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L-06

LIFEBOATS

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Foreword

China Classification Society (hereinafter referred to as CCS) Product Inspection and Testing Guideline (hereinafter referred to as this Guideline) contains the technical requirements, inspection and testing criteria related to classification and statutory survey of marine products to be applied for CCS approval/inspection.

This Guideline frees the users to adopt other test methods and requirements which are equivalent to or are stricter than this Guideline.

This Guideline is published and updated by CCS, and is released at http://www.ccs.org.cn. Your comments or suggestions are welcomed and may be sent to our email addressed service@ccs.org.cn.

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Main changes:

1. Add the newly effective amendment MSC. 554(108) to the Normative references MSC.81(70),Recommendation on Testing of Life-saving Appliances.
2. Add MSC.554(108) to Table 7.2(1)(6).

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LIFEBOATS

1 Application

1.1 This Guideline applies to the lifeboats and lifeboats combined as rescue boats provided onboard ships engaged on international voyages.

2 Normative references

2.1 The approval and inspection of lifeboats are based on the following documents:

(1) Chapter III of International Convention for the Safety of Life at Sea, 1974, and MSC.216(82), MSC.317(89), MSC.482(103);

(2) MSC.48(66), Chapters I and IV, International Life-saving Appliances Code (LSA Code), and MSC.207(81) , MSC.218(82), MSC.272(85), MSC.320(89), MSC.459(101), MSC.485(103), MSC.535(107), MSC.554(108);

(3) MSC.81(70), Recommendation on Testing of Life-saving Appliances, and MSC.226(82), MSC.274(85),MSC.321(89),MSC.323(89), MSC.488(103), MSC.544(107), MSC.568(109);

(4) CCS Rules for Materials and Welding and its amendments;

(5) MSC.481(102) Revised Recommendation on the Use and Fitting of Retro-Reflective Material on Life-saving Appliances;

(6) IMO Resolution A.760(18), Symbols Related to Life-saving Appliances and Arrangements, and its amendments;

(7) IMO Resolution A.657(16) Instructions for Action in Survival Craft, and its amendments;

(8) MSC/Circ.1006, Guidelines on Fire Test Procedures for Acceptance of Fire-retardant Materials for the Construction of Lifeboats, and its amendments;

(9) IACS UI SC233 LSA Code – lifeboat exterior color.

3 Terms and definitions

3.1 For the purpose of this Guideline:

(1) Length means a horizontal distance measured between the fore and aft outer hull plates of a rescue boat;

(2) Breadth of boat means a horizontal distance measured between the widest outer hull plates of a rescue boat;

(3) Depth of boat means a vertical distance measured at the mid-boat from the lower edge of keel to the upper edge of the gunwale angle.;

(4) Freeboard of an open boat means a distance measured at the mid-boat from the full-load waterline to the upper edge of the side opening;

(5) Freeboard of an enclosed boat means a distance measured at the mid-boat from the full-load waterline to the canopy or to the upper edge of the lowest opening of enclosed cover;

(6) Gross weight means a total weight of a fully equipped lifeboat (including engines, fully-loaded fuel, spare parts and attachments, etc.) and the rated number of persons.

4 Drawings and documents

4.1 The following documents are to be submitted to CCS for approval:

(1) Internal and external general arrangement;

(2) Hydrostatic curves;

(3) Cross-sectional drawing;

(4) Lines and offsets ;

(5) Stability calculations (light loading, full loading, open to sea and capsizing (for self-righting boats) conditions to be calculated respectively);

(6) Arrangement of reserve buoyancy;

(7) Calculation of reserve buoyancy volume;

(8) Hull construction and strength calculation;

(9) Strength calculations of boat-hooks fixed base;

(10) Calculation of ventilation system;

(11) Arrangement and installation of engine, shafting and propeller;

(12) Arrangement and installation of steering system;

(13) Arrangement and installation of releasing system;

(14) Arrangement and installation of painter release mechanism;

(15) Arrangement and installation of spraying system (for fire-protected lifeboats);

(16) Arrangement and installation of air-supply system for engines and persons (for lifeboats with a self-contained air support system);

(17) Arrangement of ventilation system;

(18) Arrangement and installation of seats and safety belts (safety harness - for free-fall lifeboats);

(19) Arrangement and installation of vessels and tanks;

(20) Arrangement and installation of doors, windows and openings (for partially enclosed and totally enclosed lifeboats);

(21) Arrangement and installation of draining valves (not applicable for free-fall lifeboats);

(22) Arrangement and installation of electrical system;

(23) Type test program;

(24) Name plate.

4.2 The following documents are to be submitted to CCS for information:

(1) list of raw materials and accessories (names, models, performance parameters and suppliers);

(2) list of attachments;

(3) Instruction manual;

(4) Maintenance and repair manual (including the release system);

(5) Molding technical documents.

5 Technical requirements

5.1 The design and manufacturing of the products are to comply with the applicable requirements in Chapter III of International Convention for the Safety of Life at Sea, 1974, and its amendments, MSC.48(66), Chapters I and IV, International Life-saving Appliances Code (LSA Code) and its amendments, MSC.81(70), Recommendation on Testing of Life-saving Appliances, as amended, and its amendments.

5.2 The hull and rigid top cover (internal and external) must be made of alkali-free glass fiber materials; the hull and rigid top cover (internal and external) and engine hood are to be made of flame retardant materials.

5.3 The colour of lifeboat outside surface should be International or vivid reddish orange or comparably highly visible colour, which is merely strong colour. Pure achromatic colour, for instance, White and variety of grey shouldn’t be considered as comparably highly visible colour to apply to outside surface of lifeboat.

6 Materials and components

6.1 Materials and components are to comply with relevant requirements of CCS Rules.

7 Type test

7.1 Selection of samples

In type approval, each model of the lifeboat as specified in this Guideline is to be selected for type test.

7.2 Type test items and requirements

The test items for lifeboats include visual examination, general tests and additional tests, to be

given respectively Tables 7.2(1), 7.2(2) and 7.2(3).

Lifeboat type test items – visual examination Table 7.2(1)

No.	Test items		Test methods and requirements
1	Verification of basic parameters		Parameter tolerance: gross weight ±5%; boat length ±0.5%; breadth ±1.0%; depth ±1.0%
2	Vertical distance of the boat		Paragraph 4.4.1.8 of LSA Code
3	Identification	Marks for start engine, secure hatches, etc.	IMO A.760(18)
4	Persons and seats	Seat size (for davit boat)	Paragraph 4.4.2.2.2 of LSA Code
5	Power units	Engine, battery casing	Paragraphs 4.4.6.2, 4.4.6.9 of LSA Code
		Exhaust pipeline protection	Paragraph 4.4.6.6 of LSA Code
		Propulsion system safety	Paragraph 4.4.6.7 of LSA Code
		Operation instruction	Paragraph 4.4.6.12 of LSA Code
6	Release mechanism	Reset indication	Paragraph 4.4.7.6.3 of MSC.218(82); Paragraph 4.4.7.6.8 of MSC.320(89) and MSC.554(108)
		Maintenance equipment	Paragraph 4.4.7.6.7 of MSC.218(82); Paragraph 4.4.7.6.13 of MSC.320(89)
		Operational handle	Paragraph 4.4.7.6.6 of MSC.218(82); Paragraph 4.4.7.6.12 of MSC.320(89)
		Operation instruction and warning indication	Paragraph 4.4.7.6.5 of MSC.218(82); Paragraph 4.4.7.6.11 of MSC.320(89)
		Colour (for free-fall boat)	Paragraph 4.7.6.1 of LSA Code
7	View for boat operator		Paragraph 4.4.7.12 of LSA Code
8	Colour of lifeboat	Partially enclosed boat	Paragraphs 4.5.2.4, 4.5.3 of LSA Code
		Totally enclosed boat	Paragraph 4.6.2.8 of LSA Code
9	Retro-reflective material		Paragraph 1.2.7 of LSA Code; MSC.481(102)
10	Fittings and attachments	Boarding ladder	Paragraph 4.4.3.3 of LSA Code
		Draining valve①	Paragraph 4.4.7.1 of LSA Code
		Rudder	Paragraph 4.4.7.2 of LSA Code
		Lifeline	Paragraph 4.4.7.3 of LSA Code
		Handholds on hull floor (for not a self-righting boat)	Paragraph 4.4.7.4 of LSA Code
		Hatches (for totally enclosed boat)	Paragraphs 4.6.2.3, 4.6.2.4 of LSA Code
		Windows (for totally enclosed boat)	Paragraph4.6.2.7 of LSA Code
		Handrails (for totally enclosed boat)	Paragraph 4.6.2.9 of LSA Code
		Fitting of antenna (where applicable)	Paragraph 4.4.7.8 of LSA Code
		Position-indicating light	Paragraph 4.4.7.10 of LSA Code and MSC.218(82)
		Illumination light	Paragraph 4.4.7.11 of LSA Code and MSC.218(82)

Continued Table 7.2(1)

No.	Test items		Test methods and requirements
		Attachments	Paragraph 4.4.8 of LSA Code; Paragraph 5.1.2.2.4/6 (combined as rescue boat) of LSA Code
11	Ventilation system	Ventilation means	Paragraph 4.6.6 of LSA Code
		Openings of the ventilation system and their means of closing	Paragraph 4.6.7 of LSA Code

Note: ① Below the lifeboat floor, the watertight structure shall be provided with a drain valve near the lowest point of the boat body. If the floor is provided with only one compartment, or is provided with a plurality of compartments and communicated with each other, then a drain valve should be set at the lowest point, if the floor under a number of cabins and is not connected with each other, then set a drain valve at the bottom of each compartment. In this case, one cannot achieve self-function, so it should be equipped with a hand pump. Lifeboat floor following the watertight structure, if there is no lifeboat cabin under the floor, the floor under the cabin or lifeboat, but the water tightness seal, the lowest point set on the floor drain valve, the drainage valve also has self-bailing device, it can no longer be equipped with hand pump, but it should comply with the following requirements arranged at the lowest point; with the prevention of seawater intrusion; in the lifeboat open position with a cover or plug, and connected in a fixed position by a rope or chain.

Lifeboat type test items – general tests Table 7.2(2)

No.	Test items		Test methods and requirements
1	Lifeboat material test	Material fire-retardant performance	Paragraph 6.2, PART 1 of MSC.81(70); MSC/Circ.1006
2	Lifeboat overload test	Davit-launching lifeboat	Paragraphs 6.3.1-6.3.6, PART 1 of MSC.81(70)
		Free-fall lifeboat	Paragraphs 6.3.7-6.3.9, PART 1 of MSC.81(70)
3	Impact test, drop test of davit-launched lifeboat		Paragraph 6.4, PART 1 of MSC81(70); Paragraph 4.4.1.5.2 of LSA Code
4	Free-fall launching test of free-fall lifeboat		Paragraph 6.5, PART 1 of MSC.81(70); Paragraphs 4.7.3.1-4.7.3.2 and 4.7.5 of LSA Code
5	Lifeboat seating strength test	Davit-launched lifeboat	Paragraph 6.6.1, PART 1 of MSC.81(70)
		Free-fall lifeboat	Paragraph 6.6.2, PART 1 of MSC.81(70)
6	Lifeboat seating space test		Paragraph 6.7, PART 1 of MSC.81(70); Paragraphs 4.4.3.1 and 4.4.3.2, PART 1 of MSC.218(82);
7	Lifeboat freeboard and stability tests	Flooded stability test	Paragraphs 6.8.1-6.8.3, PART 1 of MSC.81(70); MSC.226(82); Paragraph 4.6.3.3 of LSA Code
		Freeboard test	Paragraphs 6.8.4, 6.8.5, PART 1 of MSC.81(70) Paragraph 4.4.5.2 of LSA Code

Continued Table 7.2(2)

No.	Test items		Test methods and requirements
8	Release mechanism test	Davit-launched lifeboat	Paragraphs 6.9.1-6.9.3 and 6.9.6, PART 1 of MSC.81(70); Paragraph 6.9.4, PART 1 of MSC.226(82); Paragraphs 4.4.7.6.2, 4.4.7.6.5 of LSA Code; Paragraphs 6.9.1-6.9.5, PART 1 of MSC.321(89)
		Free-fall lifeboat	Paragraphs 6.9.5-6.9.6, PART 1 of MSC.81(70); Paragraphs 4.7.6.2-4.7.6.4 of LSA Code
9	Lifeboat operation test	Speed and fuel consumption tests	Paragraph 6.10.1, PART 1 of MSC.81(70); MSC.226(82); Paragraph 4.4.6.8 of LSA Code
		Engine-out-of-water test	Paragraph 6.10.5, PART 1 of MSC.81(70)
		Compass performance test	Paragraph 6.10.7, PART 1 of MSC.81(70)
		Survival recovery test	Paragraph 6.10.8, PART 1 of MSC.81(70); Paragraph 4.4.3.4 of LSA Code
		Rowing test	Paragraph 4.6.2.5 of LSA Code
10	Lifeboat towing and painter release test		Paragraph 6.11, PART 1 of MSC.81(70)

Lifeboat type test items – additional tests **Table 7.2(3)**

No.	Test items		Test methods and requirements
1	Partially enclosed lifeboat	Cover and canopy	Paragraphs 4.5.2and 4.5.3 of LSA Code
		Canopy erection test	Paragraph 6.13, PART 1 of MSC.81(70)
		Two-way VHF radiotelephone apparatus (where applicable)	Paragraph 4.5.4 of LSA Code
2	Totally enclosed lifeboat	Self-righting test	Paragraphs 6.14.1, 6.14.2, PART 1 of MSC.81(70); Paragraph 4.6.3.1 of LSA Code
		Flooded capsizing test	Paragraphs 6.14.3-6.14.5, PART 1 of MSC.81(70) Paragraph 4.6.3.3 of LSA Code
		Rowing test	Paragraph 4.6.2.5 of LSA Code
		Pressure test	Paragraph 4.6.2.11 of LSA Code
		Watertight test	Paragraph 4.6.2.2 of LSA Code
		Ventilation performance test	Paragraphs 6.14.9, PART 1 of MSC.81(70)
3	Self-contained air support lifeboat	Pressure test	Paragraph 6.15, PART 1 of MSC.81(70); MSC.226(82)
4	Fire-protected lifeboat	Fire test	Paragraphs 6.16.1-6.16.7, PART 1 of MSC.81(70)
		Water spray test	Paragraphs 6.16.8-6.16.10, PART 1 of MSC.81(70)
5	combined as rescue boat	Towing test	Paragraph 7.1.2, PART 1 of MSC.81(70); MSC.226(82)

Continued Table 7.2(3)

No.	Test items		Test methods and requirements
		Seating test	Paragraph 7.1.3, PART 1 of MSC.81(70); MSC.226(82)
		Overload test	Paragraph 7.1.4, PART 1 of MSC.81(70)
		Righting test	Paragraph 7.1.7, PART 1 of MSC.81(70); MSC.226(82)
		Manoeuvrability test	Paragraph 7.1.8, PART 1 of MSC.81(70)

Notes: ① All closed entrances and seams of a lifeboat are to be hose tested, directed at the entrances or seams through a 16 mm hose from a point 3 m away under a pressure of 0.1 Mpa, to demonstrate that no obvious leakage is found on the reverse side (or equivalent method may be used);

② The specimen of the hull for material test is to be made in the same condition, with the same material, same layer structure and same techniques as those for the hull;

8 Unit/batch inspection

8.1 Each new-built lifeboat applying for a marine product certificate of lifeboat is subject to inspection and test in accordance with Table 8.1.

8.2 Additional test items may be required where deemed necessary by the Surveyor.

8.3 The certificates for materials, components and fittings, attachments for use onboard lifeboats are to comply with 5 of this Chapter.

Lifeboat delivery test items **Table 8.1**

No.	Test items		Test methods and requirements
1	Visual examination	Hull appearance, identification	IMO A.760(18); Paragraphs 4.4.6.12, 4.4.7.6.2.2 of LSA Code; MSC.218(82); Approved procedure
		Verification of basic parameters	Table 8.1
		Retro-reflective material	Paragraph 1.2.7 of LSA Code; MSC.481(102)
2	Davit lifeboat release test	1.1 times its related load and suspended from its release mechanism	Paragraph 5.3.1, PART 2 of MSC.81(70); Paragraph 4.4.7.6.2 of LSA Code; MSC.218(82)
		Release when fully waterborne in the light condition	Paragraph 5.3.1, PART 2 of MSC.81(70) Paragraph 4.4.7.6.2 of LSA Code; MSC.218(82)
		Release when fully waterborne in a 10% overload condition	Paragraph 5.3.1, PART 2 of MSC.81(70) Paragraph 4.4.7.6.2 of LSA Code; MSC.218(82)
3	Operation test	All transmission gears, ahead and astern	Paragraph 5.3.3, PART 2 of MSC.81(70)
		Hand steering test	Paragraph 5.3.3, PART 2 of MSC.81(70)
		Inspection of electrical system	Paragraph 5.3.3, PART 2 of MSC.81(70)
		Speed measurement	Paragraph 5.3.3, PART 2 of MSC.81(70)

Continued Table 8.1

No.	Test items		Test methods and requirements
		Air-supply test	Paragraph 5.3.3, PART 2 of MSC.81(70)
		Water spray test	Paragraph 5.3.3, PART 2 of MSC.81(70)
4	Watertight test (for totally enclosed lifeboat)		Paragraph 4.6.2.2 of LSA Code Table 6.7.2(3)
5	Load test	Strength test of the connection of the release gear fixed to the boat	Paragraph 5.3.4, PART 2 of MSC.226(82)

9 Others

9.1 Upon installation onboard, the lifeboat is to be tested, where applicable, in accordance with Paragraph 5.4, PART 2 of MSC.81(70) – Recommendation on Testing of Life-saving Appliances, and examined to confirm it is fully equipped and the attachments are valid, and the boat identification is to be examined in accordance with Paragraph 4.4.9 of LSA Code.

9.2 Procedure approval and test equipment

9.2.1 The procedure approval is to be carried out in accordance with the requirements in Chapter 3, PART TWO of CCS Rules for Materials and Welding.

9.2.2 factories should be have following test equipment:

(1) crane for rescue boat test;

(2) test pool;

(3) flushing device (nozzle diameter is 16mm, water pressure is not less than 0.1MPa, the distance between flushing object and test object is not more than 3m or equivalent method);

(4) air compressor;

(5) a weighed block / object / bag for weighing;

(6) stop watch;

(7) free fall lifeboat test davit and its associated pool / water area (suggested)

(8) analysis balance and oven for checking moisture content of fiber reinforced material;

(9) universal material testing machine for trial test (suggestion).