



Purpose:

The e-learning module is designed for theoretical training of ratings as able seafarer deck in accordance with Chapter II of the STCW Convention in the part concerning of towing operations.

The ELM is included in the "*Able seaman*" library.

What is an e-learning module?

E-learning module is the electronic textbook on one or more sections. Theoretical materials can be accompanied by drawings, diagrams, photos, animations and videos. There is a test for assessment of knowledge gained at the end of each section.

Contents:

- Towing arrangement composition

Target groups

Deck - Support

Ship types

Generic



Regulations

Table A-II/5 STCW Code

Competence:

Contribute to berthing, anchoring and other mooring operations

Knowledge, understanding
and proficiency:

Working knowledge of the mooring system and related procedures...




TOWING EQUIPMENT
Version: 01/2023

Section 1. Towing arrangement composition

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Foreword

Towing of ships at sea is a special case of maritime practice. As a rule, towing is performed by transport vessels or powerful tug ships. To carry out maintenance of the towed object, especially a large-tonnage vessel, when maneuvering in ports and narrows, one or two secondary tugboats are assigned to help the towing ship. The towing operation provides for: preliminary study of the upcoming passage plan, preliminary calculations for towing, recommendations to the masters.



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Section 1. Towing arrangement composition

The hook is fixed on the **towing rail** located in a horizontal plane. Parallel to the towing rail, a path is often installed, on which the hook that has a significant weight lies. The hook is fixed to the towing rail through spring shock absorbers.

The location of the towing rail has great influence on the seaworthiness of the tugboat. Usually it is installed approximately in the middle of the length of the ship at height of 1 - 1.5 m from the upper deck. This position of the rail provides good turning ability of the tugboat and convenient maintenance of the towing arrangement, but at lateral tension of the rope, it can cause a dangerous list of the ship. Therefore, during sea towing in order to avoid lateral jerks, the towing rope coming from the hook is passed through the stern towing chock. If it is not available, then the rope is fastened with braces or a chain stopper is applied to it.



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The towing rope is fixed to a special hook. Tow hook is a device used by tugs to which the end of towing hawser is made fast. It is usually fitted with a compressive spring to absorb the shocks on the hawser.

Towing hooks can be:

Nonhinged open tow hook

Semi-automatic and automatic

A nonhinged open tow hook is inconvenient because the towline can only be let go if there is slack. But often it is necessary to let go the towing rope under tension at the moment of jerk, when it is directed at an angle to the center line and causes a large list of the tugboat, which can lead to the overturning of the latter.



Towing hooks:
a) - nonhinged open tow hook;
b) - semi-automatic hook;
c) - automatic hook.


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Many sea tugs have an automatic towing winch. In this case, the towing rope is fixed not on the hook, but on the winch drum. The winch has a special device that automatically adjusts the rope tension. In case of increase in tractive force, as well as during various jerks, the winch loosens the rope a little, thereby softening the jerks. When the traction force decreases, the rope is automatically picked up.



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The simplest and at the same time the most common way of towing is **hook towing**. In this case, the vessels are connected by a long flexible cable, which is given from the stern of the towing ship to the bow of the towed one.

Port towing is often carried out **alongside**, when the tugboat is fixed to the side with several mooring lines. This method of towing provides for good controllability, which is very important in the conditions of a limited port water area. Incidental salvage towing operations are performed by transport vessels or salvage tugs.

In this case, the Master of the towing vessel decides on the spot all issues of organizing and conducting towing, as well as making the necessary calculations. The requirements for towing arrangements of ships are specified in the Rules for the Classification and Construction of Sea-Going Ships. The main parts of the towing arrangement of special tugboats are shown in the figure on the right.



Towing arrangement of the towing ship:
1 - towline; 2 - rope fender;
3 - towing chock; 4 - towing arch;
5 - bit; 6 - towing winch;
7 - tow hook; 8 - path;
9 - towing rail.

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Test tasks

Test of question

Which document contains all the requirements for the ship's towing arrangement?

Choose the correct answer:

MARPOL.
 Rules for the Classification and Construction of Sea-Going Ships.
 STCW.
 SOLAS.

Attempts: 1

COMMENT

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