AC75 Interpretation 016

of

AC75 Class Rule Version 1.2 issued 10th December 2018

Rule References:

12.9 Apart from permitted movement of **foils**, **foil arm drums** and **control surfaces**, parts of the **yacht** shall only move or be moved:

(a) to control movement of a **control surface**;
(b) in preparation of controlling a **control surface** (e.g. setting a **headsail** car prior to hoisting; turning an unloaded winch to check it is connected to a drive train; charging an accumulator);
(c) to organise rigging or deck gear after controlling a **control surface** (e.g. stowing sheets; stowing a winch handle; zipping closed a sail cover);
(d) within the **FCS**;
(e) to open or close access panels (which must not be into the **hull**);
(f) as part of a drainage flap permitted by Rule 11.17;
(g) as part of a simple mechanical wind indicator that has no purpose other than indicating the apparent wind direction;

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;
(g) within electrical systems (e.g. a cooling fan, a bilge pump or a wind wand); or
(h) for safety reasons.

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 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

(d) 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:

Consider the following **control system** (Figure 1):

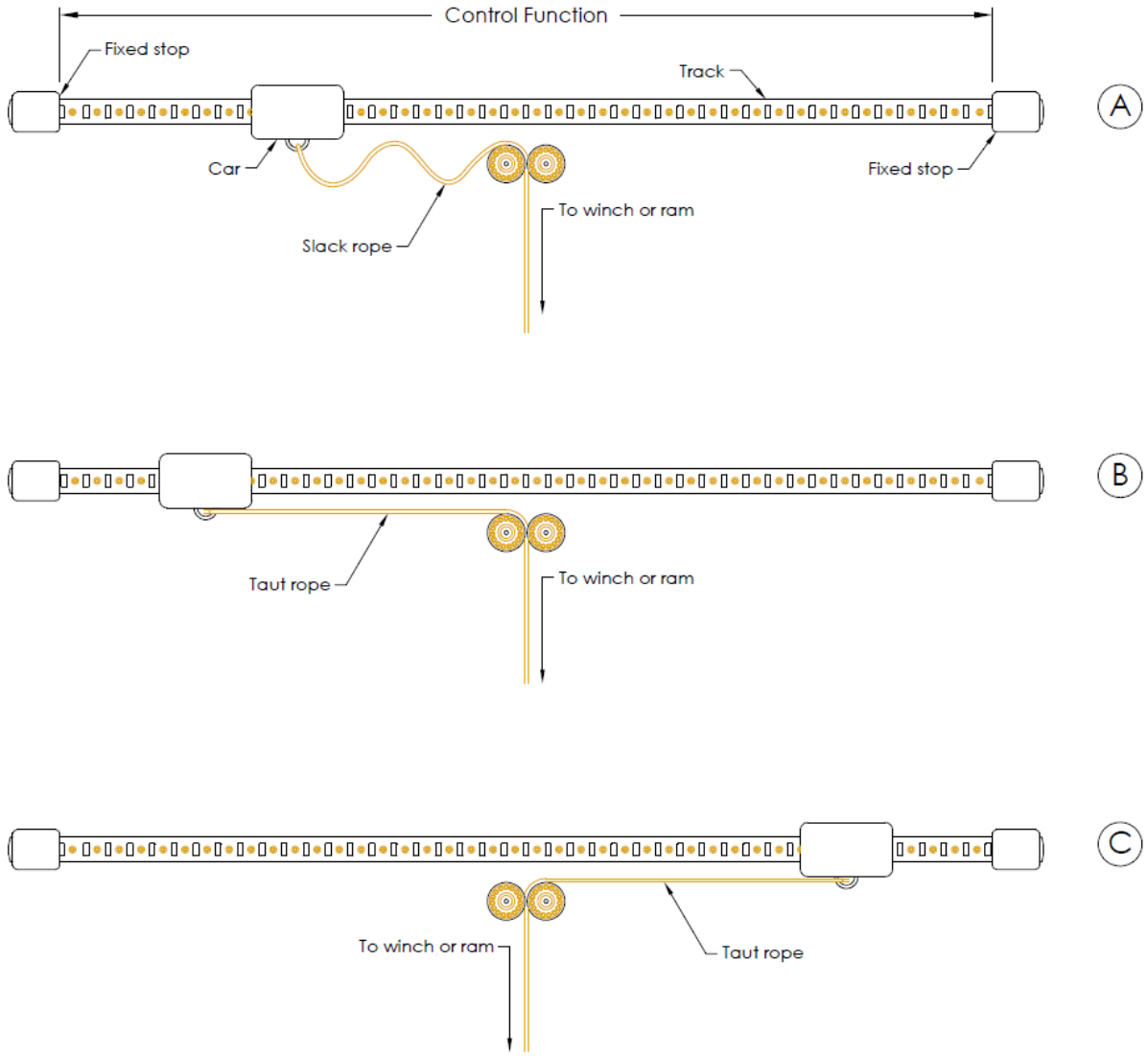

Figure 1 shows a **control system** in various configurations. A rope is connected to a car that can move on a track, where the position of the car maps directly to a **control function** of a **control surface**. The extension of the rope is adjusted by a winch or hydraulic cylinder. A typical example of such a system is a **mainsail** traveller.

Figure 1A shows the **control system** in a configuration where the rope is slack. The car is free to move depending on the load of the **control function**.

Figure 1B shows the **control system** in a configuration where the rope is taut. The car has moved to this position as the **control function** takes up load in a direction to the left of the page.

Figure 1C shows the **control system** in a configuration where the rope is taut. The car has moved to this position as the **control function** takes up load in a direction to the right of the page.

Questions:

1. If the **control function** becomes loaded and moves the car from the position described in Figure 1A to the position described in Figure 1B, is the **control system** using feedback from the **yacht state** in arresting the motion of the car as the rope becomes taut?

2. Does the **control system** comply with Rule 21.3?

3. Would the **control system** described infringe either or both of Rules 21.2 or 21.3 if the extension of the rope was set using feedback of the **yacht state** but only when the rope carries no load and the **control system** is not being used to control a **control surface**?

Interpretation:

Not applicable.

Answers:

1. No, the **control system** is not using feedback from the yacht state.
2. The **control system** described complies with Rule 21.3 providing that the ram or other device controlling the length of the rope does not provide greater control of the rope length than that permitted by Rule 21.3, whether or not the rope is loaded when the **control function** is adjusted.
3. It would infringe Rule 21.2, since feedback and position control are being used to control a **control surface**, whether or not that position control is happening at the instant the **control function** is linked to the **control system**.

END