

Guideline No.: L-03(201610)



L-03 INFLATABLE LIFERAFTS

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Foreword:

This Guide is a part of CCS Rules, which contains technical requirements, inspection and testing criteria related to classification and statutory survey of marine products.

This Guide is published and updated by CCS and can be found through <http://www.ccs.org.cn> .
Comments or suggestions can be sent by email to ps@ccs.org.cn .

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Main changes and effective date:

1. The “5 material and components” is amended to coordinate with the rules.

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INFLATABLE LIFERAFTS

1 Application

1.1 This Guideline applies to the approval and inspection of the liferafts provided onboard ships engaged on international voyages and as required in the International Code of Safety for High-speed Craft, 2000.

2 Normative references

2.1 For the purpose of this Guideline, the following documents apply:

- (1) Chapter III of the International Convention for the Safety of Life at Sea, 1974;
- (2) MSC.48(66), Chapters I and IV of the International Life-saving Appliances Code (LSA Code), and MSC.218(82), MSC.293(87);
- (3) MSC.97(73), Annex 11 of the International Code of Safety for High-speed Craft, (2000);
- (4) MSC.81(70), Recommendation on Testing of Life-saving Appliances, and MSC.226(82), MSC.295(87), MSC.323(89);
- (5) IMO Resolution A.658(16), Recommendation on the Use and Fitting of Retro-reflective Material on Life-saving Appliances, and any subsequent amendments;
- (6) IMO Resolution A.760(18), Symbols Related to Life-saving Appliances and Arrangements, and any subsequent amendments.

3 Definitions

3.1 Open reversible inflatable liferaft means an inflatable liferaft as required in Annex 11 of the International Code of Safety for High-speed Craft, 2000, which is not a SOLAS liferaft.

3.2 Canopied reversible inflatable liferaft means a canopied reversible liferaft which is substitutable for a self-righting inflatable liferaft complying with the International Convention for the Safety of Life at Sea, 1974 and its amendments as well as the International Life-saving Appliances Code.

4 Plans and documents

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

- (1) structural plan;
- (2) arrangement plan;
- (3) inflation system plan;
- (4) construction plan of main valves (relief valves, inlet valves, safety valves, platform non-return valves, canopy pillar non-return valves, exhaust valves);
- (5) technical specifications (or manufacturer's standards) of the product
- (6) calculations: volume of main buoyancy tubes, raft bottom area, water pockets capacity, freeboard, stability, inflation system volume, lifting system strength;
- (7) type test program.

4.2 The following documents are to be submitted to CCS for information when applying for products approval:

- (1) structural plan of vessels and technical requirements (or to submit approval certificate);
- (2) material technical requirements and acceptance or test methods;
- (3) manufacturing techniques;
- (4) acceptance procedures of and requirements for product survey (relevant tables of records);
- (5) a list of attachments;
- (6) instruction manual;
- (7) a list of suppliers.

5 Materials and components

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

6 Design and technical requirements

6.1 The design and manufacturing of the liferafts are to at least comply with the applicable requirements of 2.1(1), (2), (3), (4) and (5) of this Guideline.

7 Type test

7.1 Selection of samples

7.1.1 In type approval, each type and model of the liferafts is to be selected for type test.

7.2 Type test items

7.2.1 The test items of inflatable liferaft, davit-launched liferaft, self-righting liferaft and canopied reversible liferaft, and the corresponding technical requirements and test methods are given in Table 7.2.1.

Table 7.2.1

| No. | Test items | Technical requirements and test methods |
|-----|---------------------------------------|---|
| 1 | Drop test | Paragraph 5.1, PART 1 of MSC.81(70) and Paragraph 4.1.5.1.5, Chapter IV, Annex of MSC.48(66) |
| 2 | Jump test | Paragraph 5.2, PART 1 of MSC.81(70), and MSC.295(87) |
| 3 | Weight test | Paragraph 5.3, PART 1 of MSC.81(70) |
| 4 | Towing test | Paragraph 5.4, PART 1 of MSC.81(70) and Paragraph 4.1.5.1.5, Chapter IV, Annex of MSC.48(66), and MSC.295(87) |
| 5 | Mooring test | Paragraph 5.5, PART 1 of MSC.81(70) and Paragraph 4.1.1.1, Chapter IV, Annex of MSC.48(66), and MSC.295(87) |
| 6 | Liferaft painter system test | Paragraph 5.6, PART 1 of MSC.81(70) |
| 7 | Loading and seating test | Paragraph 5.7, PART 1 of MSC.81(70), and MSC.295(87) |
| 8 | Boarding and closing arrangement test | Paragraph 5.8, PART 1 of MSC.81(70) |
| 9 | Stability test | Paragraph 5.9, PART 1 of MSC.81(70), and MSC.295(87) |
| 10 | Maneuverability test | Paragraph 5.10, PART 1 of MSC.81(70), and MSC.295(87) |
| 11 | Swamp test | Paragraph 5.11, PART 1 of MSC.81(70), MSC.295(87) and MSC.323(89) |
| 12 | Canopy closure test | Paragraph 5.12, PART 1 of MSC.81(70), and MSC.226(82) |
| 13 | Buoyancy of float-free liferafts | Paragraph 5.13, PART 1 of MSC.81(70) |
| 14 | Detailed inspection | Paragraph 5.14, PART 1 of MSC.81(70) |

Continued Table 7.2.1

| No. | Test items | Technical requirements and test methods |
|--------|--|---|
| 15 | Weak link test | Paragraph 5.15, PART 1 of MSC.81(70) and Paragraph 4.1.6.2, Chapter IV, Annex of MSC.48(66) |
| 16.1 | ● Lifting component strength test | Paragraph 5.16.1, PART 1 of Resolution MSC.81(70), and MSC.295(87) |
| 16.2 | ● Impact test | Paragraph 5.16.2, PART 1 of MSC.81(70), and MSC.295(87) |
| 16.3 | ● Drop test | Paragraph 5.16.3, PART 1 of MSC.81(70), and MSC.295(87) |
| 16.4 | ● Davit-launched liferaft boarding test | Paragraph 5.16.4, PART 1 of MSC.81(70), and MSC.295(87) |
| 17 | Additional tests | |
| 17.1 | Damage test | Paragraph 5.17.1, PART 1 of MSC.81(70), and MSC.295(87) |
| 17.2 | *Righting test | Paragraph 5.17.2, PART 1 of MSC.81(70), and MSC.295(87) |
| 17.3 | Inflation test | |
| 17.3.1 | *Normal temperature inflation test | Paragraphs 5.17.3 and 5.17.4, PART 1; Paragraph 5.1.2, PART 2 of MSC.81(70) |
| 17.3.2 | Low temperature inflation test | Paragraphs 5.17.3 and 5.17.5, PART 1 of MSC.81(70) |
| 17.3.3 | High temperature inflation test | Paragraphs 5.17.3 and 5.17.6, PART 1 of MSC.81(70) |
| 17.3.4 | Test of three times working pressure | Paragraphs 5.17.7, 5.17.8, PART 1 of MSC.81(70), and paragraph 15 of MSC.226(82) |
| 17.3.5 | Seam strength test | Paragraphs 5.17.9.1 and 5.17.9.2, PART 1 of MSC.81(70), and MSC.323(89) |
| 17.4 | ● Overload suspension test | Paragraph 5.17.10, PART 1 of MSC.81(70), and MSC.295(87) |
| 17.5 | ● Low temperature suspension test | Paragraph 5.17.11, PART 1 of MSC.81(70), and MSC.295(87) |
| 17.6 | ● Simulated lowering test | Paragraph 5.17.12, PART 1 of MSC.81(70), and MSC.295(87) |
| 17.7 | Material test | Paragraph 5.17.13, PART 1 of MSC.81(70), paragraph 16 and 17 of MSC.226(82), MSC.323(89) |
| 18 | *Righting tests (additional tests applicable to automatically self-righting liferafts only) | Paragraph 5.18.2, PART 1 of MSC.81(70) (not applicable to canopied reversible liferaft) |
| 19 | *Submergence test (additional tests for automatically self-righting and canopied reversible liferafts) | Paragraph 5.19, PART 1 of MSC.81(70) |
| 20 | Wind velocity test | Paragraph 5.20, PART 1 of MSC.81(70) |
| 21 | *Self-draining test (additional tests for automatically self-righting and canopied reversible liferafts) | Paragraph 5.21, PART 1 of MSC.81(70) |
| 22 | Dimension inspection | Paragraph 5.1.3, PART 2 of MSC.81(70) |
| 23 | Test of twice working pressure and relief valve sensitivity | Paragraphs 5.1.4 and 5.1.7, PART 2 of MSC.81(70) |
| 24 | Gas-tightness inspection | Paragraphs 5.1.5 and 5.1.6, PART 2 of MSC.81(70) |
| 25 | ● Normal temperature suspension test | Paragraph 5.2, PART 2 of MSC.81(70), and MSC.295(87) |

Continued Table 7.2.1

| No. | Test items | Technical requirements and test methods |
|-----|-----------------------------|--|
| 26 | Boarding ramp strength test | Paragraph 4.2.4.1, Chapter IV of MSC.48(66), and paragraph 11 of MSC.218(82) |
| 27 | Water pockets test | Paragraph 4.2.5.4, Chapter IV of MSC.48(66) |
| 28 | Inflation system test | Paragraph 4.2.2.3, Chapter IV of MSC.48(66) and paragraph 10 of MSC.218(82) |
| 29 | Visual inspection | Paragraph 4.2, Chapter IV of MSC.48(66) and paragraphs 9, 12 of MSC.218(82) |

Note: “●” indicates additional tests for davit-launched liferafts;

“*” indicates additional tests for automatically self-righting liferafts (or inclusive).

7.2.2 The test items of open reversible inflatable liferafts, and the corresponding technical requirements and test methods are given in Table 7.2.2.

Table 7.2.2

| No. | Test items | Technical requirements and test methods |
|-----|--|---|
| 1 | Drop test | Paragraph 5.1, PART 1 of MSC.81(70); Paragraph 2.1, Annex 10 of Resolution MSC.36(63) |
| 2 | Jump test | Paragraph 5.2, PART 1 of MSC.81(70); Paragraph 2.2, Annex 10 of Resolution MSC.36(63) |
| 3 | Weight test | Paragraph 5.3, PART 1 of MSC.81(70) |
| 4 | Towing test | Paragraph 5.3, PART 1 of MSC.81(70); Paragraph 2.3, Annex 10 of Resolution MSC.36(63); MSC.295(87) |
| 5 | Liferaft painter system test | Paragraph 5.6, PART 1 of MSC.81(70); Paragraph 3.3, Annex 10, Resolution MSC.36(63) |
| 6 | Loading and seating test | Paragraph 5.7, PART 1 of MSC.81(70); MSC.295(87) |
| 7 | Boarding test | Paragraph 5.8, PART 1 of MSC.81(70); Paragraphs 2.4 and 3.4, Annex 10 of MSC.36(63) |
| 8 | Stability test | Paragraph 5.9, PART 1 of MSC.81(70); MSC.295(87) |
| 9 | Maneuverability test | Paragraph 5.10, PART 1 of MSC.81(70); MSC.295(87) |
| 10 | Swamp test | Paragraph 5.11, PART 1 of MSC.81(70); MSC.295(87) and MSC.323(89) |
| 11 | Buoyancy of float-free liferafts | Paragraph 5.13, PART 1 of MSC.81(70) |
| 12 | Detailed inspection Visual and dimensional inspection | Paragraph 5.14, PART 1 of MSC.81(70); Paragraphs 2.9 and 2.10, Annex 10 of Resolution MSC.36(63) |
| 13 | Weak link test | Paragraph 5.15, PART 1 of MSC.81(70); Paragraph 4.1.6.2, Chapter IV of MSC.48(66) |
| 14 | Damage test | Paragraph 5.17.1, PART 1 of MSC.81(70); MSC.295(87); Paragraph 2.5, Annex 10 of Resolution MSC.36(63) |

Continued Table 7.2.2

| No. | Test items | Technical requirements and test methods |
|-----|------------------------------------|---|
| 15 | Normal temperature inflation test | Paragraphs 5.17.3 and 5.17.4, PART 1 of MSC.81(70); Paragraph 2.7, Annex 10 of Resolution MSC.36(63) |
| 16 | Low temperature inflation test | Paragraphs 5.17.3 and 5.17.5, PART 1 of MSC.81(70); Paragraph 2.7, Annex 10 of Resolution MSC.36(63) |
| 17 | High temperature inflation test | Paragraphs 5.17.3 and 5.17.6, PART 1 of MSC.81(70); Paragraphs 1.1.3 and 2.8, Annex 10 of Resolution MSC.36(63) |
| 18 | Test of 3 times working pressure | Paragraphs 5.17.7 and 5.17.8, PART 1 of MSC.81(70); Paragraph 15 of MSC.226(82); Paragraph 2.8, Annex 10 of Resolution MSC.36(63) |
| 19 | Seam strength test | Paragraphs 5.17.9.1 and 5.17.9.2, PART 1 of MSC.81(70); MSC.323(89) |
| 20 | Material test | Paragraph 5.17.13, PART 1 of MSC.81(70); Paragraphs 16 and 17 of MSC.226(82); MSC.323(89) |
| 21 | Water-proof test of liferaft floor | Paragraph 2.6, Annex 10 of Resolution MSC.36(63) |
| 22 | Self-draining test | Paragraph 5.21, PART 1 of MSC.81(70); Paragraph 3.7, Annex 10 of Resolution MSC.36(63) |
| 23 | Water pockets test | Paragraph 3.5, Annex 10 of Resolution MSC.36(63) |
| 24 | Floating test of attachments | Paragraph 3.10, Annex 10 of Resolution MSC.36(63) |
| 25 | Boarding ramp strength test | Paragraph 4.2.4.1, Chapter IV of MSC.48(66); Paragraph 3.4, Annex 10 of Resolution MSC.36(63); Paragraph 11 of MSC.218(82) |

8 Unit/batch inspection

8.1 Ratio of sampling

8.1.1 One sample from each type and model of liferafts is to be taken among the satisfactorily inspected products of the manufacturer.

8.2 Inspection and test items

8.2.1 Each batch of liferafts is subject to visual examination, normal temperature inflation test, twice working pressure test, inspection and test for tightness and relief valves commissioning.

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

8.2.3 The certificates of materials and components as specified in 3.5 are to be examined.

8.2.4 The identifications of liferafts are to be inspected in accordance with 1.2.2.9, 4.1.5.2, 4.2.6.3, 4.2.7.1 and 4.2.7.2 of LSA Code.