

## BACKGROUND

STCW Code Including 2010 Manila Amendments

Section A-VI/2

Proficiency in Survival Craft and Rescue Boats other than Fast Rescue Boats

Standard of competence

Par. 4. Every candidate for certification shall be required to provide evidence of having achieved the required standard of competence through:

- .1 demonstration of competence to undertake the tasks, duties and responsibilities listed in column 1 of Table A-VI/2-1, in accordance with the methods for demonstrating competence and the criteria for evaluating competence tabulated in column 3 and 4 of that table; and
- .2 examination or continuous assessment as part of an approved training programme covering the material set out in column 2 of Table A-VI/2-1.

Par. 5. Seafarers qualified in accordance with paragraph 4 in survival craft and rescue boats other than fast rescue boats shall be required, every five (5) years, to provide evidence of having maintained the required standards of competence to undertake the tasks, duties and responsibilities listed in column 1 of Table A-VI/2-1.

## 1. TAKE CHARGE OF A SURVIVAL CRAFT OR RESCUE BOAT DURING AND AFTER LAUNCH

DEFINITION:

- a. Survival Craft – is a craft capable of sustaining the lives of persons in distress from the time of abandoning the ship.
- b. Rescue Boat – is a boat designed to rescue persons in distress and to marshal survival craft.

Types of Survival Craft

- ❖ Lifeboat - is a small, rigid or inflatable boat carried for emergency evacuation in the event of a disaster aboard a ship.
- ❖ Liferaft - a raft usually made of inflatable material and used in an emergency at sea.

Types of liferaft:

- Inflatable liferaft
- Rigid liferaft

## Type Description:

### Inflatable Liferafts

The inflatable liferaft is the most common type of liferaft and forms the secondary appliance in the majority of ships. In some classes of vessels, liferafts are the main form of life-saving equipment. International regulations lay down the requirements for the design and manufacture of inflatable liferafts and the emergency equipment carried in them.

Liferafts complying with the 1974 SOLAS Convention are made of different sizes from 6 persons to 25 persons capable of being launched by standard throw overboard procedures or by davits. For small crafts, those used for pleasure purposes, liferafts for four persons are produced to meet national regulations.

Larger liferafts of 35, 45, and 50 person capacities are found on large, high-density passenger and ferry vessels.

### Rigid Liferafts

Liferafts are also made of rigid cork type material. They usually have a mesh net attached and lifelines. Capacity will be marked clearly. These are more common on small commercial vessels.



## IMO Assembly Resolution A.657(16)

### ANNEX 1

### LIFERAFT SURVIVAL INSTRUCTIONS

#### Instructions for Immediate Action in a Liferaft

The instructions concerning immediate action upon entering the liferaft should be written in easily legible type on waterproof material, and displayed so as to be easily seen by a person entering the liferaft. The instructions should be written in one of the official languages of the organization in addition to the official language of the country.

1. Cut painter and get clear of ship.
2. Look for and pick up other survivors.
3. Ensure sea-anchor streamed when clear of ship.
4. Close up entrances.
5. Read survival instructions.

#### Instructions on How to Survive in a Liferaft

1. Identify person in charge of liferaft.
2. Post a look-out.
3. Open equipment pack.
4. Issue anti-seasickness medicine and seasickness bags.
5. Dry liferaft floor and inflate, if appropriate.
6. Administer first aid, if appropriate.

7. Manoeuvre towards other liferafts, secure liferafts together and distribute survivors and equipment between survival craft.
8. Arrange watches and duties.
9. Check liferaft for correct operation and any damage and repair as appropriate (ventilate if CO2 leaking into liferaft).
10. Check functioning of canopy light and if possible conserve power during daylight.
11. Adjust canopy openings to give protection from weather or to ventilate the liferaft as appropriate.
12. Prepare and use detection equipment including radio equipment.
13. Gather up any useful floating objects.
14. Protect against heat, cold and wet conditions.
15. Decide on food and water rations.
16. Take measures to maintain morale.
17. Make sanitary arrangements to keep liferaft habitable.
18. Maintain liferaft including topping up of buoyancy tubes and canopy supports.
19. Make proper use of available survival equipment.
20. Prepare action for:
  - a) arrival of rescue units;
  - b) being taken in tow;
  - c) rescue by helicopter; and
  - d) landing and beaching.

Notes:

1. The order in which the above instructions are followed will depend on the particular circumstances.
2. The above instructions can stand alone or can be amplified as appropriate to the satisfaction of the Administration.

### 1.1 Right an Inverted Liferaft While Wearing a Lifejacket

In some cases of automatic release of liferaft there is chance of inflating it upside down. When a liferaft inflates upside down it can be righted by one person following these simple steps:

- Move around the raft until the wind is in your face, so that the wind will be assisting you, not opposing you (all survivors should relocate to this side of the raft). Rotate the raft around until you locate the righting location which is generally where the gas cylinder is attached to the side of the raft.



- Grab hold of the righting line if possible (some rafts have only a handle or handles) and use it to assist you to climb up onto the inverted floor of the raft. On smaller rafts simply pulling on the

righting line or handle, or doing so while bracing against the side of the raft with your knees or feet, may suffice to pull the raft over.



- Once up on the inverted raft, place your feet on the gas cylinder, or on the edge of the bottom of the raft, grab hold of the righting line or righting handle, stand up and lean back, pulling the raft over onto yourself by holding onto the righting line or handle.
- The raft will come over on top of you. Don't panic, the raft weighs little and won't hurt you, and don't let go of the righting line if possible. Maintaining a grip on the line, pull yourself back out from under the life raft. If there is a righting handle, you'll need to let go to work your way out from under the raft.
- Do not try to right the raft from the side opposite the gas cylinder. When the raft comes over, the hard, heavy cylinder can come down on top of you or another survivor and cause injury.

## 2. SURVIVAL CRAFT ENGINE

### Lifeboat propulsion

Every lifeboat shall be powered by a compression ignition engine. No engine shall be used for any lifeboat if its fuel has a flashpoint of 43°C or less (closed cup test).

The engine shall be provided with either a manual starting system, or a power starting system with two independent rechargeable energy sources. Any necessary starting aids shall also be provided. The engine starting systems and starting aids shall start the engine at an ambient temperature of -15°C within 2 min of commencing the start procedure unless, in the opinion of the Administration having regard to the particular voyages in which the ship carrying the lifeboat is constantly engaged, a different temperature is appropriate. The starting systems shall not be impeded by the engine casing, seating or other obstructions. The speed of a lifeboat when proceeding ahead in calm water, when loaded with its full complement of persons and equipment and with all engine powered auxiliary equipment in operation, shall be at least 6 knots and at least 2 knots when towing a 25-person liferaft loaded with its full complement of persons and equipment or its equivalent. Sufficient fuel, suitable for use throughout the temperature range expected in the area in which the ship operates, shall be provided to run the fully loaded lifeboat at 6 knots for a period of not less than 24 h.

Water-resistant instructions for starting and operating the engine shall be provided and mounted in a conspicuous place near the engine starting controls.

**Engine Starting****a. Before operation:**

1. Check the fuel oil level in the tank and refill if necessary.
2. Open the fuel cock.
3. Check the lube oil level in the crank case and clutch case refill up to the upper marking on the dipstick.
4. Turn the handle of the lube oil filter on the outlet side several times to the left or right
5. Open the Kingston cock.
6. Turn the starting handle by hand in order to lubricate each part.
7. Set the speed control lever to HIGH.
8. Turn the starting handle until you hear the sound of fuel being injected.

Note: Fuel is not injected if air is present anywhere in this system. Air enters the system when fuel runs out and when the fuel injection pump is stripped.

**b. Starting:**

1. Set the speed control lever to HIGH.
2. Raise the decompression lever and turn the starting handle vigorously five or six times until the flywheel obtains momentum.
3. Release the decompression lever and further turning the starting handle firmly.
4. Warm up the engine at 600-700rpm speed without no load at least 10 minutes.

**c. During operation:**

1. Check that the cooling water is coming out of the cooling water pipe outlet.
2. Check the lube oil pressure warning indicator to see that the oil signal is blue.

**d. Stopping:**

1. Set the speed control lever to stop position
2. Close the fuel cock.
3. Close the Kingston cock.
4. Stop the engine at the compression stroke by turning it with the starting handle until resistance is felt. Do not use the decompression lever.

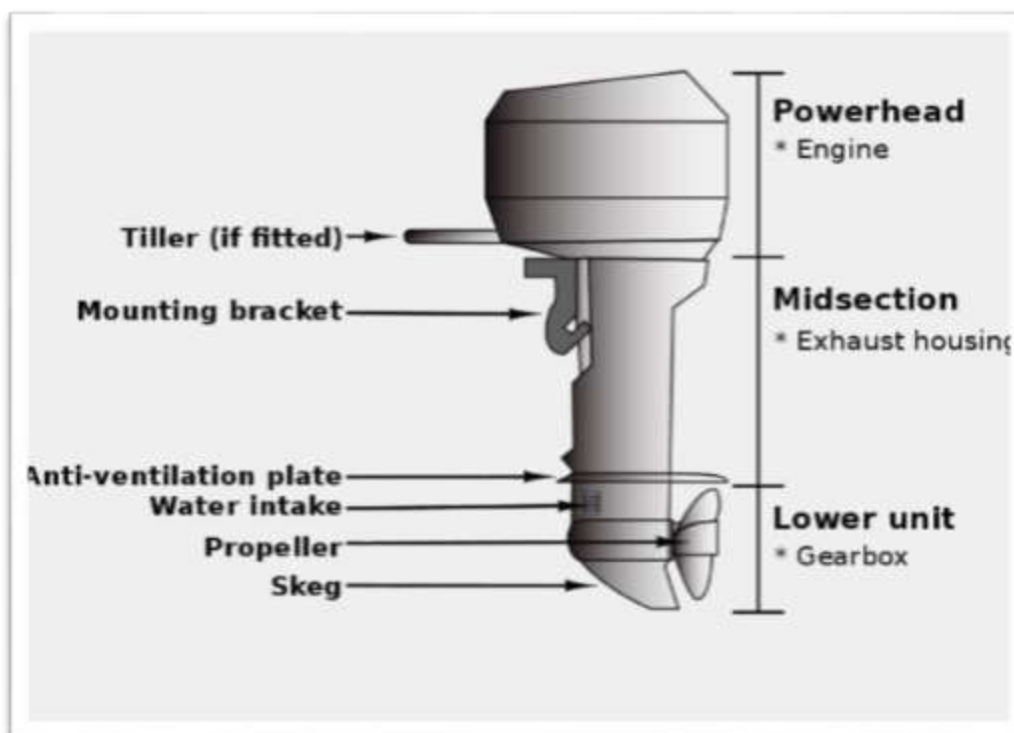
**Boat Crew, Duties and Responsibilities**

1. **Boat Coxswain** – a qualified coxswain familiar with his boat's physical characteristics. He must see to it that his boat is always clean and ready for any moment's use. He should know his passenger's capacity and the equivalent of one (1) person to a cargo 165 lbs. He has full charge of his boat crew and passengers. When underway during inclement weather, he shall require all his boat crew and passengers to wear lifejackets. He shall enforce the "no smoking" regulation and require all passengers to sit down properly while underway. Safety and welfare of the personnel must be his primary concern.
2. **Boat Engineer** – is responsible for the upkeep, maintenance and operation of the engine. He should be able to make minor repairs and spot trouble before it has a chance to cause damage.
3. **Bowman** – he acts as bow lookout and handles the bow lines and forward fender when coming alongside or getting underway. Responsible for the cleanliness of the boat. He should be qualified to relieve the coxswain if necessary.

### Rescue boat outboard engine

A rescue boat shall be fitted with an inboard engine or outboard motor. If it is fitted with an outboard motor, the rudder and tiller may form part of the engine.

An outboard motor is a propulsion system for boats, consisting of a self-contained unit that includes engine, gearbox and propeller or jet drive, designed to be affixed to the outside of the transom. They are the most common motorized method of propelling small watercraft. As well as providing propulsion, outboards provide steering control, as they are designed to pivot over their mountings and thus control the direction of thrust. The skeg also acts as a rudder when the engine is not running. Compared to inboard motors, outboard motors can be easily removed for storage or repairs.



In order to eliminate the chances of hitting bottom with an outboard motor, the motor can be tilted up to an elevated position either electronically or manually. This helps when traveling through shallow waters where there may be debris that could potentially damage the motor as well as the propeller. If the electronic motor required to move the pistons which raise or lower the engine is malfunctioning, every outboard motor is equipped with a manual piston release which will allow the operator to drop the motor down to its lowest setting.

### 3. LOCATING DEVICES, INCLUDING COMMUNICATION AND SIGNALING APPARATUS AND PYROTECHNICS

#### 3.1 Radio life-saving appliances

##### SOLAS Requirement

- A radio Installation may be separate from or combined with DSC; Portable Lifeboat radio; VHF Installation
- A radar transponder (SART) capable of operating in the 9MHz band which:
  - Shall be stowed that it can easily utilized
  - Required for a survival craft
- EPIRB

**a. Communication System for use in the Global System (Terrestrial Communication)**

1. Long Range Service
  1. HF (High Frequency 3-30 MHz)
    - Provide a long-range service in both the ship-to-shore and shore-to-ship directions.
2. DSC
  - Forms the basis of distress alerting and safety communications.
  - RT and NBDP can perform distress and safety communications following a DSC call.
3. Medium Range Service
  - Provided on frequencies 2 MHz band
  - In the ship-to-shore, ship-to-ship will be used for distress alerts and safety calls
  - DSC2182 kHz will be used for distress and safety traffic by RT including SAR coordinating and on-scene.
  - 2174.5 kHz will be used for radio telex (NBDP) distress and safety traffic.
4. Short Range Service
  - VHF provide short range service on the frequencies.
  - 156.525 MHz (channel 70) – for distress alerts and safety calls using DSC.
  - 156.8 MHz (channel 16) for distress and safety traffic by RT including SAR coordinating and on-scene communication.

GMDSS - Global Maritime Distress Safety System

INMARSAT - International Maritime Satellite Organization

(adopted 03 Sept. '76)

RT - Radio Telephony

WT - Radio Telegraphy

DSC - Digital Selective Calling

NBDP - Narrow Band Direct Printing

**Two-way VHF Radiotelephone Apparatus**

At least 3 two-way VHF radiotelephone apparatus shall be provided on every passenger ship and on every cargo ship of 500 gross tonnage and upwards. At least 2 two-way VHF radiotelephone apparatus shall be provided on every cargo ship of 300 gross tonnage and upwards but less than 500 gross tonnage. Such apparatus shall conform to performance standards not inferior to those adopted by the Organization. If a fixed two-way VHF radiotelephone apparatus is fitted in a survival craft it shall conform to performance standards not inferior to those adopted by the Organization.

VHF installations come in two types: the fixed installation and the portable sets.





The survival craft portable two-way VHF radiotelephone and/or fixed installation, in addition to meeting the requirements of the Radio Regulations, the relevant ITU-R Recommendations and the general requirements set out in resolution A.694(17), should comply with the performance standards as per IMO Assembly resolution A.809(19) – Performance standards for survival craft two-way radiotelephone apparatus. And both type should be capable of being used for on-scene communication between survival craft, between survival craft and ship and between survival craft and rescue unit. In addition, portable type may also be used for on-board communications when capable of operating on appropriate frequencies.

### Distress Signal Format

<AUTO ALARM>

Mayday (3 times) or SOS (3 times)

This is \_\_\_\_\_ call sign or name 3 times

Mayday this is \_\_\_\_\_ call sign \_\_\_\_\_

Position: Latitude \_\_\_\_\_

Longitude \_\_\_\_\_

Or bearing/distance from a navigational feature

Nature of distress \_\_\_\_\_

Assistance needed or required and

Any other information

Auto Alarm – the purpose is to alert receiving stations that an important message is to be broadcasted.

RT Auto Alarm – distinctive 2 tone signal

WT Auto Alarm – series of 12,4 seconds dashes

Silence Periods – no radio working is allowed during the silence periods except distress and emergency transmission.

### b. Search and Rescue Transponder Beacons (SARTs)

- Required under the IMO/SOLAS Global Maritime Distress and Safety System (GMDSS) for lifeboats and liferafts.
- Main means in the GMDSS for locating ships in distress or their survival craft.
- Generate a series of response signal on being interrogated by any ordinary 9GHz shipborne radar or suitable airborne radar
- Operates in a 9GHz frequency band.



- Can be either portable for use onboard ship or carrying to survival craft, or permanently installed on the ship and in survival craft, or permanently installed on the ship and in survival craft to operate on a float-free position.
- May also be incorporated into a float-free satellite EPIRB.
- Can be activated manually or automatically when placed into the water so that it will thereafter respond when interrogated by radar.
- It is able to operate under ambient temperatures of -20°C to +55°C.
- It is a passive beacon until interrogated by radar energy.
- It will then automatically transmit series of pulses which are displayed on radar screen of passing aircrafts or vessels.

**c. Emergency Position-Indicating Radio Beacons (EPIRBs)**

- Required by satellite system (INMARSAT) and source positional information relayed to ground monitoring stations (RCC)
- Capable of transmitting distress alert using DSC or VHF channel 70
- Capable of providing for location by means of radar transponder operating in the 9KHz band
- Capable of being activated manually
- Transmit a homing signal on 121.5MHz and 243MHz, the international civil and military distress frequently respectively
- Required having duration of 48 hours and with an unused battery life for 12 months
- Ready for manual release and capable of being carried by one person into a survival craft. Installed in an easily accessible position
- Float-free if the ship sinks and activates automatically when afloat

**3.2 Pyrotechnic distress signals**

❖ **Rocket Parachute flares**



**The rocket parachute flare shall:**

1. Be contained in water-resistant casing.
2. Have brief instructions or diagrams clearly illustrating the use of the rocket parachute flare printed on its casing.
3. Have integral means of ignition.
4. Be so designed as not to cause discomfort to the person holding the casing when used in accordance with the manufacturer's operating instructions.

The rocket shall, when fired vertically, reach an altitude of not less than 300 m.

At or near the top of its trajectory, the rocket shall eject a parachute flare, which shall:

1. Burn with a bright red color;
2. Burn uniformly with an average luminous intensity of not less than 30,000 cd;
3. Have a burning period of not less than 40 s;
4. Have a rate of descent of not more than 5 m/s; and not damage its parachute or attachments while burning.

#### ❖ Handflares



**The hand flare shall:**

1. Be contained in a water-resistant casing;
2. Have brief instructions or diagrams clearly illustrating the use of the hand flare printed on its casing;
3. Have a self-contained means of ignition; and
4. Be so designed as not to cause discomfort to the person holding the casing and not endanger the survival craft by burning or glowing residues when used in accordance with the manufacturer's operating instructions.



**The hand flare shall:**

1. Burn with a bright red colour;
2. Burn uniformly with an average luminous intensity of not less than 15,000 cd;
3. Have a burning period of not less than 1 min; and
4. Continue to burn after having been immersed for a period of 10s under 100 mm of water.

#### ❖ Buoyant Smoke Signals:



**The buoyant smoke signal shall:**

1. Be contained in a water-resistant casing;
2. Not ignite explosively when used in accordance with the manufacturer's operating instructions
3. Have brief instructions or diagrams clearly illustrating the use of the buoyant smoke signal printed on its casing.

**The buoyant smoke signal shall:**

1. Emit smoke of a highly visible color at a uniform rate for a period of not less than 3 min when floating in calm water;
2. Not emit any flame during the entire smoke emission time;
3. Not be swamped in a seaway;
4. Continue to emit smoke when submerged in water for a period of 10 s under 100 mm of water.