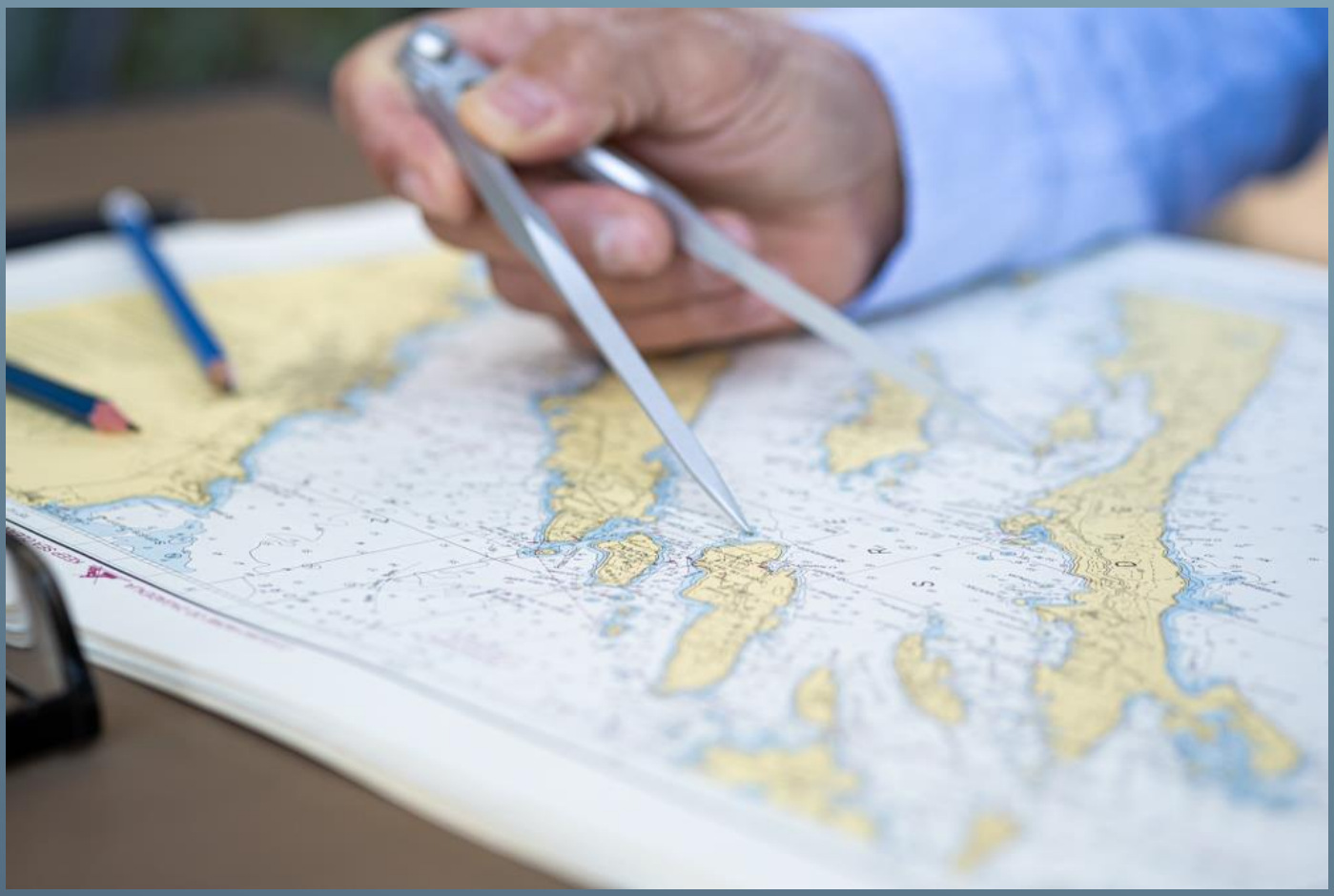
SEA MASTER
C L A S S



E-MANUAL
BOAT SKIPPER CATEGORY B

Selected content from the E-Manual Boat Skipper Category B

SEA MASTER CLASS

Inside this preview

Selected content from the English Boat Skipper Category B E-Manual

What you can evaluate

01 **Marine Navigation —** Charts, navigation concepts and visual explanations.

02 **Marine Engines —** Propulsion systems and core engine operating principles.

03 **Seamanship —** Practical ropework and illustrated knot examples.

04 **COLREGs —** Collision situations, navigation lights and exam-relevant visuals.

05 **Marine VHF —** Radio equipment, communication systems and procedures.

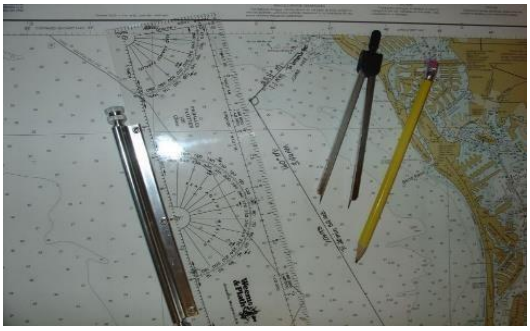
ABOUT THIS PREVIEW

This preview demonstrates the E-Manual's content, teaching style and visual presentation. It is an independent educational resource and not an official publication of Croatian authorities. Exam arrangements and current requirements should be confirmed with the competent authority.

1. MARINE NAVIGATION

Navigation is the skill of guiding a vessel from one place to another in the most convenient way.

A navigator constantly evaluates the vessel's position, anticipates dangerous situations well before they arise, and always keeps "ahead of the vessel." To be able to do this, navigator must be able to determine the position, the course - direction needs to sail and the distance between the starting and arriving position and the required time of sailing.



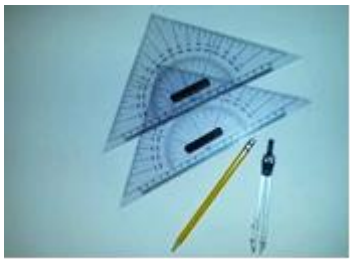
For guiding navigation, it is necessary to know how to use a **nautical chart**, a **compass** and to be familiar with the navigational situation of the area considering navigational or meteorological circumstances.

To successfully solve navigation tasks, the vessel must be equipped with the following aids:

- magnetic compass

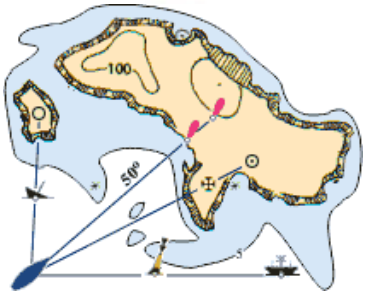
- appropriate nautical chart/s

- appropriate navigation accessories (navigation protractor triangles, dividers, pencil)



- clock

If the vessel does not have the GMDSS communication equipment - VHF radiotelephony station, it needs to be equipped with a VHF radio station, radio receiver or telephone for monitoring meteorological forecasts.



Marine navigation is divided into:

- **coastal or terrestrial navigation:** determining the position by observing natural and man-made objects on coastland or islands

- **celestial navigation:** determining the position by  observing celestial objects

- **electronic navigation:** determining the position by using electronic navigation aids (electronic charts, radar, GNSS (GPS), depth log (echo sounder), speed log, etc.

1.1. Nautical charts and plans - types, scales, chart content

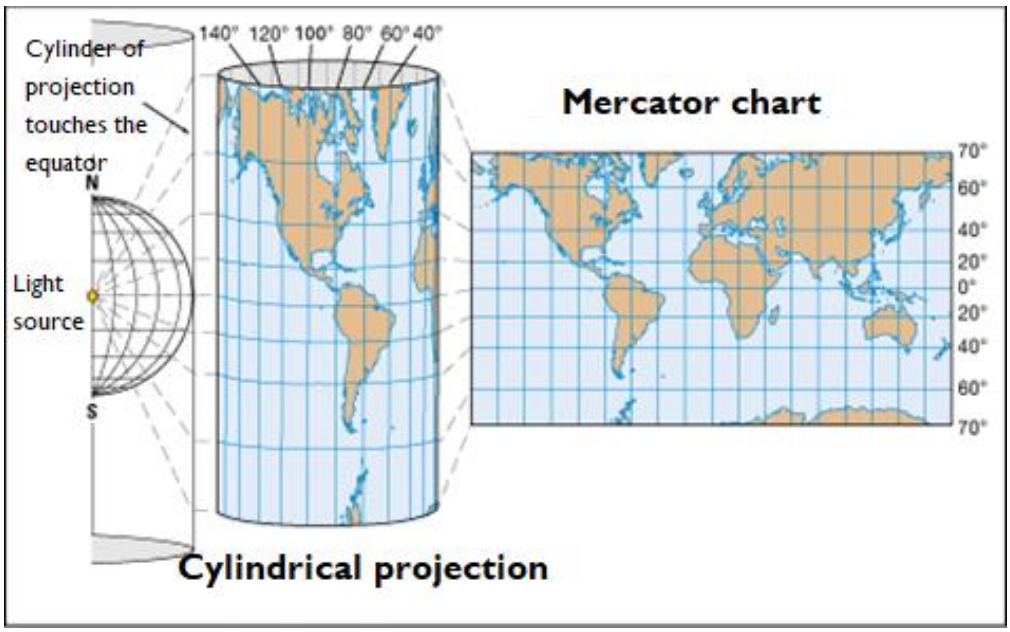
Nautical charts are the most important aid in navigation, and they represent a geographical image of an area reduced at a certain **scale**.

Regardless of the method of mapping - the projection of part of the Earth's surface onto a plane, each nautical chart has certain deviations from the actual state in the area it shows.

Mariners most frequently use a **Mercator projection**, classified as a **cylindrical projection.**

The **Mercator projection - chart** is obtained by projecting all points of the Earth's surface on a cylinder wall touching the Earth's ellipsoid at the equator, with lines starting from the centre of the Earth and then rolling on the plane.

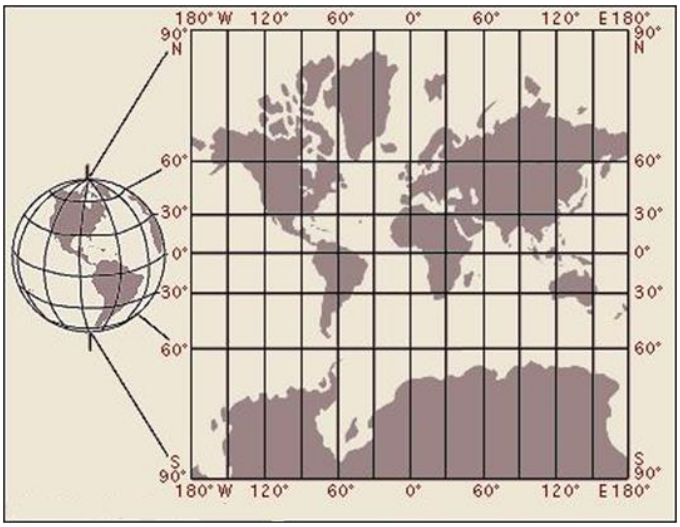
Thus, the **cylindrical projections** are those, in which the geographical **parallels** are presented as straight horizontal lines that move further and further apart from equator toward the poles and **meridians** are straight vertical lines, distantly proportional to their longitudes from the prime (zero) meridian (figures below).

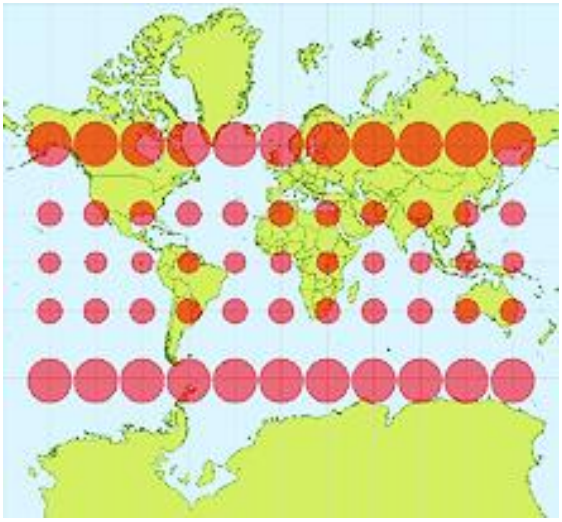


The basic characteristics of the Mercator chart are:

1. **the equator and the parallels are parallel horizontal lines diverging from equator and from each other toward the poles,**
2. **the meridians are parallel to each other and evenly spaced (perpendicular to the parallels),**
3. **the angles with respect to the N (North) direction of the meridians are faithfully represented (so-called conformal chart); courses and azimuths (angles) are straight lines,**
4. **distances can be measured accurately enough on the latitude scale and in the altitude (latitude) of the vessel's position.**

On the Mercator chart (cylindrical projection), deviations from the actual shapes of the surfaces on the Earth are evident on the parts of the chart at latitudes greater than 60° N and S.





1.1.1. Types of nautical charts

According to the size of the area displayed, nautical charts are divided into:

- **General (overview) charts**: they show larger areas of coasts, seas, or oceans; typically, in a scale of **1:1.000.000 to 1:2.000.000**;
- **Course charts**: they show the areas of individual seas and contain all important navigational data, but are used only in navigation in open seas; typically, in a scale of **1:200.000 to 1:300.000**;
- **Coastal charts**: a detailed representation of smaller areas of seas and coast and in addition to plans, they are most used on boats; typically, in a scale of **1:50.000 to 1:100.000**;
- **Plans**: they show the smallest details of an area, for example anchorages, ports, canals, areas dangerous for navigation, etc.; typically, in a scale of **1:5.000 to 1:15.000**.

In coastal navigation onboard small vessels are usually used **Coastal charts and Plans**.

1.1.2. Symbols and abbreviations used on charts – reading of the charts

Each coastal nautical chart shows a specific area of the sea and part of the land along that coastal area. It shows all the details, which may be accompanied by a key (description), numerical values or symbols.

The **title, scale**, **units of measurement in which the depths and heights are marked,** as well as other important data are written in one of the corners of the chart.

The **chart number (each chart is a part of the Chart Catalogue) and its dimensions (length and width in mm)** are stated in the bottom right corner.

Below the frame of the map, in the middle, the **name of the institution that issued the chart and the date of its issuance** are stated (Hydrographic institute of the Republic of Croatia, Split). In the bottom left corner are the **corrections** made since the date of issuance of the chart based on the *Notice to Mariners (NtM)*.

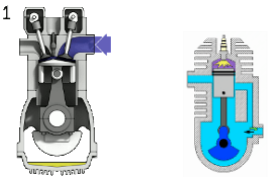
2. MARINE ENGINES AND SAFETY MEASURES

2.1. Mechanical propulsion devices - divisions

Mechanical propulsion devices used on smaller ships and boats are heat engines, namely internal combustion engines.

These are energy machines that convert the chemical energy of fuel into mechanical energy by using the combustion of a mixture of fuel and air in their working cylinder to perform mechanical work.

The basic division of internal combustion engines according to the number of operating cycles is:



- four-stroke (or four-cycle) engines,
- two-stroke (or two-cycle) engines.

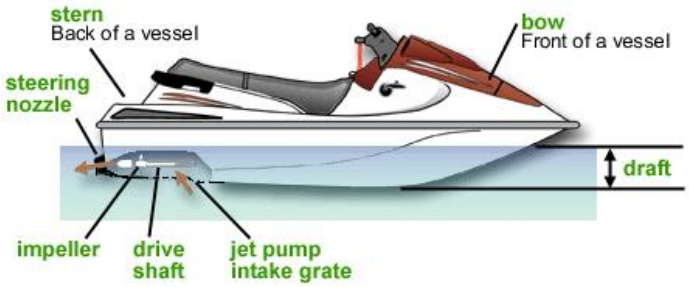
Depending on the type of fuel, they are divided into:

- diesel engines
- gasoline engines.

Depending on the method of installation on ships and boats, they are divided into:

- outboard engines,
- inboard engines,
- Z-engines.

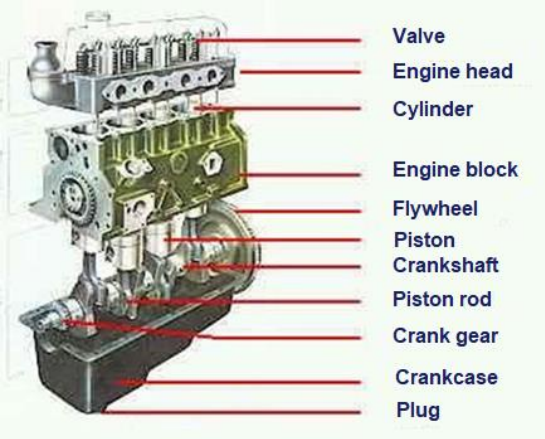
- jet engines



2.2. Basic concepts of operation, preparation for operation, starting and stopping

The main parts of internal combustion engines are divided into moving and stationary.

The main stationary parts of the engine are: housing (crankcase), block with cylinders (stems) and engine head.

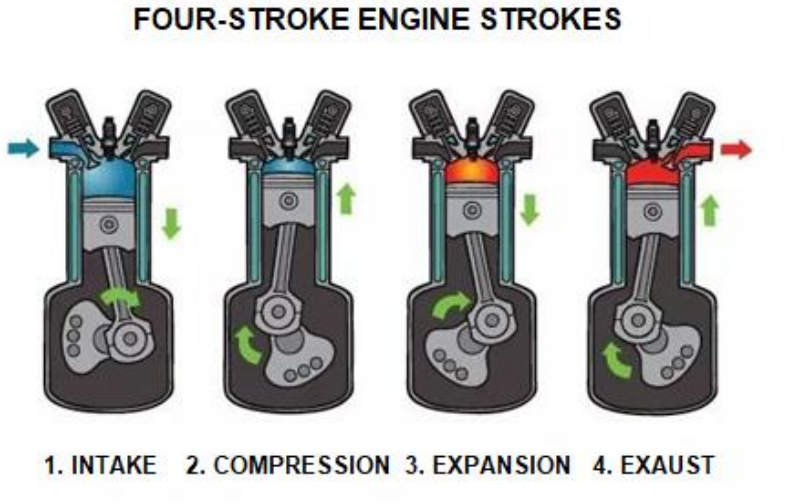


The main moving parts of the engine are:

piston with piston rod (which connects the piston to the crankshaft), crankshaft, gears, pulleys, speed reducer, clutch, oil and water pump, valve lifters and valves, power unit and electric starter.

Four-stroke engines perform the ignition process in two crankshaft revolutions:

1. **Stroke** (fuel and air **intake**): the piston is in the descending part of the first revolution and the intake valve is open.
2. **Stroke** (**compression**): the piston is in the ascending part of the first revolution; the intake and exhaust; valves are closed, and air compression is performed.
3. **Stroke** (**expansion**): after ignition, the piston is in the descending part of the second revolution; the intake and exhaust valves are still closed.
4. **Stroke** (**exhaust**): the piston is in the ascending part of the second revolution and the intake valve is open.



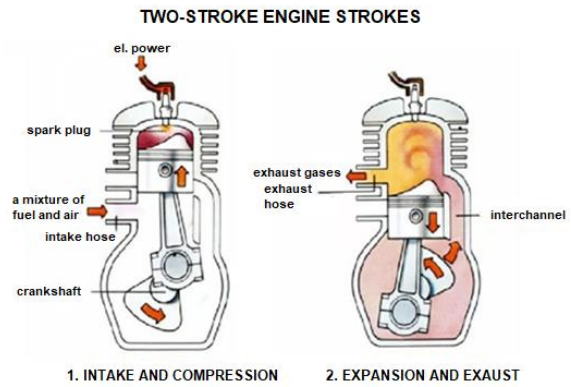
Two-stroke engines perform the ignition process in a single crankshaft revolution:

1. Stroke is **intake and compression (simultaneously)**,
2. Stroke is **expansion and exhaust (simultaneously)**.

Two-stroke engines have no valves. Instead, there are openings in the body of the cylinder which the piston closes and opens with its movement.

The openings are the ends of the intake duct, exhaust duct and intermediate duct.

The engine housing also participates in the operation of the two-stroke engine.



Diesel engines can be two-stroke or four-stroke. On boats, they are used as inboard (stable) four-stroke propulsion machines of different manufacturers and different powers (4 to 40 kW).

The fuel mixture of the diesel engine is formed in the cylinder by injecting fuel into the air, compressed by the engine piston, and **ignition occurs by autoignition of the mixture.**

Therefore, fuel is supplied to the cylinder only when a sufficient degree of compression and heating of the air has been achieved, and a much higher pressure than the pressure in the cylinder is required to inject fuel.

Gasoline or **Otto engines** are a type of internal combustion engines that can be two-stroke and four-stroke.

On boats they are most often used as outboard engines, less often as built-in (stable).

The fuel mixture of the gasoline engine is prepared outside the working cylinder and is ignited by an external ignition source at the end of the compression stroke. The working medium is a mixture of air and gasoline that is prepared in the carburettor and whose ignition is done through a spark plug that receives high voltage from a magnetic induction generator.

Electric spark plugs for gasoline engines are divided according to:

- calorific value
- thread shape (long and short)

Both diesel and Otto engines are used as for propulsion of boats and each of them has its advantages and disadvantages.

Diesel engines have a greater number of advantages due to their cost-effectiveness and a simpler technical design.

Preparation for operation, starting and stopping the engine

Preparation for operation – outboard engine

For outboard engines with a built-in tank, open the fuel supply, while for engines with a portable tank, connect the fuel supply pipe and use a hand pump built into the fuel pipe to pump the fuel until you feel resistance. It is necessary to enable the supply of air to the fuel tank (in the case of a portable tank, open the valve on the cap).

The air lever (choke) entering the engine must be closed, gearshift in neutral, and accelerator in half.

In case of manual starting, check that the engine is securely fastened.

When the outboard engine starts, open the choke, wait for the engine to warm up and check the cooling water flow.

Preparation for operation – inboard engine

The inboard diesel or gasoline engine is started by an electric battery-powered starter. The engine is started with the ignition key or by pressing the start button. Immediately after starting the engine, the electric starter automatically shuts off.

When starting inboard diesel engines manually, it is necessary to check that the clutch is in the neutral position, check the fuel supply, oil level and cooling system, set the accelerator to half power.

Insert the lever on the flywheel, open the decompression valve or valves on the cylinder head, start turning the lever on the flywheel, turn the flywheel lever strongly, return the decompression valve or valves to the starting position and start the engine, release the accelerator, check oil pressure and cooling water supply.

Stopping the engine

Gasoline engines are stopped by cutting off the power supply to the engine spark plug, and diesel engines are stopped by cutting off the fuel supply. This can be done by pressing the stop button, turning off the ignition key, closing the fuel supply lever, etc., depending on the engine manufacturer's instructions.

Both gasoline and diesel engines are stopped by gradually releasing the accelerator. If the engine is hot or has been running for a long time, it must be allowed to idle for a certain period before stopping at minimum accelerator power. This allows the engine to gradually cool.

If the engine shuts down suddenly, its temperature rises for some time immediately after that because the circulation of water or air that takes away heat stops, which can damage the engine.

3.2. Ropes and knots

Types of rope

- ropes made of natural materials: they are made of hemp, manila, sisal, coconut, and cotton; they are relatively elastic, and when wet they shorten and should be loosened; after use they should be washed in fresh water and air dried in the shade.
- ropes made of artificial (synthetic) materials made of: Nylon, Perlon, Dacron, polypropylene; they are strong and elastic, moisture does not harm them and does not affect their characteristics; compared to natural ropes they are twice as strong.
- metal ropes: steel, copper, aluminium, bronze; on boats they are used for heavy work.

Purpose of the ropes:

- for mooring a boat,
- for anchoring and towing,
- for handling boat equipment (sails, etc.).

Knots

A knot is the mutual connection of two ropes where the working end is the one, we work with, and the standing end of the rope is the one not used in making the knot.

Commonly used boating knots are reliable, hold well, and are easy to tie and untie.

1. **FIGURE EIGHT KNOT <= click the link**: it is tied at the end of the rope to prevent its passage through an opening, stopper, or pulley.

2. **SQUARE KNOT <= click the link**: it is used to connect two ropes of the same thickness.

3. **SHEET BEND <= click the link**: it is used to connect two ropes of different thickness.

4. **CLOVE HITCH <= click the link**: it is used for tying fenders to a fence, placing onto cleats, fastening equipment.

5. **BOWLINE KNOT <= click the link**: it is used to form a loop that does not tighten, for placement onto a mooring cleat.

6. **ROUND TURN AND TWO HALF HITCHES <= click the link**: it is tied to the anchor shank or the anchor chain ring.

7. **ANCHOR HITCH <= click the link**: it is tied to a buoy ring or a mooring ring on a pier or in a marina.

4.1. Regulations for Preventing Collisions at Sea

International Regulations for Preventing Collisions at Sea are accepted and published by the International Maritime Organization (IMO). They represent a set of international legal norms regulating maritime traffic.

The first written international rules were adopted and accepted in 1863. It has been amended several times since their first adoption. In 2001, new rules were amended by IMO and entered into force in 2003 and 2007.

Based on the Croatian Maritime Code, the Republic of Croatia adopted the Rules with **Ordinance on preventing collisions at sea.**

The main contents of the Rules are:

- General definitions,
- Steering and sailing rules in any conditions of visibility,
- Lights and shapes,
- Sound and light signals,
- Distress signals.

The Ordinance on preventing collisions at sea applies to all vessels upon the high seas and in all waters connected therewith (canals, rivers) navigable by sea-going vessels.

4.1.1. General definitions

The Ordinance includes **general definitions** of certain terms used therein:

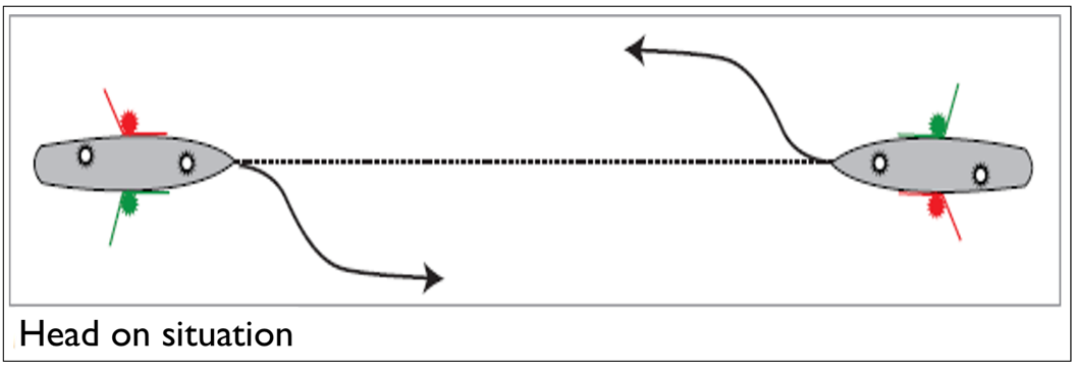
- ***Vessel*** includes every description of watercraft, including non-displacement craft, WIG (Wing in Ground) craft and seaplanes, used or capable of being used as a means of transportation on water,
- ***Power-driven vessel*** means any vessel moving through water by means of a mechanical propulsion device (machinery),
- ***Sailing vessel*** means any vessel under sail provided that propelling machinery if fitted, is not being used,
- ***Vessel engaged in fishing*** means any vessel fishing with nets, lines, trawls, or other fishing apparatus which restricts manoeuvrability,
- ***Vessel not under command*** means a vessel which through some exceptional circumstances is unable to manoeuvre as required by these rules and is therefore unable to keep out of the way of another vessel,
- ***Vessel restricted in ability to manoeuvre*** means a vessel which from the nature of work is restricted in ability to manoeuvre as required by these rules and is therefore unable to keep out of the way of another vessel (*A vessel engaged in laying, servicing, or picking up a navigation mark, submarine cable or pipeline; in dredging, engaged in a towing operation, etc.)*
- ***Vessel constrained by her draught*** means a power-driven vessel which because of the draught in relation to the available depth of water is severely restricted in ability to deviate from the course.
- ***Vessel underway*** means that a vessel is not at anchor, or made fast to the shore, or aground. A floating vessel is considered underway.

4.1.2. Steering and sailing rules in any conditions of visibility

Rules for practical conducting of vessels in sight of one another

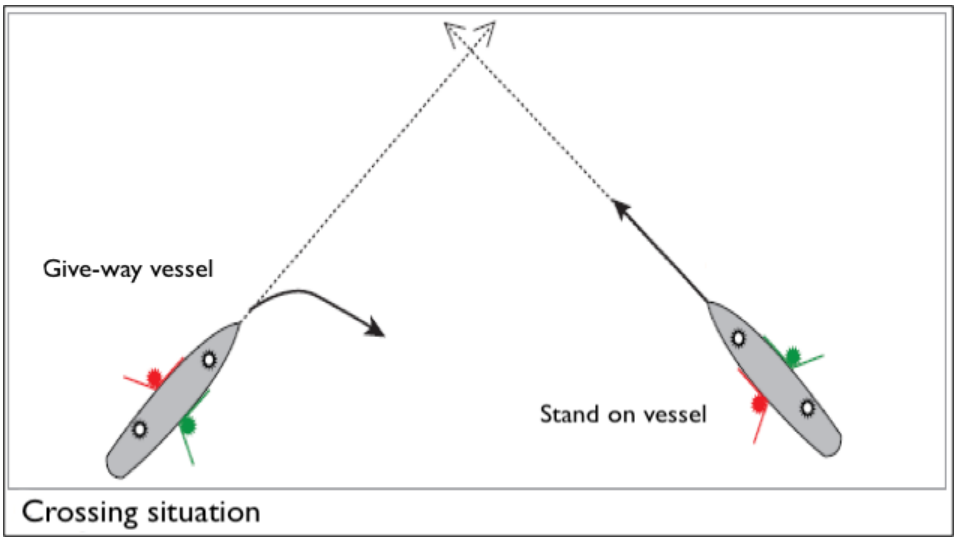
Head-on situation

- when two power-driven vessels are meeting on reciprocal or nearly reciprocal courses so as to involve risk of collision, each shall **alter the course to starboard** so that each shall pass on the port side of the other.
- every vessel which is directed to keep out of the way of another vessel shall, so far as possible, take **early and substantial action to keep well clear**.


Head on situation

Crossing situation (I)

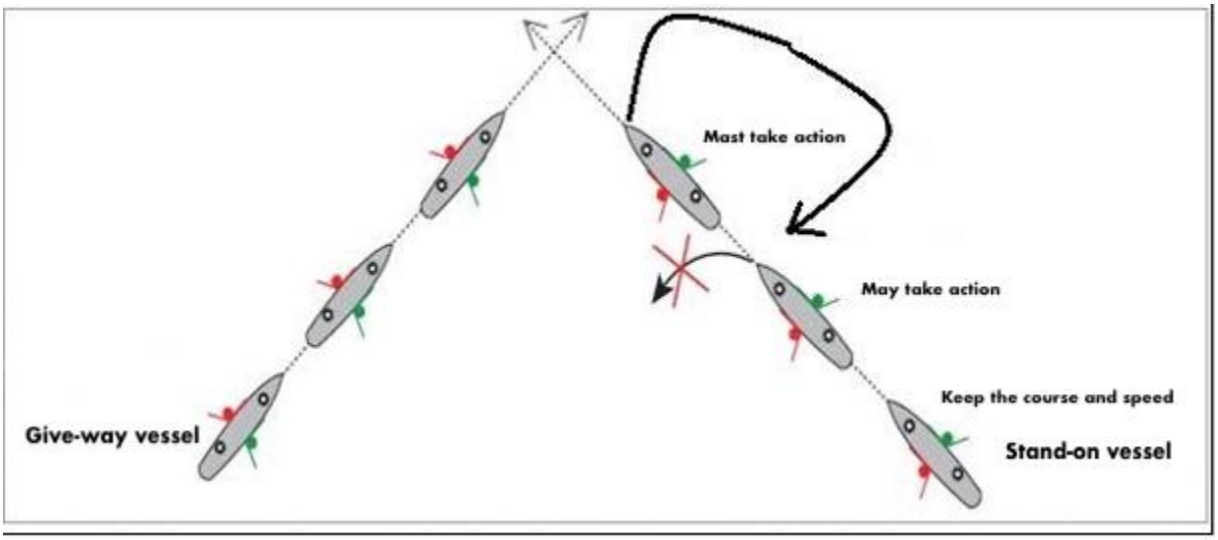
- when the courses of two power-driven vessels are crossing in a way that involves a risk of collision, the one that sees the other vessel on the starboard shall give way and shall avoid crossing ahead of the other vessel, if possible,
- and the stand-on vessel will maintain its course and speed and constantly monitor the movement of the give-way vessel.



Crossing situation

Crossing situation (II)

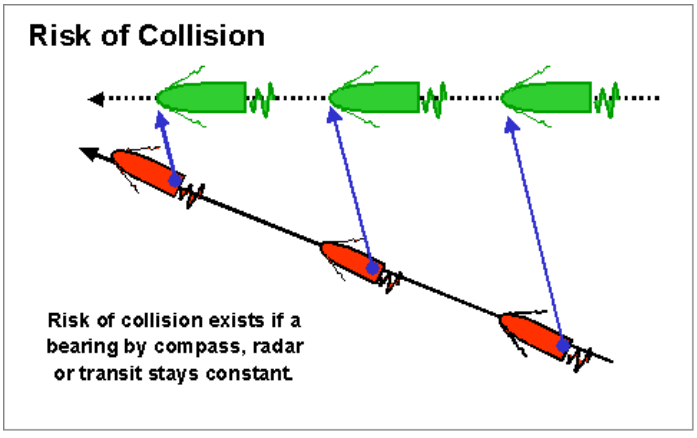
- if the give-way vessel does not comply according to Rules for any reason, the stand-on vessel, after attempting to contact the give-way vessel using the sound and light appliances (five short signals) and/or VHF radio station, must take action to avoid collision by her manoeuvre alone, as soon as it becomes apparent to that the vessel required to keep out of the way is not taking appropriate action in compliance with the Rules,
- stand-on vessel will take such action as will best aid to avoid collision and shall, if the circumstances permit, not alter course to port for vessel on her own port side.
- this Rule does not relieve the give-way vessel of the obligation to keep out of the way.



Crossing situation (III)

- vessels on crossing courses, despite moving at different speeds, may come into a collision position depending on the approach angle.
- vessels for which it cannot be determined with certainty that they are not on a collision course must be monitored successively using the bow angle and/or compass bearing in intervals.
- if the compass bearing or bow angle **does not change or if its change is very small,** there will certainly be a dangerous risk of collision.

Particular attention should be paid if the courses intersect at a sharp angle, as the room for manoeuvring is significantly reduced, and any avoidance manoeuvre should be taken much earlier.



4.1.3. Lights and shapes

The lights (navigation lights) on vessels are shown at sea from sunset to sunrise and during the day in conditions of poor visibility.

Lights on vessels determine:

- **types of boats (motor, sailing, fishing ...),**
- **direction of sailing,**
- **size of the vessel,**
- **activity they are engaged in,**
- **specific job they perform,**
- **restrictions for other vessels.**

Lights on vessels have:

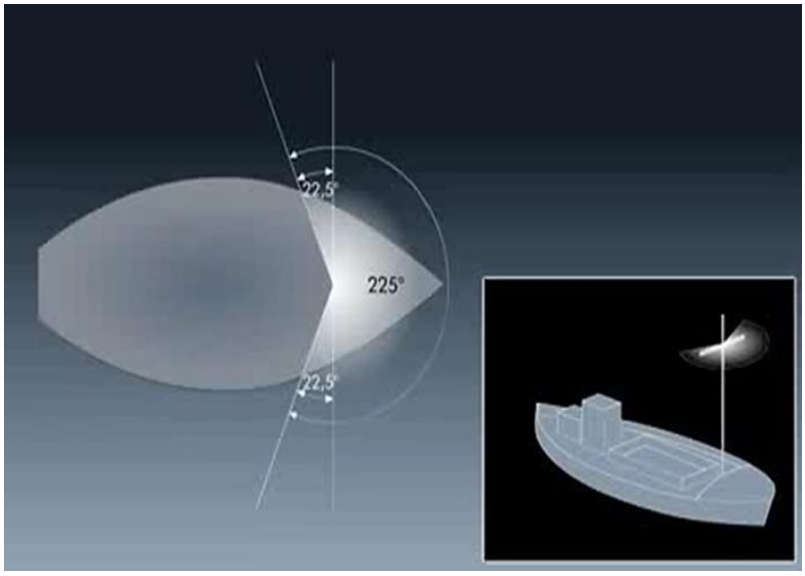
- **certain colours (white, red, green, yellow, blue),**
- **the angle at which they are seen,**
- **certain location on the vessel,**
- **specific range.**

Definitions of lights on vessels

Masthead light is a white light placed over the fore and aft centreline of the vessel showing an unbroken light over an arc of the horizon of 225°, and so fixed as to show the light from right ahead to 22.5° abaft the beam on either side of the vessel.

The masthead light must be placed above all other lights and above the superstructure which can shade them, so that it can be seen directly throughout the horizontal sector of visibility required for masthead lights.

The masthead light of power-driven vessel more than 12 but less than 20 m in length, shall be placed at a height above the gunwale of not less than **2.5 m**.



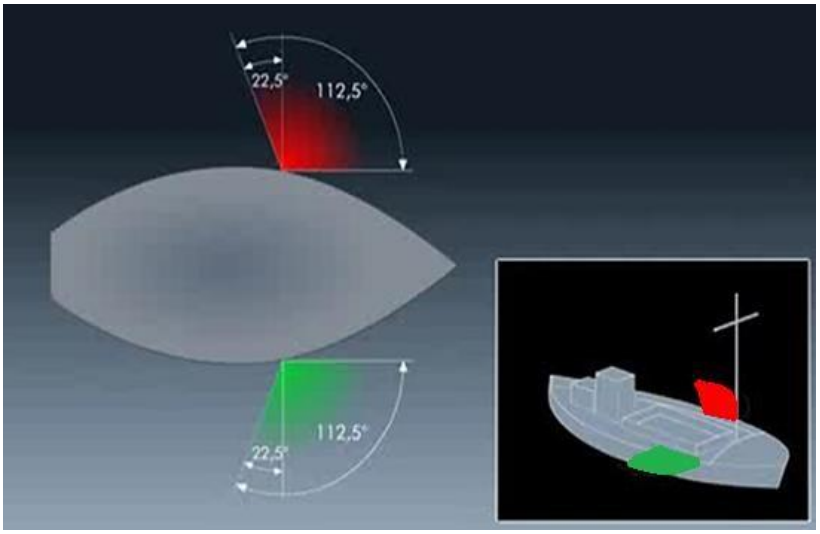
A power-driven vessel less than 12 m in length may carry the uppermost light at a height of less than 2.5 m above the gunwale. In case that masthead light is carried in addition to sidelights and stern light or the all-round white, it shall be carried at least **1 m** above sidelights.

The masthead light may be a white light with a horizontal viewing angle of 360°.

On boats longer than 12 meters, the visibility of the masthead light must be at least 3

nautical miles, and on boats up to 12 meters long, at least 2 nautical miles.

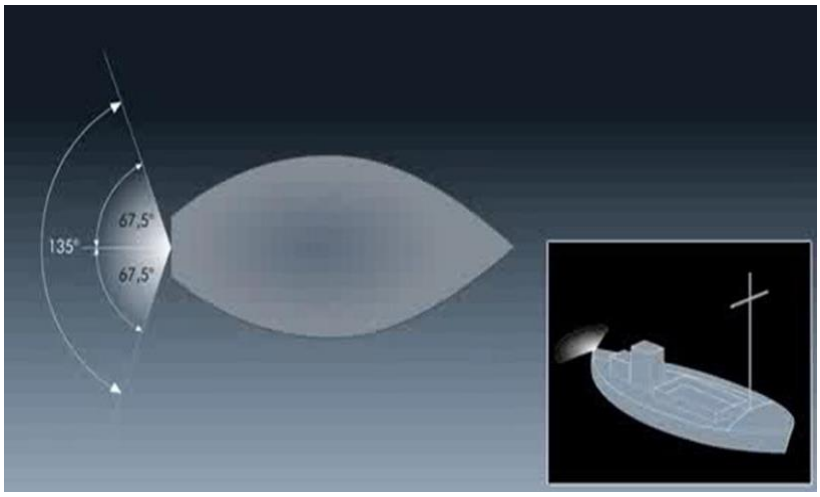
Sidelights is green light on the star- board side and red light on the port side, each showing an unbroken arc of the horizon of 112.5° and so fixed as to show the light from right ahead to 22.5° abaft the beam on its respective side.



In vessel of less than 20 m in length the sidelights may be combined in one lantern carried on the fore-and-aft centreline of the vessel.

The sidelights, if in a **combined lantern** and carried on power-driven vessel less than 20 m in length, shall be placed not less than 1 m below the masthead light.

Stern light is white light placed as near as possible to the stern showing an **unbroken arc of the horizon of 135°** and so fixed as to show the light 67.5° from right aft on each side of the vessel.

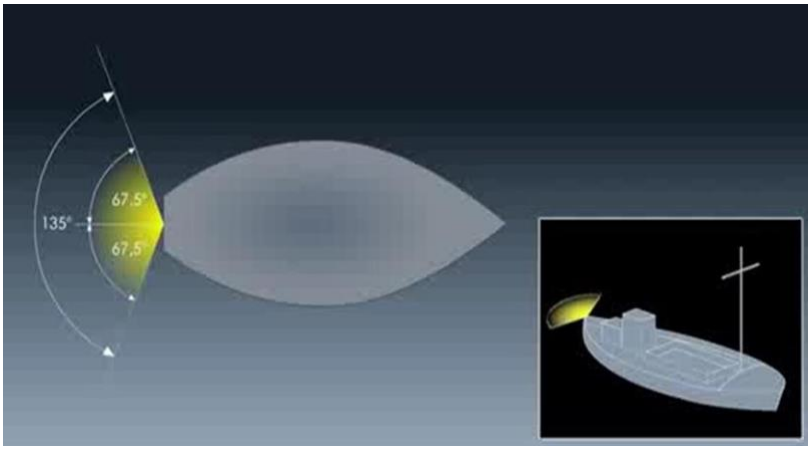


It must be placed as nearly as practicable at the stern (in the centreline of the vessel and fixed on the bulwark, or at the top of the stern fence or on the rear wall of the superstructure).

The visibility of the stern light must be at least 2 nautical miles.

Towing light is a yellow light with the same characteristics as the stern light,

placed above the stern light showing an **unbroken arc of the horizon of 135°**.



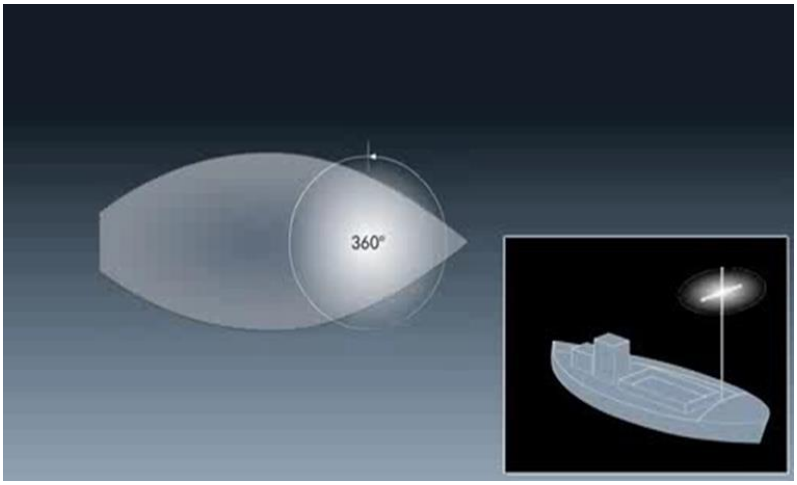
All-round light (white, red, green, yellow, or blue) is placed in the most visible place on the vessel and shows an unbroken light over an arc of the horizon of 360°.

The all-round light must be placed above all other lights and above the superstructure which can shade them, so that it can be seen directly throughout the horizontal sector of visibility required for the light.

On power driven vessel with a length of 12 m and more, the all-round light must be placed on the mast or on a special support, at least 2.5 m above the gunwale or at least 1 m above the sidelights.

Power driven vessel shorter than 12 m, with a maximum speed of less than 20 knots, may carry the all-round light at a height of less than 2.5 m above the span, but at least 1 m above the level of the sidelights or the combined two-tone lamp.

On power driven vessel shorter than 12 m, with a maximum speed more than 20 knots, the all-round light must be permanently displayed at the highest point of the vessel or at a height of 2.5 m from the waterline, whichever is greater.

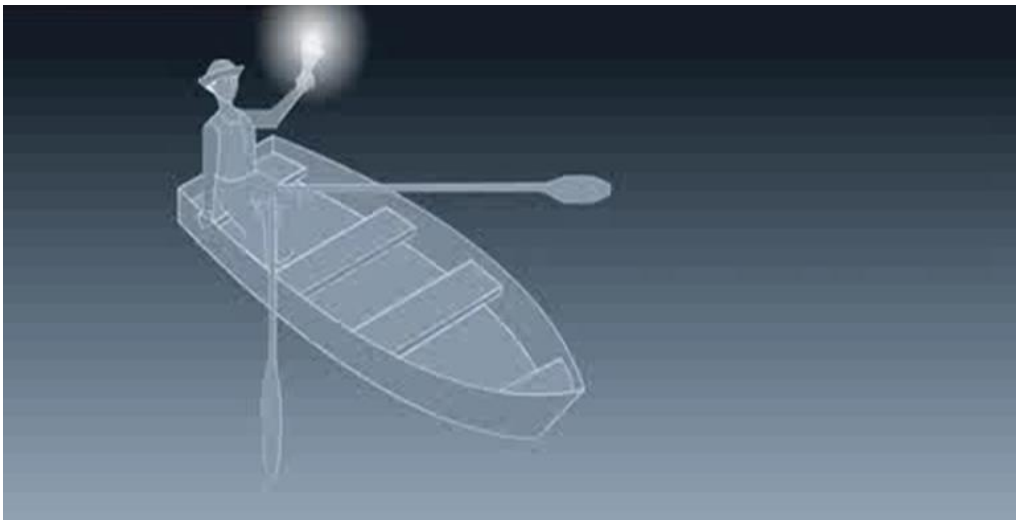


Lights visibility range (in M)

	Vessel > 50 m	Vessel < 50 m	Vessel < 12 m
Masthead light	**6**	**3**	**2**
Sidelights	**3**	**2**	**1**
Stern light	**3**	**2**	**2**
Towing light	**3**	**2**	**2**
All-round lights	**3**	**2**	**2**

Lights on vessel under oars and sailing vessel

Vessel under oars or sailboat with a length of less than 7 m may exhibit the lights prescribed for sailing vessels. If not, an electric torch or lighted lantern showing white light shall be ready at hand to be exhibited in sufficient time to prevent collision.



5. MARINE RADIOTELEPHONY

The main objective of Marine Radio Service is to **improve safety of human life at sea** when sailing as a professional or as an amateur on leisure crafts such as speedboats, yachts or sailing boats in a **distress or in emergency at sea** or on inland waterways.

To solve this problem the **GMDSS** (Global Maritime Distress and Safety System) was introduced.
The GMDSS is an important part of the **IMO** (International Maritime Organisation) and **SOLAS** (Safety Of Life At Sea) convention.

It is an internationally agreed upon set of safety procedures, types of equipment, and communication protocols used to increase safety and make it easier to rescue distressed ships.

The SOLAS convention is a **key element of maritime communications**.

The GMDSS provides methods and procedures for sending alerts by radio communication to shore based MRCCs (Maritime Rescue and Coordination Centres), CRSs (Coast Radio Stations) and vessels in the vicinity.

This **Ship to Shore distress alerting** will guarantee a quick and efficient SAR (Search and Rescue) operations.
All SAR activities are organized by MRCCs and MRSCs (Maritime Rescue Sub Centres) within specified navigational sea areas normally bordering their coastlines.

There are many types of radio equipment used for communications purposes.

The equipment, its carriage requirements and its usage are integral elements of GMDSS dependent on the GMDSS Sea Area in which they operate.

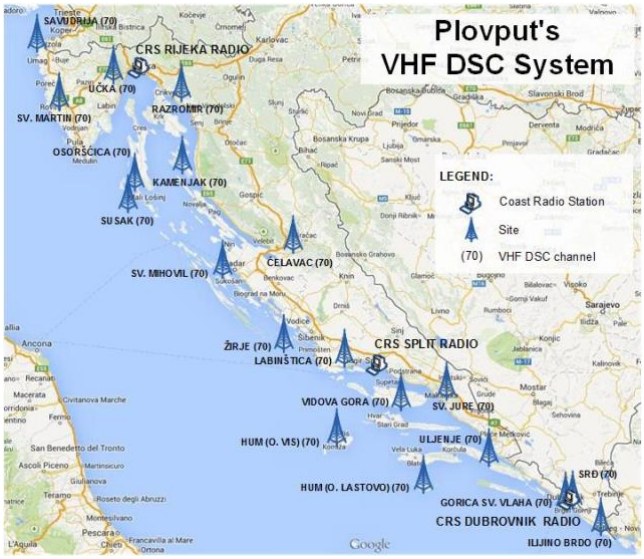
Republic of Croatia has incorporated GMDSS radio equipment carriage requirements into their domestic marine legislation that is valid for SOLAS and non-SOLAS vessels under their flag. **All vessels engaged in commercial fishing, all passenger vessels and leisure vessels which are allowed to sail up to 30 Nm from shore are required to fit some or all the needed GMDSS equipment.**

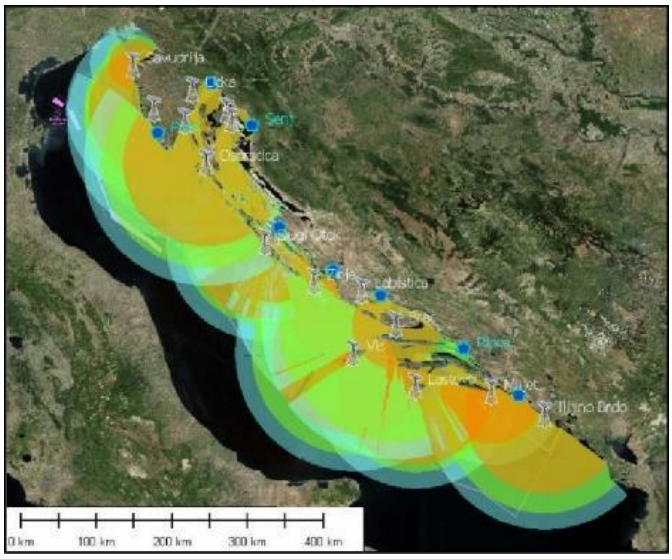
Radiotelephone communication in the coastal waters of the Republic of Croatia is covered by the company **"Plovput"** with three coast radio stations: **Rijeka Radio, Split Radio and Dubrovnik Radio** on which radio service is kept permanently (24/7/365) and which belong to Maritime regions bearing the same name.

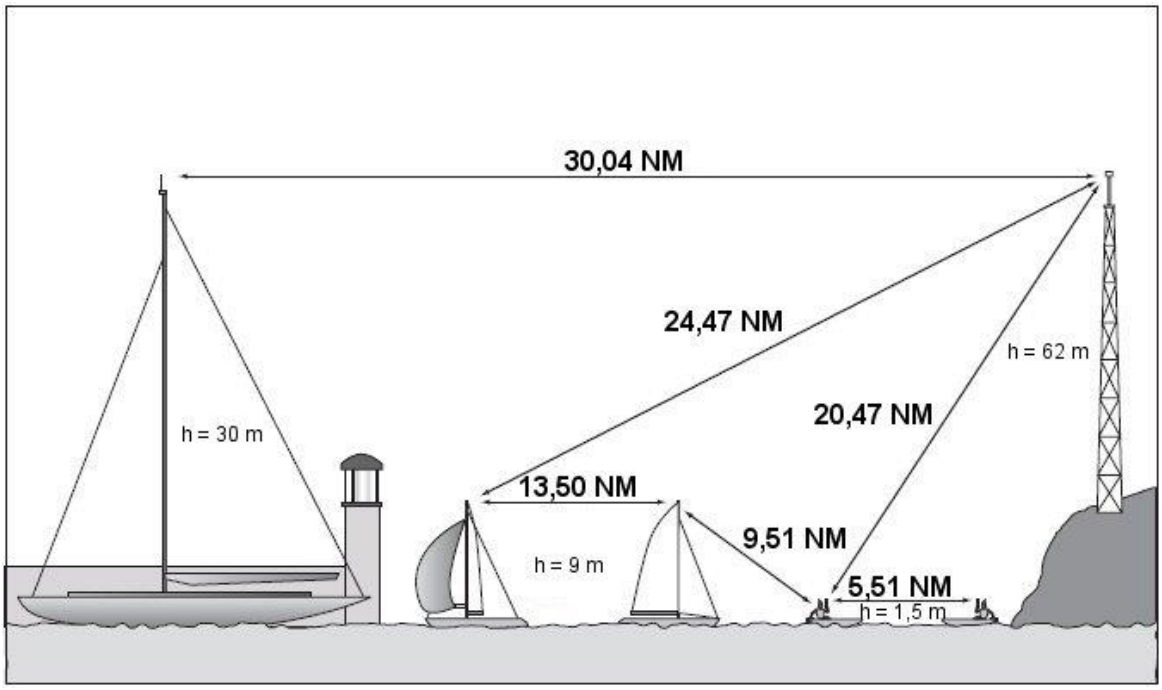
COAST RADIO STATION	CALL SIGN	VHF SYSTEM	MMSI	VHF DSC SYSTEM	ID	NAVTEX sustav
CRS Rijeka Radio tel: 385 (0)51 217 332	9AR	7 sites (19 sites)	002380200	19 sites (19 sites)	-	-
CRS Split Radio tel: 385 (0)21 389 190	9AS	7 sites (19 sites)	002380100	19 sites (19 sites)	Q F	1 site
CRS Dubrovnik Radio tel: 385 (0)20 311 373	9AD	5 sites (19 sites)	002380300	19 sites (19 sites)	-	-

VHF, VHF DSC and the **NAVTEX** radio service are organized via all three coast radio stations. The official NAVTEX station through which all NAVTEX messages are broadcasted is CRS Split Radio which also contains the Centre for reporting of alarm states originating from aids to navigation.
VHF System is a part of the Global Maritime Distress and Safety System (GMDSS) in which communications are made on frequencies prescribed by Radio Regulations which regulate the scope and order of usage of radio channels in VHF frequency bands (from 156 MHz to 174 MHz).

For VHF maritime radio service **57 VHF** channels are used (simplex and duplex channels), among which **channel 16** is foreseen for calls and communications in case of a distress and for other communications.
Plovput's VHF system includes the equipment located on three coast radio stations and on 19 sites.
Coast radio stations relate to each other, as well as with VHF base radio stations by means of a VPN network based on TCP/IP technology.







Range of signals from VHF radiotelephony station

VHF DSC System (Digital Selective Call) is a part of Global Maritime Distress and Safety System (GMDSS). It uses simplex **VHF channel 70** (156,525 MHz) where it receives and transmits phase modulated digital signal.

VHF DSC is used for **automatic distress and safety calls**, as well as for other types of communications.

NAVTEX (NAVigational TEleX) System is a part of Global Maritime Distress and Safety System (GMDSS) and serves for broadcasting of Maritime Safety Information (MSI) within the Worldwide Navigational Warning Service (WWNWS).

NAVTEX messages are broadcasted in FEC mode (Forward Error Correction) on operating frequencies 518 kHz (International NAVTEX Service) and 490 kHz (National NAVTEX Service).

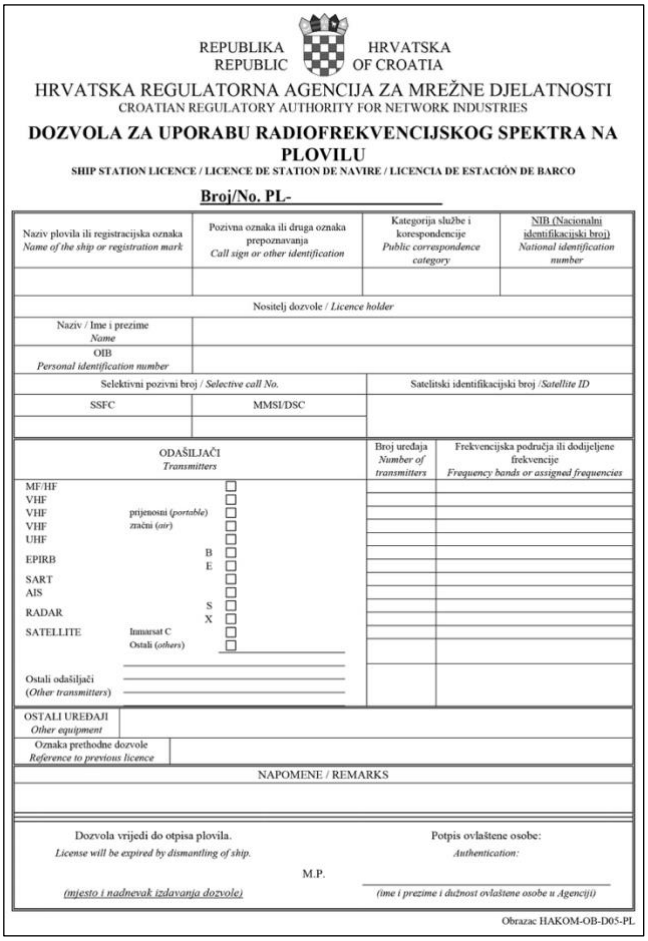
NAVTEX System of **Plovput** consists of operators' sites on CRS – Rijeka Radio, Split Radio and Dubrovnik Radio and Transmitting Centre on R.R.S. Hvar by means of a VPN network.

5.1. VHF and VHF DSC radio station documents, radio watchkeeping, work in ports, supervision and inspection

5.1.1. VHF and VHF DSC radio station documents

1. *Ship radio station licence* is proof that the boat can use the radio station in the prescribed manner. The permit is issued by the Croatian Regulatory Authority for Network Industries (HAKOM – www.hakom.hr).
2. *Radio operator Certificate*
   is proof that the boat skipper has passed the exam and that the person is authorized to perform the duties of a radio operator on a boat's VHF or VHF DSC radio station as an operator with *SRC (Short Range Certificate)*.

   The authorization to operate the radio station is proven by the Boat Skipper *category B* Licence.
3. *The radio station logbook* is a book in which the radio operator enters data on the work of the station. The logbook is kept only by boats that are required to have a radiotelephone station (the following must be recorded: work start and end time, downtime – shutdowns, inspection data, battery charging time, distress messages).



REPUBLIKA HRVATSKA
REPUBLIC OF CROATIA

HRVATSKA REGULATORNA AGENCIJA ZA MREŽNE DJELATNOSTI
CROATIAN REGULATORY AUTHORITY FOR NETWORK INDUSTRIES

DOZVOLA ZA UPORABU RADIOFREKVENCIJSKOG SPEKTRA NA PLOVILU
SHIP STATION LICENCE / LICENCE DE STATION DE NAVIRE / LICENCIA DE ESTACIÓN DE BARCO

Broj/No. PL-

Naziv plovila ili registracijska oznaka *Name of the ship or registration mark*	Pozivna oznaka ili druga oznaka prepoznavanja *Call sign or other identification*	Kategorija službe i korespondencije *Public correspondence category*	NIB (Nacionalni identifikacijski broj) *National identification number*

Nositelj dozvole / *Licence holder*

Naziv / Ime i prezime *Name*	
OIB *Personal identification number*	

Selektivni pozivni broj / *Selective call No.*		Satelitski identifikacijski broj /*Satellite ID*
SSFC	MMSI/DSC	

ODAŠILJAČI *Transmitters*			Broj uređaja *Number of transmitters*	Frekvencijska područja ili dodijeljene frekvencije *Frequency bands or assigned frequencies*
MF/HF		☐		
VHF		☐		
VHF	prijenosni (*portable*)	☐		
VHF	zračni (*air*)	☐		
UHF		☐		
EPIRB		B ☐ E ☐		
SART		☐		
AIS		☐		
RADAR		S ☐ X ☐		
SATELLITE	Inmarsat C	☐		
	Ostali (*others*)	☐		
Ostali odašiljači (*Other transmitters*)				

OSTALI UREĐAJI *Other equipment*	
Oznaka prethodne dozvole *Reference to previous licence*	

NAPOMENE / REMARKS

Dozvola vrijedi do otpisa plovila. *License will be expired by dismantling of ship.*

(mjesto i nadnevak izdavanja dozvole)

M.P.

Potpis ovlaštene osobe: *Authentication:*

(ime i prezime i dužnost ovlaštene osobe u Agenciji)

Obrazac HAKOM-OB-D05-PL

5.1.2. Radio watchkeeping

Whilst at sea it is a requirement for small craft to maintain a listening watch on **VHF Channel 16** (or **VHF DSC channel 70**) from the moment of departure until the end of the voyage.

5.1.3. Radio communication in ports

Entering a port, the use of the radio station ceases except for the transmission of messages important for the safety of navigation and communication with the port authorities.

5.1.4. Supervision and inspection

The supervision and inspection of the operation of radiotelephone stations on boats, the correctness of the documents for the operation of the station and the orderliness of a boats' documents and books is carried out by radio inspectors of navigation safety of the harbour master's office, who may order the elimination of deficiencies by a written decision or, in the case of deficiencies that endanger safety, may prohibit the operation of the station.

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