Interpretation 031
of
AC75 Class Rule Version 1.7 issued 4th November 2019

Rules References:

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.

Background:

Figure 1 shows two hydraulic cylinders controlling the position of a car on a track via a rope. The cylinders are symmetrical, and both allow the car to reach the opposite end of the track (if **external loads** on the car allow it).

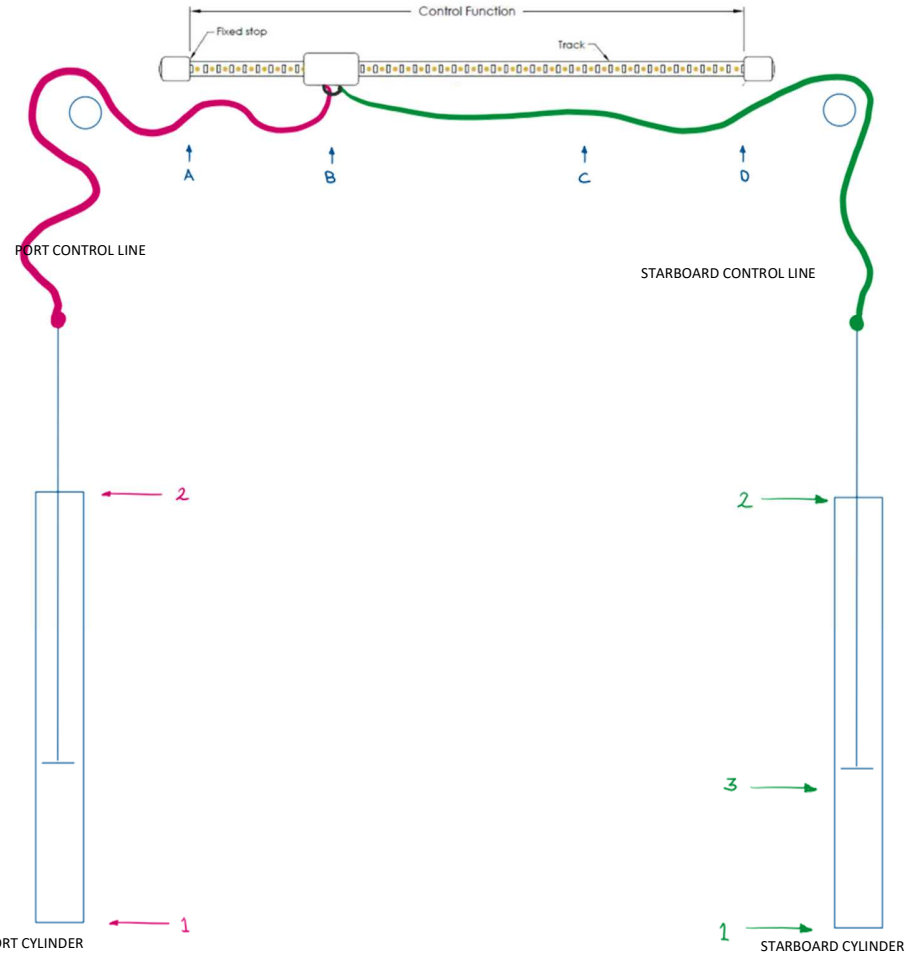

Figure 1

Consider 2 scenarios:

SCENARIO A: The cylinders are long enough such that they can exert a force on the car across the whole range of motion of the track (provided **external forces** are in putting tension into the rope). That is to say:

- With tension in the port control line (**external forces** driving the car towards position D) and the starboard cylinder free to move, the car can reach position (A) without the port cylinder piston reaching the end of its bore at (1), and can reach position (D) without the cylinder bottoming out at (2).
- With tension in the starboard control line (**external forces** driving the car towards position A) and the port cylinder free to move, the car can reach position (D) without the port cylinder piston reaching the end of its bore at (1), and can reach position (A) without the cylinder bottoming out at (2).

SCENARIO B: The cylinders are shorter than the length of the track such that they cannot exert a force on the car across the whole range of motion of the track. That is to say:

- With tension in the port control line (**external forces** driving the car towards position D) and the starboard cylinder free to move, the car can only reach position (B) before the port cylinder piston reaches the end of its bore at (1), but can reach position (D) without the cylinder bottoming out at (2).
- With tension in the starboard control line (**external forces** driving the car towards position A) and the port cylinder free to move, the car can only reach position (C) before the starboard cylinder piston reaches the end of its bore at (1), but can reach position (A) without the cylinder bottoming out at (2).

Questions:

1. In scenario A:

   External forces are driving the car towards position (D). The port cylinder is fully eased to allow the car to reach the stop at (D). With the car in this position, the starboard cylinder is adjusted to a position (3) near the middle of its travel, corresponding to a car position in the middle of the track (C), away from the track's end stops.

   The direction of the **external forces** then switches such that the car is being driven towards (A). The port control line immediately becomes slack and the starboard control line becomes taut when the car reaches position (C). The starboard cylinder is then eased, allowing the car to rest against its stop at (A).

   a. Does the movement of this control system constitute "indexed control"?
   b. Does this control system comply with **the AC75 Class Rule**?

2. In scenario B:

   External forces are driving the car towards position (D). The port cylinder is fully eased to allow the car to reach the stop at (D). With the car in this position, the starboard cylinder is adjusted to a position (1) at the end of its stroke, corresponding to a car position (C), away from the track's end stops.

   The direction of the external forces then switches such that the car is being driven towards (A). The port control line immediately becomes slack and the starboard control line becomes taut when the car reaches position (C). The starboard cylinder is then eased, allowing the car to rest against its stop at (A).

   a. Does the movement of this control system constitute "indexed control"?
   b. Does this control system comply with **the AC75 Class Rule**?

Interpretation:

In scenario A there is no combination of stops and locks that provide greater control of a **control function** or an indexed control or position control. Therefore, scenario A is rule compliant.

In contrast to the scenario described in Interpretation 016, in scenario B above, there is the possibility of achieving greater control or indexed control of a **control function** (the traveller).

For example this occurs in scenario B when sailing on port (or starboard) tack with the port (or starboard) cylinder fully eased and the car adjusted to position D (or A), and then performing a tack or a jibe with the possibility to achieve a pre-setting (other than the track dead end) for sailing on starboard (or port) tack with the starboard (or port) cylinder fully retracted and traveller car in position C (or B).

Thus, in scenario B, there are a combination of stops and locks (4; positions A, B, C and D) which are arranged to provide a greater control in one **control function** (the traveller), which infringes the last paragraph of rule 21.3. This creates a combination of stops and locks which doesn't appear in Interpretation 017.

Answers:

1. a.: No.

   b.: Yes.

2. a.: Yes.

   b.: No.

END.