

LP 05/2026 Weighing Anchor in Heavy Weather

The Association's hull claims data shows that winter and rough sea seasons are peak periods for anchor damage or loss, including cases where anchor retrieval in severe conditions damages chains, windlasses, or anchors. Such incidents cause not only property loss but may also lead to seaworthiness defects, mandatory anchor salvage orders from authorities, and significant disruption to ship operations.

I. Case Study: Anchor Loss in Open Anchorage

An entered vessel anchored in the open anchorage in Rotterdam awaiting berth. When instructed to weigh anchor and enter port, winds suddenly increased to Beaufort 8-9 with corresponding swell. When the chief officer tried to lift the anchor, excessive waves and swell overloaded the windlass, preventing anchor hoisting. Worse, as the bow pitched in the swell, the anchor chain was pulled out, damaging the gypsy drum and gears of the windlass. Ultimately, the vessel had to release the bitter end connection and all 11 shackles of chain were paid out. This accident exposed an improper assessment by captain and crew, forcing anchor retrieval despite conditions.

II. Anchor Loss Cause Analysis

Causes of anchor loss or damage typically fall into three categories:

1. Excessive stress during anchoring operations
2. Failure of anchor-connected components (swivels, shackles, chains)
3. Electrical or brake failures of windlass

When moored in anchorage or during normal anchoring in port, anchor loss typically happens:

- when dropping anchor in too deep water;
- when vessel has too high speed during anchoring;
- when dropped without controlling by brake;
- when dragging (it may also cause damages to underwater cables and pipelines and cause collisions);

- when clutch disengages accidentally during anchoring operations;
- when anchor is stuck or fouled;
- when shackles, swivels, or chains connecting the anchor break;
- when lifting the anchor in rough weather with significant swell with excessive vertical stress;
- when hydraulic motor is engaged and chain is pulled out by the vessel's movements;
- breakdown of windlass motor and the anchor and chain needs to be cut.

III. Anchor Equipment Design Parameters

As per IACS UR-A1 Rev8 regulations for anchoring equipment (as given in A1.2 and A1.3), the Equipment Number (EN) formulae are based on an assumed maximum current speed of 2.5 m/s, maximum wind speed of 25 m/s and a minimum scope of chain cable of 6, the scope being the ratio between length of chain paid out and water depth. For ships with an equipment length, alternatively the required anchoring equipment can be considered applicable to a maximum current speed of 1.54 m/s, a maximum wind speed of 11 m/s and waves with maximum significant height of 2 m.

Note: While seabed conditions can be looked up in charts, chain length is adjustable, and wind/current effect can be mitigated with engine/rudder, anchorage swell — critical during weighing anchor — remains uncontrollable. This requires sophisticated understanding of the risk: as chains become vertical before the anchor breaks free from the bottom, the swell would put excessive tension along the chain, causing reversal of the windlass and the chain paid out, and moreover equipment damage before any corrective action can be taken.

IV. Advice to Members

The IACS guidance pointed out in the beginning that “the anchoring equipment required is intended for temporary mooring of a ship within a harbour or sheltered area when the ship is awaiting berth, tide, etc. The equipment is, therefore, not designed to hold a ship off fully exposed coasts in rough weather or to stop a ship which is moving or drifting”. Exceeding design conditions risks chain breakage, windlass damage, or complete anchor loss, especially for large vessels.

Captains must recognize equipment limits set by classification rules based on vessel type/size and anchor coefficient. Overconfidence in the equipment and overlooking the surroundings (sudden gusts, reflected waves, shallow water effects) contribute

to many anchor dragging/loss incidents. With improved weather forecasting, captains should conduct thorough risk assessments using numerical forecasts, observations, and local knowledge, implementing proactive measures like engine preparation, anchor lifting, or drifting in open water as needed.

For anchor lifting operations in severe weather conditions:

- For normal anchoring in sheltered waters: wait until the swell subsides before lifting the anchor;
- For mandatory port instructions: immediately report swell conditions to owners/charterers and seek permission from the authorities for reasonable delays based on objective conditions;

For emergency conditions in heavy swell: allow operational margin and have the crew standing by at the anchor station. Engage the main engine at slow ahead and slowly retrieve 1-2 shackles, then apply windlass brake/chain stopper to pause briefly and monitor tension variations and repeat the steps until the anchor weighs smoothly from the seabed, minimizing overloading and damage risks.

For more information, please contact Managers of the Association.