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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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Contents

Page

Foreword v

Introduction vi

1 Scope 1

2 Normative references 1

3 Terms, definitions and abbreviated terms 2
3.1 Terms and definitions 2
3.2 Abbreviated terms 2

4 Design and performance requirements 2
4.1 General 2
4.2 Bailer (LR, LB, RB – LSA Code 4.1.5.1.3, 4.4.8.3, 5.1.2.2.2) 2
4.3 Bilge pump (manual) (LB, LB/RB – LSA Code 4.4.8.25) 3
4.4 Boathook (LB, RB – LSA Code 4.4.8.2, 5.1.2.3.1, 5.1.2.4.5) 4
4.5 Bucket (LB, RB – LSA Code 4.4.8.3, 5.1.2.3.2) 4
4.6 Compass (LB, RB – LSA Code 4.4.8.5, 5.1.2.2.3) 4
4.7 Container, liferaft equipment (LR – LSA Code 4.1.5.4) 4
4.8 Dipper (LB – LSA Code 4.4.8.10) 5
4.9 Drinking vessel (cup) (LR, LB – LSA Code 4.1.5.1.20, 4.4.8.11) 5
4.10 Electric torch (LR, LB, RB – LSA Code 4.1.5.1.13, 4.4.8.16, 5.1.2.2.7) 5
4.11 Fire-extinguishing equipment, portable (fire extinguishers) (LB, RB – LSA Code 4.4.8.28, 5.1.2.2.14) 5
4.12 First-aid outfit (LR, LB, RB – LSA Code 4.1.5.1.8, 4.4.8.20, 5.1.2.2.9) 6
4.13 Fishing kit (set of fishing tackle) (LR, LB – LSA Code 4.1.5.1.17, 4.4.8.26) 6
4.14 Flare, hand red (LR, LB – LSA Code 4.1.5.1.11, 4.4.8.14) 6
4.15 Flare, rocket parachute (LR, LB – LSA Code 4.1.5.1.10, 4.4.8.13) 6
4.16 Handholds/lifelines (LB, RB – LSA Code 4.4.7.3, 5.1.1.1) 7
4.17 Hatchet [LB, rigid; RB (optional) – LSA Code 4.4.8.8, 5.1.2.3.3] 7
4.18 Instructions for immediate action (LR – LSA Code 4.1.5.1.23) 7
4.19 Jack-knife [LR (optional); LB, rigid; RB (optional) – LSA Code 4.1.5.1.2, 4.4.8.22, 5.1.2.3.3] 7
4.20 Knife, buoyant (non-folding safety type) (LR, RB – 4.1.5.1.2, 4.2.9.2, 5.1.2.4.1) 7
4.21 Ladder (rigid LR, LB – LSA Code 4.3.4.2, 4.4.3.3) 8
4.22 Lighting system (interior) (LR, LB, RB – LSA Code 4.1.3.4, 4.4.7.11) 8
4.23 Mirror, signalling, daylight (LR, LB – LSA Code 4.1.5.1.15, 4.4.8.17) 8
4.24 Oars or paddles (LB, RB – LSA Code 4.4.8.1, 5.1.2.2.1, IMO Recommendation on Testing of Life-Saving Appliances, section 1/7.1.8) 9
4.25 Oarlocks or equivalent devices for all lifeboats and rescue boats carrying oars (LB, RB – LSA Code 4.4.8.1, 5.1.2.2.1) 10
4.26 Paddle (liferaft) (LR – LSA Code 4.1.5.1.6) 10
4.27 Painter (LB, RB) 10
4.28 Pump (inflatable LR, inflated RB – LSA Code 4.2.9.1.2, 5.1.2.4.3) 10
4.29 Radar reflector (LR, LB, RB) 11
4.30 Rainwater collection equipment for lifeboats (LB – LSA Code 4.4.7.5) 11
4.31 Rations, food (LR, LB – LSA Code 4.1.5.1.18, 4.4.8.12) 11
4.32 Repair kit (LR, inflated and rigid/inflated RB – LSA Code 5.1.2.4.4) 13
4.33 Rescue quoit, buoyant (LR, LB, RB – LSA Code 4.1.5.1.1, 4.4.8.24, 5.1.2.2.10) 14
4.34 Scissors (LR – LSA Code 4.1.5.1.7) 14
4.35 Sea anchor (LR, LB, RB – LSA Code 4.1.5.1.5, 4.4.8.6, 5.1.2.2.4) 14
4.36 Searchlight (LB, RB – LSA Code 4.4.8.29, 5.1.2.2.11; IMO Recommendation on Testing of Life-Saving Appliances, section 1/13) 15
4.37 Seasickness kit (anti-seasickness medicine and seasickness bag) (LR, LB – LSA Code 4.1.5.1.21, 4.4.8.21) 15

4.38 Smoke signal, buoyant (LR, LB, RB – LSA Code 4.1.5.1.12, 4.4.8.15) 15
4.39 Sponge (LR, LB-old – LSA Code 4.1.5.1.4) 15
4.40 Survival instructions or manual (LR, LB – LSA Code 4.1.5.1.22, 4.4.8.4) 15
4.41 Table of lifesaving signals (LR, LB – LSA Code 4.1.5.1.16, 4.4.8.18) 15
4.42 Thermal protective aid (LR, LB, RB – LSA Code 4.1.5.1.24, 4.4.8.31, 5.1.2.2.13) 15
4.43 Tin (can)-opener (LR, LB – LSA Code 4.1.5.1.7, 4.2.9.2, 4.4.8.23) 16
4.44 Tool kit (LB – LSA Code 4.4.8.27) 16
4.45 Towline (RB – LSA Code 5.1.2.2.6) 16
4.46 Water (LR, LB – LSA Code 4.1.5.1.19, 4.4.8.9) 16
4.47 Whistle (or equivalent sound signal) (LR, LB, RB – LSA Code 4.1.5.1.9, 4.4.8.19, 5.1.2.2.8) 17

5 Format of instructional materials 17

Annex A (informative) **Maintenance and periodic inspection guidelines 18**

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*.

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”).

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.

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

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.

4.16 Handholds/lifelines (LB, RB – LSA Code 4.4.7.3, 5.1.1.1)

A lifeline shall be buoyant, and becketed around the outside of the lifeboat above the waterline and within reach of a person in the water. The lifelines shall be at least 8 mm in diameter, of a type certified or treated to be resistant to deterioration from sunlight. Handholds shall have a suitable surface, and be shaped and positioned so as to be easily usable by a person in the water. For fire-protected lifeboats, lifelines shall be of non-combustible material.

4.17 Hatchet [LB, rigid; RB (optional) – LSA Code 4.4.8.8, 5.1.2.3.3]

Hatchets shall be of a size and type suitable for cutting a fibre rope towline or painter in an emergency, and provided with a suitable lanyard, not less than 2 m in length, securely attached to the handle. The head of the hatchet shall have a cutting edge at least 80 mm long. The opposite end of the head shall be flat and usable as a hammer.

NOTE See also A.2.12.1 concerning lanyard length.

4.18 Instructions for immediate action (LR – LSA Code 4.1.5.1.23)

The instructions for immediate action shall be waterproof, and shall contain the information required by IMO Resolution A.657(16). The instruction card shall be located so that it can be easily seen upon entering the liferaft.

4.19 Jack-knife [LR (optional); LB, rigid; RB (optional) – LSA Code 4.1.5.1.2, 4.4.8.22, 5.1.2.3.3]

4.19.1 Performance and construction

4.19.1.1 The jack-knife shall have at least one blade with a shackle to which a lanyard is attached. The jack-knife may optionally be fitted with a tin-opener blade in addition to the cutting blade. The handle shall be approximately 95 mm long. All materials used in the construction of the knife shall be corrosion resistant in the marine environment, and the blades shall be heat treated as necessary to meet the requirement of 4.19.2.

4.19.1.2 The knife blade shall be not less than 2,4 mm thick at the tang, and shall have a triangular section and sheep's foot point. The blade shall have a cutting edge approximately 80 mm in length, and shall have a height of approximately 20 mm at the point. The blade shall be uniformly ground and finished on both sides, and sharpened to a uniform and keen edge, and shall have a common nail nick on one side.

4.19.1.3 The tin-opener blade, if fitted, shall be not less than 1,8 mm thick at the tang, and 42 mm to 49 mm long overall. It shall be mounted on the same end of the handle as the knife blade, and in such a manner that both rectangular and circular tins may be opened with a minimum of effort when the knife is held in the right hand and operated in a clockwise direction around the tin. It shall be formed to obtain a smooth cutting action, and designed so that the cutting action turns the ragged cut edge down into the tin. It shall have a common nail nick on one side, and the extreme distal edge shall be pointed.

4.19.2 Testing

After cutting various non-metallic objects, including at least 10 shavings from a strip of oak or other hardwood, and – if fitted with a tin-opener blade – after opening various rectangular and circular cans, the knife shall show no noticeable loss in cutting ability.

4.20 Knife, buoyant (non-folding safety type) (LR, RB – 4.1.5.1.2, 4.2.9.2, 5.1.2.4.1)

4.20.1 The knife shall be of the buoyant non-folding type, with the buoyancy provided by a handle of suitable buoyant material. A knife intended for use in an inflated or rigid/inflated rescue boat, or inflatable liferaft, shall have a rounded point, or otherwise be designed to minimize the possibility of damage to the inflatable chambers. The knife blade shall be of material suitable for the marine environment, heat treated to suitable hardness, and of sufficient strength and sharpness to enable it to cut a typical painter line.

4.20.2 The knife for a liferaft shall be secured to the liferaft by a lanyard, and stowed in a pocket near the point where the painter is attached to the liferaft. The lanyard shall be long enough to permit the knife to be used to cut the painter.

4.21 Ladder (rigid LR, LB – LSA Code 4.3.4.2, 4.4.3.3)

4.21.1 The boarding ladder for a lifeboat shall be capable of being used on either side of the boat to enable persons in the water to board the boat. A boarding ladder for a rigid liferaft is used at any entrance not fitted with a boarding ramp. The ladder shall be able to support a static load of 1,4 kN applied to the centre of the lowest step, without permanent deformation or damage to the ladder.

4.21.2 The ladder shall be a permanently installed rigid type, or a flexible ladder kept rigged ready for use. A flexible ladder may be kept rigged over the side, so that it is immediately ready for use. The lowest step of the ladder shall be at least 0,4 m below the light waterline of the lifeboat or liferaft. An acceptable configuration for the ladder is as follows:

a) The ladder should have flat steps with handhold openings in them.

b) Each step should have a bare wood surface, or a non-skid surface.

c) The steps of the ladder should be uniformly spaced approximately 0,3 m apart.

d) Each suspension member should be at least 15-mm-diameter manila rope, or another material provided it is at least 15 mm in diameter and has a breaking strength of at least 17,6 kN. Synthetic rope should not be used unless it is ultraviolet light resistant, or is pigmented in a dark colour.

NOTE A short embarkation ladder complying with ISO 5489 is suitable for this purpose.

4.22 Lighting system (interior) (LR, LB, RB – LSA Code 4.1.3.4, 4.4.7.11)

The interior lighting system of a partially or totally enclosed lifeboat, or a rigid or inflatable liferaft, shall be capable of continuous operation for a period of at least 12 h. It shall be provided with a means to light automatically when a liferaft canopy is erected, and the mean luminous intensity measured in all directions of the upper hemisphere of the lamp shall be at least 0,5 cd throughout the required operating period. The interior lighting system shall be approved to the requirements of the IMO LSA Code, and tested in accordance with the IMO *Recommendation on Testing of Life-Saving Appliances*.

4.23 Mirror, signalling, daylight (LR, LB – LSA Code 4.1.5.1.15, 4.4.8.17)

4.23.1 Construction and performance

4.23.1.1 The signalling mirror shall be of metal, plastic, or glass with a smooth, even, and unpitted reflecting surface.

4.23.1.1.1 Metal mirrors with a base of corrodible metal shall be plated over the base with copper, and upon that a plating of nickel with a final coating of chromium. Plating shall be done after all stamping, cutting, and grinding is completed.

4.23.1.1.2 The reflecting area of plastic or glass mirrors shall be by deposition of either aluminium or silver. The rear of the reflecting area and edges shall be adequately protected from corrosion by a durable protective coating. Glass, if used, shall be tempered.

4.23.1.2 A lanyard shall be securely attached to each mirror by means of a hole. The lanyard shall be approximately 1 m long and in the form of a 0,5-m loop. The dry breaking strength of the lanyard shall be at least 220 N. A wiping cloth to remove finger and hand stains, of twice the area of one mirror, shall be included with the mirror.

4.23.1.3 The mirror shall be flat, with a reflecting area of at least 110 cm^2, and of such thickness that it cannot be easily deformed in use. Any corners shall be rounded. At the centre of the mirror there shall be an effective aiming means of optical quality such that a person of normal vision can observe a distant small signalling target through it.

4.23.1.4 Each mirror, together with the lanyards and operating instructions as specified in 4.23.1.5, shall be packed in a single durable watertight container enclosed within an outer durable container. The outside of the outer container shall be plainly marked SIGNALLING MIRROR, and with the name of the manufacturer.

4.23.1.5 Appropriate instructions for the mirror type shall be printed on waterproof paper in text at least 3 mm high, or permanently affixed to the back of the mirror, and shall include diagrams illustrating the use of the mirror.

4.23.2 Testing

4.23.2.1 Reflection test

In a dark room, using a standard lamp and intensity-meter, the reflected intensity shall be measured at 2 m and the reflectance calculated. The reflectance shall be at least 80 %.

4.23.2.2 Flatness test

Measure the area and shape of a reflected beam of sunlight on a surface 2 m from the mirror. The shape and area of the reflected beam on the wall shall be the same as those of the mirror.

4.23.2.3 Oil-resistance test

Submerge the mirror in petrol for 24 h. No visible deformation, defect or other change shall be observed.

4.23.2.4 Dropping test

Drop the mirror from 2 m height on a hardwood board 25 mm thick, secured to a concrete floor, in such a position that the reflecting surface strikes the board. Repeat the test with the mirror positioned so as to strike the back and two different corners. The mirror shall not break.

4.23.2.5 Lanyard strength test

Measure the tensile strength of the lanyard at a displacement speed of 200 mm/min for 100 mm length. The test should be performed using five test pieces. The breaking strength should be at least 220 N.

4.24 Oars or paddles (LB, RB – LSA Code 4.4.8.1, 5.1.2.2.1, IMO Recommendation on Testing of Life-Saving Appliances, section 1/7.1.8)

4.24.1 General

Oars or paddles shall be buoyant, and of sufficient size and quantity for the craft in which they are carried to make headway in calm seas.

4.24.2 Motor lifeboats or rescue boats

The number and type of oars required for a motor lifeboat or rescue boat should be determined during testing and evaluation for approval of the boat. In the case of a rescue boat, the number and type provided should be as used in performing the manoeuvrability test (0,5 kn for at least 25 m) for approval of the boat. On small motor boats, the manufacturer may be able to meet the requirement with buoyant paddles, rather than conventional oars. If not specified on the manufacturer's equipment chart in the boat, the number and size of oars or paddles should be specified in the operation or maintenance manual provided by the manufacturer with the boat. If not specified by the manufacturer, the recommended minimum complement of oars for motor

lifeboats is four rowing oars and one steering oar of the lengths specified in Table A.1. The minimum complement of oars or paddles for a rescue boat which is not also a lifeboat is two rowing oars or paddles.

4.25 Oarlocks or equivalent devices for all lifeboats and rescue boats carrying oars (LB, RB – LSA Code 4.4.8.1, 5.1.2.2.1)

4.25.1 An oarlock or equivalent device, either permanently installed or attached to the boat by a lanyard or chain, shall be provided for each oar. Removable oarlocks shall be attached to the boat by lanyards or chains.

NOTE The IMO LSA Code describes these as “thole pins, crutches, or equivalent arrangements”.

4.25.2 This requirement may be met by suitable oar ports in the canopy of a partially or totally enclosed lifeboat. If paddles are provided instead of oars, oarlocks are not required.

4.26 Paddle (liferaft) (LR – LSA Code 4.1.5.1.6)

Each liferaft paddle shall be buoyant. Paddles shall be of the size and type used for the manoeuvrability test of the raft in which they are carried, and shall be of a design which is not likely to cause damage to an inflated liferaft. Although no test is specified, the paddle should be sufficiently robust for use in adverse sea, weather, and temperature conditions.

4.27 Painter (LB, RB)

4.27.1 General

If the painter is of synthetic material, it shall be of a type certified or treated to be resistant to deterioration from sunlight.

4.27.2 Lifeboat painters (LSA Code 4.4.8.7)

Painters shall be of a length equal to not less than twice the distance from the stowage position of the lifeboat to the waterline in the lightest seagoing condition, or 15 m, whichever is the greater. One painter shall be attached to a suitable painter release device capable of quickly releasing the painter when the painter is being used to tow the boat. This painter shall be placed at the forward end of the lifeboat. The other painter shall be firmly secured at or near the bow of the lifeboat ready for use. The painter shall have a strength of at least 34 kN, or five times the towing force of the fully loaded lifeboat measured at 5 kn in calm water, whichever is greater.

4.27.3 Rescue boat painters (LSA Code 5.1.2.2.5)

The painter shall be of a sufficient length to properly launch and recover the rescue boat. The painter shall be attached to the boat’s painter release device and shall be placed at the forward end of the rescue boat. The painter shall have a strength of at least 34 kN, or five times the towing force of the fully loaded lifeboat measured at 5 kn in calm water, whichever is greater.

4.28 Pump (inflatable LR, inflated RB – LSA Code 4.2.9.1.2, 5.1.2.4.3)

The pump or bellows shall be hand operable, arranged and provided with suitable fittings to be capable of topping up any part of the inflatable structure of the liferaft or rescue boat, and of a design compatible with the craft in which it is used. Any necessary fittings shall be secured to the pump or bellows.

4.29 Radar reflector (LR, LB, RB)

4.29.1 Radar reflector for lifeboats and rescue boats (LSA Code 4.4.8.30, 5.1.2.2.12)

The radar reflector shall be provided with a suitable mounting arrangement to install it on the boat in its proper orientation. The radar reflector shall comply with IMO Resolution A.384(X) and ISO 8729:1997.

4.29.2 Liferaft radar reflector (LSA Code 4.1.5.1.14)

The radar reflector shall be provided with a suitable mounting arrangement to install it in the liferaft in its proper orientation. The radar reflector shall be demonstrated and certified by its manufacturer to provide a positive response on the display of a typical marine radar installation during 50 % of antenna revolutions at a range of at least 4 nautical miles in calm sea conditions as installed.

NOTE In accordance with IMO MSC Circular 447, due to the "non-availability of an efficient radar reflector for liferafts", non-compliance with the requirement to carry one "should not constitute a reason for detaining or delaying a ship". On the basis of this Circular, some Administrations do not require radar reflectors to be carried in inflatable liferafts provided that the liferaft container is marked accordingly.

4.30 Rainwater collection equipment for lifeboats (LB – LSA Code 4.4.7.5)

If a means to collect rainwater is not permanently incorporated into the design of the canopy, a separate device to be mounted outside the lifeboat, with a drain tube leading to the provided rainwater storage compartment may be carried. In any case, the device should have a projected horizontal collection area of at least 1 m^2, and be designed to function unattended.

4.31 Rations, food (LR, LB – LSA Code 4.1.5.1.18, 4.4.8.12)

4.31.1 Contents and packaging

4.31.1.1 One ration is required for each person the liferaft or lifeboat is equipped to accommodate, and consists of at least 10 000 kJ (2 400 kcal) of approved emergency provisions. Food rations shall be approved to the IMO LSA Code requirements. Where food rations are packed in sizes other than 10 000 kJ, total kilojoule counts rather than package counts should be used to determine the quantity of emergency provisions required.

4.31.1.2 Food rations shall be palatable, edible throughout the recommended shelf life and packed in waterproof, airtight packaging in a manner which can be readily divided and easily opened.

NOTE A satisfactory single food ration unit would consist of the following components:

Ration unit:	500 g – 550 g
Energy:	minimum 10 000 kJ
Packing:	hermetically sealed (can) or vacuum-packed (flexible package)
Composition	
Moisture:	maximum 3 % – 7 %
Salt (NaCl):	maximum 0,2 %
Carbohydrates:	60 % – 70 % weight = 50 % – 60 % energy
Fat:	18 % – 23 % weight = 33 % – 43 % energy
Protein:	6 % – 10 % weight = 5 % – 8 % energy

4.31.1.3 Food rations shall be packed in tins (cans), or flexible packaging material with a negligible vapour transmission rate (less than 0,1 g/m^2 per 24 h at 23 °C and 85 % relative humidity, when tested in accordance with an appropriate national or international standard). Flexible packaging materials generally shall be a laminate construction including at least one ply of aluminium foil.

4.31.2 Testing

4.31.2.1 Contents

The food rations shall be analysed for the composition given in the Note to 4.31.1.2.

4.31.2.2 Low- and high-temperature storage

Two empty sample containers shall be prepared and sealed in the same manner as is used for regular provision containers. If the containers are flexible packages, they shall be sealed in such a way as to contain as much air as possible. The two empty samples and two filled samples shall be placed in a chamber at −30 °C for 24 h, followed by 24 h at 65 °C. At the end of this period each container shall be examined. There shall be no evident deterioration of the container, any protective coating on the container, the sealing of the container, or the required markings on the container.

4.31.2.3 Leakage

The two empty samples from the low- and high-temperature storage test shall be subjected to a leakage test as follows.

a) Tins (cans) shall be submerged in boiling water for 10 min. At the end of that period, the heat shall be removed and the containers examined under water. There shall be no bubbles indicating leakage of the container.

b) Flexible packages shall be squeezed by hand. The package shall not burst and there shall be no leakage evident.

4.31.2.4 Water immersion

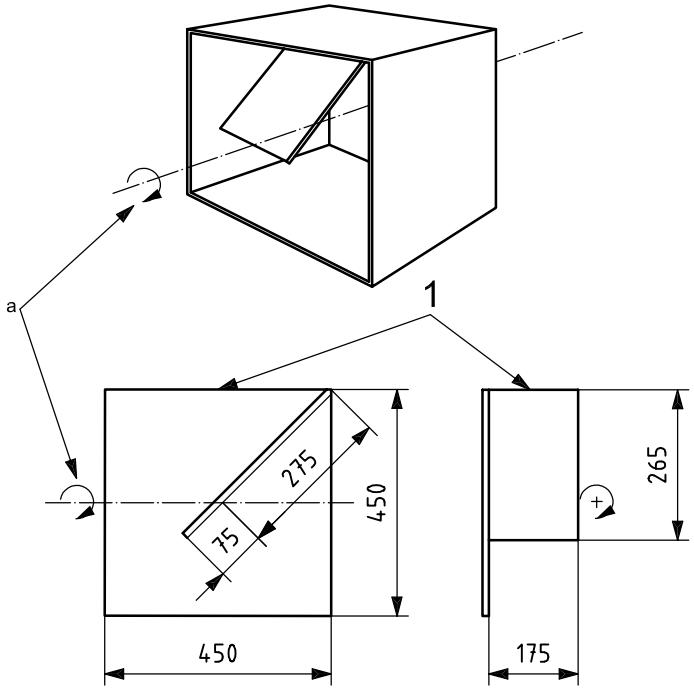
The two filled samples from the high- and low-temperature storage test shall be immersed in salt water having the approximate salinity of sea water for 24 h. At the end of this period, the container shall be examined. There shall be no evident deterioration of the container, the required markings on the container, or the sealing of the container.

4.31.2.5 Durability (tumble test)

When completely dry, the two samples from the water immersion test shall be placed in tumble test apparatus as shown in Figure 1. The tumble test apparatus is a cubic box, approximately 450 mm on each side. A fixed barrier extends out from one side of the box in such a way that it turns rolling containers, but enough clearance is left between the barrier and the ends of the box for the pair of containers to slide through. (One end is shown removed in Figure 1 to show the fixed barrier inside.) One end of the apparatus shall be hinged so that it can be opened and closed with ease, and shall be capable of being securely closed. The entire apparatus shall be arranged to rotate clockwise about the axis of rotation as shown in Figure 1 at a speed of 10–20 rotations per minute.

The tumble test apparatus with the two samples inside shall be rotated at approximately 10 rotations per minute for a total of 100 rotations. At the end of this period, each container shall be examined. If the container is not a tin, then each container shall be opened and the contents examined. There shall be no evident deterioration of the sealing of the container or its contents.

Dimensions in millimetres



Key

1 barrier side of box (shown separately; front and side views)

a Axis of rotation.

Figure 1 — Tumble test apparatus

4.31.2.6 Corrosion

If the container is a tin, the two samples from the durability test shall be subjected to salt spray (5 % sodium chloride solution) at a temperature of $+35 \pm 3$ °C for at least 100 h. At the same time, two reference tins which have also been subjected to the low- and high-temperature storage, immersion and durability tests shall also be subjected to the salt-spray test procedure. The seams of the tins (if any) shall face the salt-spray mist during the test. At the end of the test period, each sample container shall be examined, then the container shall be opened and the contents examined. There shall be no evident deterioration of the sealing of the sample container, or the emergency provisions inside. The sample containers shall not have more corrosion than the reference containers.

4.31.2.7 Drop

Two full containers shall be dropped onto a concrete surface from a height of 3 m. One of the containers shall strike the surface on its end, and the other shall strike the surface on its side. There shall be no evident deterioration of the sealing of the containers as a result of this test.

NOTE Emergency provisions are carried in lifeboats and liferafts which may be dropped into the water from great heights. This test is intended to make sure that the container will survive such a drop. If actual experience with lifeboats and liferafts is unsatisfactory, modifications and additional tests may be required.

4.32 Repair kit (LR, inflated and rigid/inflated RB – LSA Code 5.1.2.4.4)

The repair kit shall contain at least

a) six or more sealing clamps or serrated conical plugs, or a combination of the two;

b) a repair patch and cement kit as specified in 4.32.1, or a self-adhesive repair patch kit as specified in 4.32.2.

4.32.1 A repair patch and cement kit shall include

a) five 50 mm diameter tube patches,

b) a suitable fabric roughing tool (if needed),

c) cement compatible with the tube fabric. The cement shall be marked with an expiry date on its container that is not more than 24 months after the date of manufacture of the cement, and with instructions for its use.

4.32.2 A self-adhesive repair patch kit shall include

a) five 50 mm tube patches,

b) two 80 mm × 100 mm tube patches,

c) one 100 mm × 150 mm tube patch.

4.32.2.1 The thickness of the patches shall be 0,75 mm minimum, and the tensile strength of the patch material shall be 900 N per 50 mm. Each patch shall be provided with an easy-peel backing which exposes the adhesive surface when removed.

4.32.2.2 The patches shall be suitable for application in a temperature range from −25 °C to +65 °C, on dry surfaces, and on wet surfaces that have been wiped by a bare hand.

4.32.2.3 After being adhered to liferaft fabrics, the patches shall have a minimum mean peel strength of 0,5 N/mm.

4.32.2.4 The patch kit shall be marked with an expiry date, and shall be provided with instructions for its use.

4.32.3 The specific type of patch kit provided should be specified by the liferaft manufacturer based on its suitability for use with that manufacturer's products.

4.33 Rescue quoit, buoyant (LR, LB, RB – LSA Code 4.1.5.1.1, 4.4.8.24, 5.1.2.2.10)

Each buoyant rescue quoit shall be attached to not less than 30 m of buoyant line. The mass of the quoit shall be at least 160 g, and the inside diameter shall be at least 105 mm. The line shall be 3 mm – 6 mm in diameter with a breaking strength of at least 900 N, and shall be stowed so that it will pay out freely when thrown.

4.34 Scissors (LR – LSA Code 4.1.5.1.7)

Each liferaft shall be provided with a pair of scissors of corrosion-resistant construction. For an inflatable liferaft, the scissors shall be of the safety type.

NOTE Scissors provided as part of a first-aid outfit or repair kit comply with this requirement.

4.35 Sea anchor (LR, LB, RB – LSA Code 4.1.5.1.5, 4.4.8.6, 5.1.2.2.4)

Sea anchors, whether installed or spare, shall comply with ISO 17339:2002.

4.36 Searchlight (LB, RB – LSA Code 4.4.8.29, 5.1.2.2.11; IMO Recommendation on Testing of Life-Saving Appliances, section 1/13)

4.36.1 When tested in accordance with the IMO *Recommendation on Testing of Life-Saving Appliances*, a lifeboat or rescue boat searchlight shall have a horizontal and vertical sector of at least 6 °, and a measured luminous intensity of 2 500 cd, while working continuously for at least 3 h. If the power source for the searchlight is an engine starting battery, there shall be sufficient battery capacity to start the engine at the end of the specified operating period(s).

4.36.2 The searchlight shall comply with the performance, safety, and marking requirements specified in section 1/13 of the IMO *Recommendation on Testing of Life-Saving Appliances*. The searchlight shall be provided with at least two spare illuminants.

4.36.3 The searchlight shall be capable of being permanently mounted on the boat or canopy, or with a stanchion or collapsible type portable mounting.

4.36.4 The mounting shall be located to enable operation of the searchlight by the helmsman.

4.37 Seasickness kit (anti-seasickness medicine and seasickness bag) (LR, LB – LSA Code 4.1.5.1.21, 4.4.8.21)

Each seasickness kit shall include one waterproof seasickness bag, and anti-seasickness medication sufficient for 48 h, for each person the survival craft is approved to accommodate. The seasickness kit shall be wrapped in waterproof packaging, and shall include instructions for using the medication. Anti-seasickness medication may be any suitable medicine deemed safe and effective by the relevant medical authorities.

4.38 Smoke signal, buoyant (LR, LB, RB – LSA Code 4.1.5.1.12, 4.4.8.15)

Buoyant smoke signals shall be approved to the IMO LSA Code requirements, and marked appropriately.

4.39 Sponge (LR, LB-old – LSA Code 4.1.5.1.4)

Each sponge should be capable of holding at least 0,5 l of water.

4.40 Survival instructions or manual (LR, LB – LSA Code 4.1.5.1.22, 4.4.8.4)

The survival instructions or manual shall be in English, but may include additional languages as appropriate. The manual should be printed on waterproof paper or plastic. The contents of the manual shall comply with IMO Resolution A.657(16). Taking into account the capabilities of the interior light (see 4.22), the type size should be at least 10 point.

NOTE The survival instructions or manual are generally provided by the manufacturer of the lifeboat or liferaft.

4.41 Table of lifesaving signals (LR, LB – LSA Code 4.1.5.1.16, 4.4.8.18)

The table of lifesaving signals shall include those described in the *International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual, Vol. III (Mobile Facilities)* and illustrated in the *International Code of Signals*. The table shall be printed on a waterproof card or stored in a waterproof container.

4.42 Thermal protective aid (LR, LB, RB – LSA Code 4.1.5.1.24, 4.4.8.31, 5.1.2.2.13)

Each thermal protective aid shall comply with the IMO LSA Code requirements. In the case of thermal protective aids with sleeves, it shall comply with ISO 24432.

4.43 Tin (can)-opener (LR, LB – LSA Code 4.1.5.1.7, 4.2.9.2, 4.4.8.23)

4.43.1 Each tin-opener shall be suitable for opening any tins carried in the lifeboat or liferaft, and standard food tins which might be carried to the survival craft in an evacuation. The tin-opener shall be of corrosion-resistant material.

4.43.2 A suitable tin-opener blade provided in an approved jack-knife may substitute for a tin-opener specified in this clause.

4.43.3 A tin-opener for use in an inflatable liferaft shall be of the safety type.

4.44 Tool kit (LB – LSA Code 4.4.8.27)

4.44.1 The tool kit shall contain sufficient tools for minor adjustments to the engine and its accessories. As a minimum, the tool kit shall include the following, or equivalent:

a) a corrosion-resistant container large enough to hold all the items in the kit;

b) one 340 g ball peen hammer;

c) one screwdriver with a 150 mm flat blade;

d) one pair of 200 mm slip-joint pliers;

e) one 200 mm adjustable wrench.

4.44.2 In addition to the minimum tools specified above, the tool kit shall include any additional or specialized tools recommended by the engine manufacturer.

4.45 Towline (RB – LSA Code 5.1.2.2.6)

The line for towing of liferafts shall be buoyant, not less than 50 m in length, and shall have a breaking strength of not less than 15 kN.

4.46 Water (LR, LB – LSA Code 4.1.5.1.19, 4.4.8.9)

4.46.1 Fresh water for emergency drinking shall be of an approved type, satisfying suitable international requirements for chemical and microbiological content. Emergency drinking water shall be stored in sealed watertight receptacles that are of corrosion-resistant material or are treated to be corrosion resistant. Flexible packaging materials generally shall be a laminate construction including at least one ply of aluminium foil, with a negligible vapour transmission rate (less than 0,1 g/m^2 per 24 h at 23 °C and 85 % relative humidity, when tested in accordance with an appropriate national or international standard). The water packaging shall be tested in accordance with 4.31.2.

4.46.2 Water within a receptacle may be divided into smaller separately packaged portions which need not meet the vapour transmission requirement in 4.46.1.

4.46.3 Receptacles or portions shall be easy to open. Except for receptacles or portions with a capacity of less than 125 ml, each receptacle or portion shall have a method of spill-proof reclosure.

4.46.4 Each receptacle shall be clearly marked, as a minimum, with the packing date, the lot number, the quantity of water contained in it, and instructions for use.

4.46.5 Up to one third of the required water may be replaced by chemical or solar desalting apparatus capable of producing an equal amount of fresh water in 2 days, or up to two-thirds may be replaced by a manually operated reverse osmosis desalinator complying with IMO MSC/Circular 1048.

4.47 Whistle (or equivalent sound signal) (LR, LB, RB – LSA Code 4.1.5.1.9, 4.4.8.19, 5.1.2.2.8)

A whistle shall be a ball-type or multi-tone whistle of non-metallic construction, attached to a lanyard at least 0,9 m long. An equivalent sound signal, such as a horn, may be provided instead.

5 Format of instructional materials

Where this International Standard requires provision of written instructions, such instructions should be provided in English, and in the appropriate working language or languages of the ship, taking into account the relevant requirements of the ISM Code. Suitable pictograms should be used wherever possible to supplement or replace written instructions.

Annex A
(informative)

Maintenance and periodic inspection guidelines

A.1 General

These guidelines address procedures for maintenance and inspection of survival equipment in survival craft and rescue boats during the periodic inspections required by SOLAS regulations III/20.6, 20.7, and 20.8 and the associated recommendation on liferaft servicing (IMO Resolution A.761(18), as amended), and during periodic overhauls of rigid liferafts, lifeboats, and rescue boats. Those items marked (LB – old) in the subclause title will generally be found only in existing open lifeboats not complying with the LSA Code requirements. For lifeboats and rescue boats, except where specified otherwise, survival equipment should be secured within the lifeboat by lashings, storage in lockers or compartments, storage in brackets or similar mounting arrangements or other suitable means. For rigid liferafts, where appropriate the equipment should be stowed in a container complying with 4.7.

A.2 Equipment-specific procedures

A.2.1 Bilge pump

During periodic shipboard inspections, the bilge pump should be visually inspected to confirm parts are in good condition, especially rubber parts and mounting arrangements. The pump should be operated to show that it pumps water efficiently.

A.2.2 Boathooks

In service, boathooks should be kept ready for use for fending-off purposes at all times, except for boathooks in free-fall lifeboats, which should be secured for launching.

A.2.3 Compass

During periodic inspections, the compass should be inspected to ensure that the compass bowl is filled with fluid and the card free to rotate. Markings should be legible. If the boat is operated in the course of an inspection, the compass reading should be compared with a few known bearings. If large errors are evident, the compensating mechanism should be used to reduce the errors, or a compass deviation card should be prepared and mounted on or near the compass.

A.2.4 Ditty bag (LB – old)

Where provided in an open lifeboat, the ditty bag should be of canvas or equivalent material, and should contain a sailmaker's palm, needles for repairing a sail, sail twine, marline, and a marlinespike.

A.2.5 Drinking vessel (cup) (LB – old)

In open lifeboats, a lanyard approximately 1 m long or longer shall be attached to the cup.

A.2.6 Fire-extinguishing equipment, portable (fire extinguishers)

Fire extinguishers should be inspected periodically in accordance with the inspection instructions on the extinguisher label.

A.2.7 First-aid outfit

A.2.7.1 During periodic shipboard inspections, first-aid outfits not packed in inflatable liferafts should be examined to ensure that they contain all of the items listed in the provided instructions. Each unit carton should be in an intact waterproof package. If it is not, it should be replaced with an equivalent waterproof unit from a supplier of approved first-aid outfits.

NOTE Standard cellophane-wrapped unit cartons are not waterproof.

A.2.7.2 Any dated medications in the outfit should be replaced during periodic stripping and cleaning of the lifeboat, rescue boat, or rigid liferaft if their expiry date has passed.

NOTE First-aid outfits packed in inflatable liferafts are inspected during required servicing of the liferaft by an approved service station.

A.2.8 Fishing kit

A sealed fishing kit should not be opened for inspection. If the sealed package is intact, and the package markings legible, the fishing kit should be considered to be acceptable for continued use. If the package is not sealed, the contents should be checked against the packing list.

A.2.9 Flares (hand red flares or rocket parachute flares)

Approved flares are marked with an expiry date. All flares which are past their expiry date, or which have less than six months remaining until their expiry date, should be replaced during the annual stripping and cleaning of the lifeboat or rigid liferaft, or during servicing of an inflatable liferaft.

A.2.10 Electric torch

Torch batteries should be replaced annually, unless they are marked with an expiry date. Batteries with an expiry date should be replaced if their expiry date has passed. Spare torch batteries in a sealed package should not be opened as long as the expiry date (if any) is visible.

A.2.11 Handholds/lifelines

Synthetic rope used for replacement of lifelines should be of a type certified or treated to be resistant to deterioration from ultraviolet light. Replacement lifelines or handholds should be of a material similar to, and secured in a similar manner to those originally installed.

A.2.12 Hatchet

A.2.12.1 Hatchets should be stowed in brackets at the ends of the lifeboat near the release hooks. On boats with only one release hook, the second hatchet should be stowed near the towing point. Each hatchet should be secured to the lifeboat by a 4 mm minimum diameter lanyard long enough to allow the hatchet to reach the falls and painter.

A.2.12.2 Hatchets should be reasonably free of rust. The edge should be sufficiently sharp to cut wood cleanly from a board when the hatchet strikes the board in a direction nearly parallel to the grain.

A.2.13 Jack-knife

Jack-knives should be free of rust. The edge of the blade should be sufficiently sharp to shave wood cleanly from a hardwood board.

A.2.14 Knife, buoyant (non-folding safety type)

Buoyant knives should be free of rust, and the edge of the blade should be sharp to the touch. The knife should be secured in its storage pocket, with lanyard intact.

A.2.15 Ladder, boarding

Each survival craft or rescue boat boarding ladder should be carefully inspected for condition, especially ladders that are assembled with tarred marline which can loosen as it dries out. Steps should be securely attached to side ropes, and there should be no broken or cracked steps.

A.2.16 Lantern (LB – old)

A lantern carried in an open lifeboat should be kept ready for use at all times, and should contain sufficient oil to burn for at least 9 h. Each lifeboat equipped with an oil lantern should also carry the following:

a) at least 100 wooden friction matches with striking surface, in a watertight container;

b) at least 1,0 l of illuminating oil in a durable container, in addition to the oil provided in the lantern.

A.2.17 Lifeboat protecting cover (LB – old)

A.2.17.1 During periodic inspections, the protecting cover should be carefully inspected to ensure that it is free of unrepaired rips and holes. All framework for erecting the cover should be complete and suitable for its intended purpose. The rainwater collection device in a protecting cover should be in good condition and have a length of tubing sufficient to reach the water storage tanks.

A.2.17.2 When protecting covers become so badly deteriorated that they must be replaced, a replacement may be fabricated using the original cover as a pattern. These covers can often be made by sailmakers or awning fabricators with the industrial sewing equipment needed for heavy fabrics. The fabric used should be a coated waterproof fabric comparable in weight to the original cover fabric.

NOTE The cover described in this subclause is used to provide shelter to occupants of a lifeboat. It does not apply to a cover used to protect an open lifeboat while it is stowed on the ship.

A.2.18 Mast and sail (LB – old)

The mast and sail unit of an open lifeboat should be as specified by the lifeboat manufacturer, or substantially equivalent. As a minimum, it should consist of the following:

a) one standing lug sail of good quality canvas or equivalent material, international orange in colour;

b) a yard suitable for mounting the sail;

c) suitable stays of either galvanized or stainless-steel wire rope at least 4,75 mm in diameter;

d) a suitable cover or storage container.

A.2.19 Mirror, daylight signalling

The signalling mirror package should not be opened for inspection. If the sealed package is intact, if there is no indication that the mirror is broken, and if the package markings are legible, the mirror should be considered acceptable for continued use.

A.2.20 Oars (LB – old)

A.2.20.1 Hand-propelled lifeboats

If not specified by the boat manufacturer, the recommended minimum complement of oars for hand-propelled lifeboats is four rowing oars and one steering oar of the lengths specified in Table A.1.

Table A.1 — Length of oars for motor lifeboats and hand-propelled lifeboats

Length of lifeboat m (ft)		Length of oars m (ft)	
Over (>)	Not over (⩽)	Rowing	Steering
—	4,5 (15)	2,4 (8)	2,7 (9)
4,5 (15)	5,8 (19)	3,0 (10)	3,3 (11)
5,8 (19)	6,4 (21)	3,3 (11)	3,6 (12)
6,4 (21)	7,0 (23)	3,6 (12)	4,0 (13)
7,0 (23)	7,6 (25)	4,0 (13)	4,3 (14)
7,6 (25)	8,2 (27)	4,3 (14)	4,5 (15)
8,2 (27)	—	4,5 (15)	4,8 (16)

A.2.20.2 Oar-propelled lifeboats

If not specified by the manufacturer, the recommended minimum complement and length of oars for oar-propelled lifeboats is as specified in Table A.2.

Table A.2 — Number and length of oars for oar-propelled lifeboats

Length of lifeboat m (ft)		Number of oars		Length of oars m (ft)	
Over (>)	Not over (⩽)	Rowing	Steering	Rowing	Steering
—	4,5 (15)	4	1	2,4 (8)	2,7 (9)
4,5 (15)	5,8 (19)	6	1	3,0 (10)	3,3 (11)
5,8 (19)	6,4 (21)	6	1	3,3 (11)	3,6 (12)
6,4 (21)	7,0 (23)	6	1	3,6 (12)	4,0 (13)
7,0 (23)	7,6 (25)	8	1	4,0 (13)	4,3 (14)
7,6 (25)	8,2 (27)	8	1	4,3 (14)	4,5 (15)
8,2 (27)	—	8	1	4,5 (15)	4,8 (16)

A.2.21 Position-indicating lights

Any position-indicating light added to or replaced on a rigid liferaft, lifeboat or rescue boat should be of a type approved to the LSA Code requirements, and tested in accordance with the IMO *Recommendation on Testing of Life-Saving Appliances*. The position-indicating light or its battery, as appropriate, should be replaced when its expiry date has passed.

A.2.22 Rations, food

Canned emergency provisions can be checked only by visual examination of the condition of the container. Emergency provisions in vacuum-packed flexible pouches should have packaging material tightly compressed against the contents. Loose contents indicate a loss of the vacuum seal, and such pouches should be replaced. Approved emergency provisions are marked with a packing date, and should also have an expiry date. All packages past their expiry date should be replaced. Packages without an expiry date should be replaced if they are more than five years old.

A.2.23 Repair kit

The cement or self-adhesive patches in the repair kit should be replaced if the expiry date has passed.

A.2.24 Sea anchor

Existing sea anchors not complying with 4.35 need not be replaced as long as they remain in good and serviceable condition. Sewn components of the sea anchor should be pulled firmly by hand to check for deterioration of seams and fabric. The sea anchor should be replaced if there is any indication of deterioration.

A.2.25 Search and rescue transponder (SART) (free-fall LB only – SOLAS III/6.2.2)

Where a ship is carrying at least two radar transponders, and is equipped with free-fall lifeboats, one of the transponders should be stowed in the free-fall lifeboat. The lifeboat should have a suitable mounting arrangement for the SART.

A.2.26 Seasickness kit (anti-seasickness medicine and seasickness bag)

If their expiry date has passed, dated medications in the kit should be replaced.

A.2.27 Smoke signal, buoyant

Approved buoyant smoke signals are marked with an expiry date. All buoyant smoke signals which are past their expiry date, or which have less than six months remaining until their expiry date, should be replaced.

A.2.28 Water

A.2.28.1 Tinned (canned) water should be checked for vacuum by the “slap test”. Any clicking sound is evidence of an acceptable vacuum. Doubtful tins can be checked by opening some of them. If a hiss is heard consistently as these tins are opened, the rest of the doubtful tins may be accepted, and only the open tins replaced.

A.2.28.2 Water in flexible pouches should be checked by squeezing the pouch. Any leaking water or air is cause for rejection. All approved water containers are marked with a packing date, and some may have an expiry date. All containers past their expiry date should be replaced. Containers without an expiry date should be replaced if they are more than five years old.

A.2.28.3 Water stored in bulk in open lifeboats should be replaced at every inspection. The water tanks or breakers should be thoroughly cleaned before being filled with fresh water.

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