

**E25**  
(June  
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# Failure detection and response of all types of steering control systems

## 1. Failure detection

1.1 The most probable failures that may cause reduced or erroneous system performance shall be automatically detected and at least the following failure scenarios shall be considered:

- (a) Power supply failure
- (b) Earth fault on AC and DC circuits
- (c) Loop failures in closed loop systems, both command and feedback loops (normally short circuit, broken connections and earth faults)
- (d) Data communication errors
- (e) Programmable system failures (Hardware and software failures)
- (f) Hydraulic locking
- (g) Deviation between rudder order and feedback\*

\* Deviation alarm shall be initiated if the rudder's actual position does not reach the set point within acceptable time limits for the closed loop control systems (e.g. follow-up control and autopilot). Deviation alarm may be caused by mechanical, hydraulic or electrical failures.

1.2 All failures detected shall initiate audible and individual visual alarm on the navigation bridge.

## 2. System response upon failure

2.1 The failures (as defined but not limited to those in 1.1) likely to cause uncontrolled movements of rudder are to be clearly identified. In the event of detection of such failure, the rudder should stop in the current position. Alternatively the rudder can be set to return to the midship/neutral position in the event of a failure. This is subject to the discretion of each Classification Society.

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Note:

- 1. This UR is to be uniformly implemented by IACS Societies on ships contracted for construction (as defined in IACS PR29) on or after 1 July 2017.
- 2. The "contracted for construction" date means the date on which the contract to build the vessel is signed between the prospective owner and the shipbuilder. For further details regarding the date of "contract for construction", refer to IACS Procedural Requirement (PR) No. 29.

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