



### 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 nautical tools and devices.

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:

- Magnetic compass
- Sextant
- Bearing Circle Sight
- Sounding lead
- Navigation Tools
- Gyrocompass. Repeater
- Course recorder
- Autopilot
- Log and echo sounder
- Time, time measuring instruments

### Target groups

Deck - Support

### Ship types

Generic



## Regulations

### Table A-II/5 STCW Code

Competence:

Steer the ship and comply with helm orders in the English language



Section 1: Magnetic compass

The ship's magnetic compass is a compass with a floating card.

Typically, a ship's magnetic compass is a fluid-filled 'bowl' in which an aluminum card is fixed on a vertical axis. On opposite sides of the axis, a pair or two pairs of magnets are attached to the bottom of the card. In the center of the card there is a hollow hemispherical protrusion – a float that weakens the pressure on the axis support (when the bowl is filled with compass fluid). The axis of the card, passed through the center of the float, rests on a stone thrust bearing, usually made of synthetic sapphire. The thrust bearing is fixed on the fixed disk with a 'heading line'. There are two holes at the bottom of the bowl through which fluid can overflow into the expansion chamber, compensating for changes in pressure and temperature.

The card floats on the surface of the compass fluid. The fluid, moreover, dampens the oscillations of the card caused by rolling. Water is not suitable for the ship's compass, as it

FLUID (SHIPS) COMPASS

1 – holes for overflow of the compass fluid when it expands;  
2 – filling plug; 3 – stone thrust bearing;  
4 – inner ring of the multipurpose hinge; 5 – card; 6 – glass cap;  
7 – heading marker; 8 – card axis; 9 – float; 10 – heading line disk;  
11 – magnet; 12 – bowl; 13 – expansion chamber.

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Section 13: Time measuring instruments

A chronometer is the most accurate instrument for keeping accurate time on board. According to it, the moments of Greenwich Mean Time are determined with sufficient accuracy.

The chronometer is a spring clock, very carefully made and equipped with a special device that ensures the constancy of its operation.

The chronometer consists of the following main units: motor, driving clock and counter (dial).

The constancy of the chronometer is provided mainly by the design features of the first two units.

The large dial of the chronometer is divided into twelve hour divisions, and therefore each division has two values, for example, 315 h, 618 h, etc. The large dial has hour and minute hands, and two small dials are equipped, one with the second hand and the other, with the hand, showing how long the chronometer runs after full winding.

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Section 4: Sounding lead

The sounding lead can be used to measure the depth of the sea, detect the drift of an anchored vessel, control the anchoring of a vessel, and for heaving anchor at night.

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Section 8: Autopilot

Autopilot is an electric navigation instrument for automatic keeping the vessel on a given course, as well as for changing the course.

The action of the autopilot is based on the automatic activation of the steering gear when the ship deviates from the given course.

The autopilot operates from the gyrocompass or other direction indicator.

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Section 9: Log and echo sounder

The principle of operation of the echo sounder is based on measuring the time of passage of an ultrasonic pulse from the vibrator-emitter to the seabed and back to the vibrator-receiver.

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Test: tasks

Question text:

What instruments are used to determine and accurately measure time on ships?

Выберите все правильные варианты

- Chronometer.
- Deck watch.
- Ship's clock.
- Stop-watches.
- Engine clock.
- Hand watch.

Attempt: 1

COMMENT

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