitted within an **HCC** by Rules 22.5 (d) and 22.5 (e);
 - (e) as permitted within an **ECC** by Rule 24; and
 - (f) a **control surface** can move passively as the result of **external forces** acting on that **control surface**, providing the above Rules are respected.
- 21.3 A **control system** may restrict a **control function** as follows:
- (a) fixed stops, or stops engaged and disengaged **mechanically**, may limit the travel of a **control function**;
 - (b) locks that engage **mechanically** at (or very nearly at) either end of the extent of motion of a **control function** may be disengaged by an **ECC** and/or **HCC**, providing those extents of motion are not adjustable; and
 - (c) locks that limit the direction of motion of a **control function** at discrete points, e.g. ratchets, may engage **mechanically**.

However, stops and locks permitted herein shall not be combined to provide greater control of a **control function**, and shall not be used in mechanisms such as, but not limited to, escapements, to achieve the effect of indexed control or position control.

35.17 **Control system**

A system used for the adjustment of **control surfaces**, including all mechanical, hydraulic and electrical components involved in supplying or transmitting power or information used for such adjustment.

Context:

The following questions are asked in relation to the arrangement shown in figure 3 of Interpretation request 084.

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Questions:

1. Is the statement 'including all mechanical, hydraulic and electrical components' an exhaustive list of items that may be involved in 'a system used for adjustment of **control surfaces**', or can other items be part of a **control system** as defined in 35.17?
2. Which is the correct OED dictionary definition for the word mechanical as used in Rule 35.17?
3. Are pneumatic actuators a 'mechanical component' as the phrase is used in 35.17?
4. Are pneumatic actuators considered to be part of a **control system** when they are used in a system that provides power or information to adjust a **control surface**?
5. Is the pneumatically actuated lock subject to the prohibition on using **yacht state** information in the first paragraph of 21.2?
6. In order for the lock to close does the control surface have to be in a known position relative to the lock body?
7. If the answer to Q6 is yes, does this positional knowledge about the control surface constitute **yacht state** information.
8. If the combination of the actuator position and lock closing constrains the control surface in a known position, has the **control system** used **yacht state** information?
9. Does the pneumatically actuated lock engage **mechanically**?
10. Is the pneumatically actuated lock allowed to restrict the **control function** as provided by 21.3(a)?
11. Is the pneumatically actuated lock allowed to restrict the **control function** as provided by 21.3(b)?
12. Is the pneumatically actuated lock allowed to restrict the **control function** as provided by 21.3(c)?
13. Is the pneumatically actuated lock allowed to use **yacht state** information because of any of the exceptions provided in Rule clauses 21.2 (b) through (f)?

Answers:

1. No.
2. Since the list in Rule 35.17 is not exhaustive the precise definition of "mechanical" is not critical for this interpretation.

Notwithstanding that, in the context of Rule 35.17, the most appropriate OED definitions of "mechanical" are:

II. Senses relating to machines or mechanical processes.
5.a. Of the nature of a machine or machines; acting, worked, or produced by a machine or mechanism.
5.b. Of, relating to, or dealing with machinery or mechanisms.
3. Yes.
4. Yes.
5. Yes.
6. The use of the word "known" makes it impossible to answer this question. "Known" to whom? If the **control surface** is not in a certain position, or within a very small range around that position, the lock cannot close.
7. Yes, information on position is **yacht state**.
8. Yes, see answer 7.
9. No.

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10. No.

11. No.

12. No.

13. No.

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