
**Ships and marine technology — Survival
equipment for survival craft and rescue
boats**

*Navires et technologie maritime — Équipement de survie pour
embarcations de survie et bateaux de sauvetage*

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Published in Switzerland

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 18813 was prepared by Technical Committee ISO/TC 8, *Ships and marine technology*, Subcommittee SC 1, *Lifesaving and fire protection*.

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Introduction

This International Standard contains detailed specifications for various items of survival equipment carried in survival craft and rescue boats in compliance with the IMO LSA Code. For each item, the relevant subclause title specifies the name of the item, the types of craft in which it is required (LR = liferafts, LB = lifeboats, RB = rescue boats, LB/RB = combined life/rescue boats), and (in the same order) the specific sections of the LSA Code that require it. However, compliance of a product with this International Standard does not relieve the manufacturer of a survival craft or rescue boat of the responsibility to evaluate the suitability of the product in their particular application.

For the sake of completeness, certain items of equipment which pre-date the LSA Code, but which are still often carried on existing ships, are addressed in informative Annex A. For these items, the type of craft specified in the subclause title is followed by the suffix “– old” (e.g., “LB – old”).

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Ships and marine technology — Survival equipment for survival craft and rescue boats

1 Scope

This International Standard specifies design, performance, and use of various items of survival equipment carried in survival craft and rescue boats complying with the International Convention for the Safety of Life at Sea (SOLAS), 1974 (as amended), and the International Maritime Organization Life-Saving Appliance Code (LSA Code). For many items, it also includes guidelines for maintenance and periodic inspections by Administrations or ships' crews in informative Annex A.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 613:2000, *Ships and marine technology — Magnetic compasses, binnacles and azimuth reading devices — Class B*

ISO 8729:1997, *Ships and marine technology — Marine radar reflectors*

ISO 10316:1990, *Shipbuilding — Class B magnetic compasses — Tests and certification*

ISO 17339:2002, *Ships and marine technology — Sea anchors for survival craft and rescue boats*

ISO 24432, *Ships and marine technology — Thermal protective aids with sleeves*¹⁾

International Code for Fire Safety Systems, 2001 [Resolution MSC.98(73)], International Maritime Organization

International Code of Signals, 2005, International Maritime Organization

International Life-Saving Appliance (LSA) Code [Resolution MSC.48(66)], International Maritime Organization

International Safety Management (ISM) Code and guidelines on implementation of the ISM Code, International Maritime Organization

Recommendation on Testing of Life-Saving Appliances [Resolution A.689(17), as amended through Resolution MSC.81(70)], International Maritime Organization

IMO MSC/Circular 1048, *Performance standards and performance tests for manually powered reverse osmosis desalinators*

IMO Resolution A.384(X), *Performance standards for radar reflectors*

IMO Resolution A.657(16), *Instructions for action in survival craft*

1) To be published.

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IMO Resolution A.951(23), *Improved guidelines for marine portable fire extinguishers*

International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual, Volume III: Mobile Facilities, International Maritime Organization and International Civil Aviation Organization

International Convention for the Safety of Life at Sea (SOLAS), 1974 [as amended through Resolution MSC.47(66)], International Maritime Organization

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1.1

Administration

maritime administration of the State whose flag a ship is entitled to fly

3.1.2

approved

marked with approval markings of a ship's flag Administration, or of a recognized organization acting on its behalf

3.2 Abbreviated terms

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| | |
|----------|---|
| IMO | International Maritime Organization |
| LB | lifeboat |
| LB/RB | combined life and rescue boat |
| LR | liferaft |
| LSA Code | IMO International Life-Saving Appliance Code [IMO Res. MSC.48(66)] |
| RB | rescue boat (including fast rescue boat) |
| SOLAS | International Convention for the Safety of Life at Sea, 1974, as amended by IMO Res. MSC.47(66) |

4 Design and performance requirements

4.1 General

The quality of constituent materials, of manufacturing conditions and processes and of the finished product shall be appropriate to the intended performance and serviceability of the equipment. To the extent practicable, materials shall be selected taking into consideration compatibility with other materials used in the product, and the materials used in construction of the craft in which they are to be carried. The use of rigid plastic which can shatter and create sharp or pointed edges shall be avoided.

4.2 Bailer (LR, LB, RB – LSA Code 4.1.5.1.3, 4.4.8.3, 5.1.2.2.2)

A bailer shall be buoyant, and if its purpose is not immediately apparent, clearly marked with its function in the appropriate language or languages. It shall have a capacity of at least 2 l, and shall be fitted with a lanyard of suitable length for the craft in which it is intended to be used.

4.3 Bilge pump (manual) (LB, LB/RB – LSA Code 4.4.8.25)

4.3.1 Performance and construction

4.3.1.1 A bilge pump shall be manually operated and designed for permanent installation in the lifeboat without interfering with seated persons. When pumped at fifty cycles per minute, the discharge rate shall be not less than 23 l/min for a lifeboat of less than 7,3 m in length, and not less than 32 l/min for a lifeboat of over 7,3 m in length.

4.3.1.2 Bilge pumps shall be constructed of materials which are inherently corrosion-resistant, except that parts which are not subject to sliding contact when the pump is in use may, alternatively, be protected from corrosion by a durable coating such as galvanizing or the equivalent. Components such as seals, elastomeric diaphragms, or other parts subject to wear, shall be designed to be user-replaceable.

4.3.1.3 Bilge pumps shall be capable of operating against a head pressure of 140 kPa when tested in accordance with 4.3.2.2.

4.3.1.4 The design of the bilge pump shall allow access for inspection, cleaning, and removal of debris.

4.3.1.5 If a bilge pump is provided with a removable operating lever or shaft, the lever or shaft shall be provided with a set screw or other suitable means to secure it to the pump, and shall be connected to the pump body by a chain or lanyard to prevent loss.

4.3.1.6 The suction line shall be fitted with a non-return valve and a strainer. The strainer shall be removable for cleaning without the use of tools. Hoses and fittings in the suction line shall be of a type that will not collapse when the pump is in service.

4.3.1.7 The pump shall be self-priming, but may in addition be provided with a means for manual priming. Any removable plug or cap shall be secured to the pump by a retaining chain or cable.

4.3.1.8 If a bilge pump is of a type fitted with a removable discharge hose, the hose shall be secured to the pump by a means which enables removal of the hose by hand, with a tool that is secured to the pump by a chain or cable, or a tool which is available in the tool kit (see 4.44). The discharge hose shall have an inside diameter not less than that of the pump discharge opening.

4.3.2 Testing

4.3.2.1 The bilge pump being tested shall be set up at a height of 1,2 m over a source of water for operation with all the required fittings and connections, the set-up to simulate an installation in a lifeboat. The bilge pump shall be operated, without manual priming, at a speed of fifty cycles per minute, and the flow of water measured. The time to first discharge of water shall not exceed 1 min, and the discharge rate after the first discharge of water shall not be less than that required by 4.3.1.1.

4.3.2.2 A pressure gauge capable of registering 140 kPa, and a variable restriction (nozzle, valve, etc.) shall be fitted in the discharge line. The pump shall be put in operation with the discharge line open, and then the restriction shall be gradually closed until the pressure builds up to at least 140 kPa. This pressure shall be maintained for at least 15 s, after which the pump shall be disassembled and inspected. There shall be no destruction or deformation of parts sufficient to affect the serviceability of the pump as a result of this test.

4.3.2.3 With the pump firmly secured in such a position that the shaft or operating lever is fully extended and in a horizontal position, apply a downward load of 90 kg for a period of 5 min at the free end of the shaft or operating lever and perpendicular to its axis and the axis of the shaft. There shall be no slippage of the lever around the shaft, nor any evidence of permanent set or undue stress in any part of the pump. In cases where the design of the pump is such that this test may not be applicable to the complete pump, the pump shall be disassembled and the 90 kg load applied to the shaft or operating lever while the free end is held in a vice or chuck so that the shaft or operating lever is in a horizontal position.

4.3.3 Marking

Each pump shall be permanently and legibly marked with the name of the manufacturer, the capacity, and appropriate approval information. If the pump is provided with means for manual priming, it shall be permanently and legibly marked with the words "PRIME HERE".

4.4 Boathook (LB, RB – LSA Code 4.4.8.2, 5.1.2.3.1, 5.1.2.4.5)

The boathook shall be of the single-hook and ball-point style. In addition, for boathooks intended for use with inflated rescue boats or rigid inflated rescue boats, the boathook shall be of a type designed to minimize the possibility of damage to the inflated portions of the hull. The tip shall be securely fastened to the handle. The handle should be at least 2,4 m long; and for boats 9 m or greater in length, the handle should be at least 3,6 m long. Handles should be at least 38 mm in diameter in order to be properly gripped. The boathook shall be buoyant.

4.5 Bucket (LB, RB – LSA Code 4.4.8.3, 5.1.2.3.2)

The bucket shall be made of corrosion-resistant material, and shall have an attached lanyard at least 1,8 m long. Buckets should have a nominal capacity of at least 7,5 l. The lanyard should be at least 4 mm in diameter, and should be attached to the handle of the bucket. The design and construction of the bucket should take into account its usage for sanitary purposes.

4.6 Compass (LB, RB – LSA Code 4.4.8.5, 5.1.2.2.3)

4.6.1 The compass and its mounting arrangement shall comply with ISO 613:2000 and be tested in accordance with ISO 10316:1990, or be approved by the Administration to an equivalent standard.

4.6.2 If the compass is not contained in an illuminated binnacle, it shall have an internally illuminated or photoluminescent dial.

4.6.3 The compass in totally enclosed lifeboats shall be permanently mounted at the steering station. For partially enclosed lifeboats, the compass should be permanently mounted at the steering station, but a removable compass may be used. The mounting base for a removable compass shall be installed in a location where the compass will be in sight of the helmsman.

4.6.4 A compass for use in a free-fall lifeboat shall be demonstrated to be resistant to the acceleration forces imposed at the aft position by free-fall launching from the free-fall certification height by

- a) simulation of the magnitude and duration of those forces on suitable shock table apparatus;
- b) simulation of the magnitude and duration of those forces by means of a pendulum test with suitable impact damping material; or
- c) documentation of satisfactory performance in free-fall launching imposing equal or greater acceleration forces.

NOTE Compasses for use in fast rescue boats may also be subject to unusually high acceleration forces.

4.7 Container, liferaft equipment (LR – LSA Code 4.1.5.4)

Where appropriate, liferaft equipment shall be stowed in a container which, if it is not an integral part of or not permanently attached to the liferaft, shall be stowed and secured inside the liferaft and be capable of floating in water for at least 30 min without damage to its contents. The container shall be marked with or include a list of its contents. The container shall be provided with a means to secure it to the liferaft.

4.8 Dipper (LB – LSA Code 4.4.8.10)

The dipper shall be rustproof, and attached to a suitable lanyard or chain. The dipper should be suitable for dipping collected water from the lifeboat's watertight lockers or compartments, and the lanyard or chain should be sufficiently long to allow the dipper to collect water from the bottom of the containers.

4.9 Drinking vessel (cup) (LR, LB – LSA Code 4.1.5.1.20, 4.4.8.11)

The drinking cup shall be graduated and of a rustproof and breakage-resistant material. The cup shall have a minimum volume of 250 ml, with graduations of 50 ml or less.

4.10 Electric torch (LR, LB, RB – LSA Code 4.1.5.1.13, 4.4.8.16, 5.1.2.2.7)

4.10.1 Construction and performance

4.10.1.1 The torch shall be capable of Morse Code signalling at a rate of at least 180 on–off cycles per minute, by a person wearing an immersion suit glove.

4.10.1.2 The torch shall provide a concentrated beam of light for at least 2,5 ° about the centre of the beam at a distance of 1,5 m, and with a maximum intensity of at least 100 cd. The light shall be substantially white in colour.

4.10.1.3 One set of spare batteries and one spare bulb shall be provided for each torch. They shall be packaged in such a way that they are protected from moisture, and the batteries are separated from the glass envelope of the bulb. The container shall be marked with its contents and the expiry date of the batteries (if not visible through the container), and any relevant safety precautions. Alternatively, the spare bulb may be stored in the body of the flashlight, either in the end cap or the reflector head area.

4.10.1.4 Each torch shall be fitted with provisions for attachment of a suitable lanyard.

4.10.2 Testing

4.10.2.1 Submerge the torch in water at 1 m depth for 24 h. There shall be no water ingress.

4.10.2.2 Drop the torch in a horizontal position from 2 m height on a hardwood board 25 mm thick, secured to a concrete floor. Repeat the test with the torch in a vertical and in a 45 ° inclined position. Turn the light on and test the Morse Code signalling function. The drops shall not adversely affect the performance of the torch.

4.10.2.3 With the torch at 25 °C ± 5 °C, operate the torch using fresh batteries for a period of 5 h. At the end of the 5-h period, the torch shall continue to meet the minimum intensity requirement.

4.10.2.4 Cycle the switch on and off 10 000 times at twenty cycles per minute. The switch shall not fail during this test.

4.10.2.5 Insulation resistance shall be not less than 10 MΩ at 500 V d.c.

4.11 Fire-extinguishing equipment, portable (fire extinguishers) (LB, RB – LSA Code 4.4.8.28, 5.1.2.2.14)

Fire extinguishers shall be of a type suitable for fighting oil fires, and shall comply with IMO Resolution A.951(23), *Improved guidelines for marine portable fire extinguishers*. The fire extinguisher shall be capable of extinguishing Class A and Class B fires, as identified in IMO Resolution A.951(23). The extinguisher shall be of a size in accordance with Chapter 4 of the IMO *International Code for Fire Safety Systems*, except that smaller extinguishers may be carried if their combined capacity equals or exceeds the requirements of that Code.

4.12 First-aid outfit (LR, LB, RB – LSA Code 4.1.5.1.8, 4.4.8.20, 5.1.2.2.9)

4.12.1 The first-aid outfit shall be packed in a waterproof case capable of being closed tightly after use, and the contents shall be approved by the Administration to the appropriate national requirements for the craft in which it is carried. The first-aid outfit shall include the following items, plus any other items required by the Administration:

- a) waterproof container;
- b) first-aid instructions;
- c) analgesic medication – 48 doses minimum;
- d) antiseptic preparations – suitable for at least 10 applications;
- e) burn preparations – suitable for at least 12 applications;
- f) adhesive plasters – 20 minimum in assorted sizes;
- g) sterile compression bandage – 10 minimum in assorted sizes;
- h) adhesive elastic bandages – 4 m minimum;
- i) sterile gauze compresses – 2 minimum;
- j) triangular bandages – 2 minimum.

4.12.2 If the first-aid outfit contains expiry-dated items, the date of expiry shall be marked on the outside of the waterproof container, or visible through the container.

4.13 Fishing kit (set of fishing tackle) (LR, LB – LSA Code 4.1.5.1.17, 4.4.8.26)

The fishing kit shall include at least the following:

- a) container,
- b) fishing instructions,
- c) hooks,
- d) lures,
- e) weights,
- f) fishing line,
- g) line holder (winder).

4.14 Flare, hand red (LR, LB – LSA Code 4.1.5.1.11, 4.4.8.14)

Hand red flares shall be approved to the requirements in section 3.2 of the IMO LSA Code, tested in accordance with the IMO *Recommendation on Testing of Life-Saving Appliances*, and marked appropriately.

4.15 Flare, rocket parachute (LR, LB – LSA Code 4.1.5.1.10, 4.4.8.13)

Rocket parachute flares shall be approved to the requirements in section 3.1 of the IMO LSA Code, tested in accordance with the IMO *Recommendation on Testing of Life-Saving Appliances*, and marked appropriately.