

**RULES
FOR THE CLASSIFICATION OF
SHIPS**

*Part 9 – MACHINES
January 2020*

*Amendments No. 3
July 2021*

CROATIAN REGISTER OF SHIPPING

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By the decision of the General Committee of Croatian Register of Shipping,

Amendments No. 3 to the
RULES FOR THE CLASSIFICATION OF SHIPS
Part 9 – MACHINES

have been adopted on 28th June 2021 and shall enter into force on 1st July 2021

INTRODUCTORY NOTES

These amendments shall be read together with the requirements in the Rules for the Classification of Ships, Part 9 – Machines, edition January 2020, as last amended by Amendments No. 2, edition January 2021.

Table 1 contains review of amendments, where items changed or added in relating to previous edition are given, with short description of each modification or addition. All major changes throughout the text are shaded.

This Part of the Rules includes the requirements of the following international Organisations:

International Maritime Organization (IMO)

Conventions: International Convention for the Safety of Life at Sea 1974 (SOLAS 1974) and all subsequent amendments up to and including the 2014 amendments (MSC.365/93).
Protocol of 1988 relating to the International Convention for the Safety of Life at Sea 1974, as amended (SOLAS PROT 1988).

Circulars: MSC.1/Circ.1425

International Association of Classification Societies (IACS)

Unified Requirements (UR):

A3 (Rev.1 2019), F29 (Rev. 6, 2005), M2 (1971), M3 (Rev. 6, 2018), M9 (Corr. 2, 2007), M10 (Rev. 4, 2013), M11 (1972), M12 (1972), M16 (Rev. 1, 2005), M26 (Corr. 1, 2005), M28 (1978), M42 (Rev. 4, 2011), M44 (Corr.2, Nov 2016), M51 (Corr. 1, Oct 2018), M53 (Rev. 4, Aug 2019), M56 (Rev. 3, 2015), M60 (1997), M61 (2003), M63 (2005), M66 (Rev. 3, 2008), M67 (Rev. 2, 2015), M71 (Corr.1, 2016), M72 (Rev.2, 2019), M73 (Corr.1, 2016), Z26 (2015), M77 (Rev.1 Aug 2019), **M79 (rev. 1, Feb 2020)**, M80 (2019)

Unified Interpretations:

SC76 (1985), SC94 (Rev. 2, 2016), SC133 (1998), SC189 (2004), SC228 (2008), SC242 (Rev.2, 2020), SC246 (Rev.1, 2015)

International Organisation for Standardisation:

ISO 1122-1:1998 Corr. 1:1999 Corr. 2:2009, ISO 6336-1:2006 Corr. 2008, ISO 6336-2:2006 Corr. 2008, ISO 6336-3:2006 Corr. 2008, ISO 6336-5:2003, ISO 19019:2005

TABLE 1 – REVIEW OF AMENDMENTS

This review comprises amendments in relation to the Rules for the Classification of Ships, Part 9 – Machines, edition January 2020, as last amended as amended by Amendments No. 2, edition January 2021.

<i>ITEM</i>	<i>DESCRIPTION OF THE AMENDMENTS</i>
SECTION 6 – DECK MACHINERY	
Paragraph 6.5.8	Update due to inclusion of UR M79, Rev. 1

6 DECK MACHINERY

■ **Head 6.5 TOWING WINCHES**, paragraph 6.5.8 has been amended and should be read as follows:

6.5.8.1 This requirements defines minimum safety standards for winch emergency release systems provided on towing winches that are used on towing ships within close quarters, ports or terminals, including those ships normally not intended for towing operation in transverse direction. This requirements is not intended to cover towing winches on board ships used solely for long distance ocean towage, anchor handling or similar offshore activities.

The purpose of this requirement is to provide requirements to prevent the capsizing of a tug when in the act of towage as a result of the towline force acting transversely to the tug (in beam direction) as a consequence of an unexpected event (could be loss of propulsion/steering or otherwise), whereby the resulting couple generated by offset and opposing transverse forces (towline force is opposed by thrust or hull resistance force) causes the tug to heel and, ultimately, to capsize. This capsizing may be referred to as "girting", "girthing", "girding" or "tripping". See Figure 6.5.8.1a which shows the forces acting during towage operations.

'Emergency release system' refers to the mechanism and associated control arrangements that are used to release the load on the towline in a controlled manner under both normal and black out conditions.

'Maximum design load' is the maximum load that can be held by the winch as defined by the manufacturer (the manufacturer's rating).

'Fleet angle' is the angle between the applied load (towline force) and the towline as it is wound onto the winch drum, see Figure 6.5.8.1b.

6.5.8.2 General requirements

The in-board end of the towline is to be attached to the winch drum with a weak link or similar arrangement that is designed to release the towline at low load.

All towing winches are to be fitted with an emergency release system.

6.5.8.3 Emergency release system performance requirements

The emergency release system is to operate across the full range of towline load, fleet angle and ship heel angle under all normal and reasonably foreseeable abnormal conditions (these may include, but are not limited to, the following: vessel electrical failure, variable towline load (for example due to heavy weather), etc.).

The emergency release system shall be capable of operating with towline loads up to at least 100 per cent of the maximum design load.

The emergency release system is to function as quickly as is reasonably practicable and within a maximum of three seconds after activation.

The emergency release system is to allow the winch drum to rotate and the towline to pay out in a controlled manner such that, when the emergency release system is activated, there is sufficient resistance to rotation to avoid uncontrolled unwinding of the towline from the drum. Spinning (free, uncontrolled rotation) of the winch drum is to be avoided, as this could cause the towline to get stuck and disable the release function of the winch.

Once the emergency release is activated, the towline load required to rotate the winch drum is to be no greater than:

- the lesser of five tonnes or five per cent of the maximum design load when two layers of towline are on the drum, or
- 15 per cent of the maximum design load where it is demonstrated that this resistance to rotation does not exceed 25 per cent of the force that will result in listing sufficient for the immersion of the lowest unprotected opening.

Emergency release of the towline is to be possible in the event of a blackout. For this purpose, where additional sources of energy are required, such sources are to be sufficient to achieve the most onerous of the following conditions (as applicable):

- sufficient for at least three attempts to release the towline (i.e. three activations of the emergency release system). Where the system provides energy for more than one winch it is to be sufficient for three activations of the most demanding winch connected to it.
- Where the winch design is such that the drum release mechanism requires continuous application of power (e.g. where the brake is applied by spring tension and released using hydraulic or pneumatic power), sufficient power is to be provided to operate the emergency release system (e.g. hold the brake open and allow release of the towline) in the event of a blackout for a minimum of five minutes. This may be reduced to the time required for the full length of the towline to feed off the winch drum at the load specified above if this is less than five minutes.

6.5.8.4 Emergency release system operational requirements

Emergency release operation must be possible from the bridge and from the winch control station on deck. The winch control station on deck is to be in a safe location. A position in close proximity to the winch is not regarded as "safe location", unless it is documented that the position is at least protected against towline break or winch failure.

The emergency release control is to be located close to an emergency stop button for winch operation, if provided, and shall be clearly identifiable, clearly visible, easily accessible and positioned to allow safe operability.

The emergency release function is to take priority over any emergency stop function. Activation of the winch emergency stop from any location is not to inhibit operation of the emergency release system from any location.

Emergency release system control buttons are to require positive action to cancel, the positive action may be made at a different control position from the one where the emergency release was activated. It must always be possible to cancel the emergency release from the bridge regardless of the activation location and without manual intervention on the working deck.

Controls for emergency use are to be protected against accidental use.

Indications are to be provided on the bridge for all power supply and/or pressure levels related to the normal operation of the emergency release system. Alarms are to activate automatically if any level falls outside of the limits within which the emergency release system is fully operational.

Wherever practicable, control of the emergency release system is to be provided by a hard-wired system, fully independent of programmable electronic systems.

Computer based systems that operate or may affect the control of emergency release systems are to meet the requirements for Category III systems of IACS UR E22.

Components critical for the safe operation of the emergency release system are to be identified by the manufacturer.

6.5.8.4 Emergency release system test requirements

All testing defined within item 6.5.8.4 is to be witnessed by the Surveyor of the Register.

For each emergency release system or type thereof, the performance requirements of 6.5.8.3 are to be verified either at the manufacturer's works or as part of the commissioning of the towing winch when it is installed on board. Where verification solely through testing is impracticable (e.g. due to health and safety), testing may be combined with inspection, analysis or demonstration in agreement with the Register.

The performance capabilities, as well as instructions for operation, of the emergency release system are to be documented by the manufacturer and made available on board the ship on which the winch has been installed.

Instructions for surveys of the emergency release system are to be documented by the manufacturer, agreed by the Society and made available on board the ship on which the winch has been installed.

Where necessary for conducting the annual and special surveys of the winch, adequately sized strong points are to be provided on deck.

6.5.8.5 Installation trials

The full functionality of the emergency release system is to be tested as part of the shipboard commissioning trials to the satisfaction of the surveyor. Testing may be conducted either during a bollard pull test or by applying the towline load against a strong point on the deck of the tug that is certified to the appropriate load.

Where the performance of the winch in accordance with 6.5.8.3 has previously been verified, the load applied for the installation trials is to be at least the lesser of 30% of the maximum design load or 80% of vessel bollard pull.

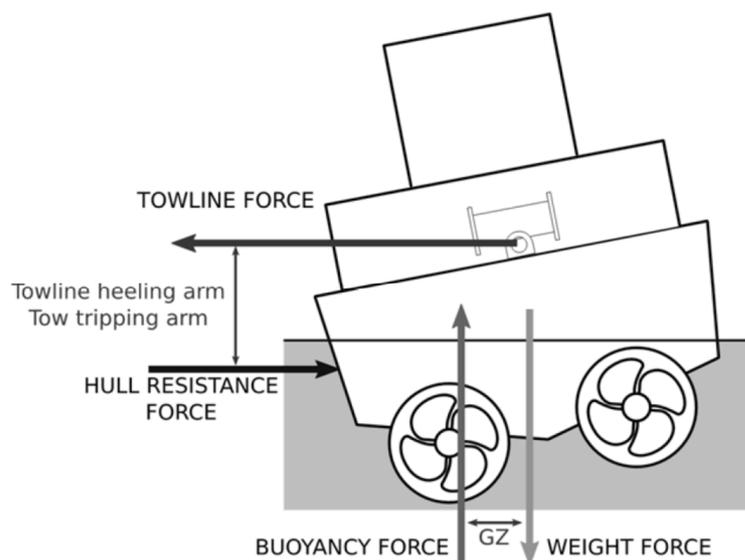


Fig. 6.5.8.1a
Forces during towing

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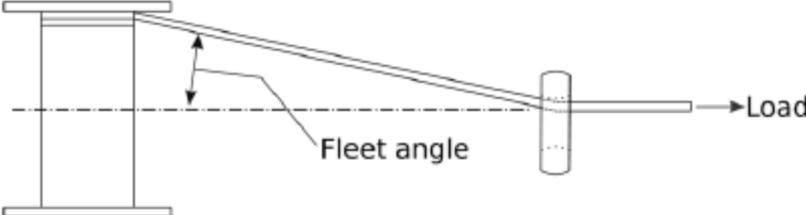


Fig. 6.5.8.1b
Towline "fleet angle"