Guideline No.: L-05(201610)

L-05 LAUNCHING AND EMBARKATION APPLIANCES

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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.

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Main changes and effective date:

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

CONTENTS

LAUNCHING AND EMBARKATION APPLIANCES

1 Application

1.1 This Guideline applies to the launching and embarkation appliances of the following survival craft provided onboard ships engaged on international voyages, with the configurations as specified in 1.2:

(1) davit-launched lifeboats;

(2) davit-launched rescue boats, davit-launched life-saving and rescue boats;

(3) davit-launched liferafts;

(4) free-fall lifeboats;

(5) fast rescue boats.

1.2 The launching appliances applicable to this Guideline have the following configurations:

(1) luffing arm davit appliance;

(2) sliding arm davit appliance;

(3) telescopic arm davit appliance;

(4) slewing arm launching appliance;

(5) free-fall lifeboat launching appliance;

(6) fast rescue boat launching appliance.

2 Normative references

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

(1) MSC.47(66), Chapter III of International Convention for the Safety of Life at Sea, 1974, and MSC.216(82);

(2) MSC.48(66), Chapter VI/6.1, International Life-saving Appliances Code (LSA Code), and

MSC.218(82);

(3) MSC.81(70), PART 1/8 and PART 2/6, Recommendation on Testing of Life-saving Appliances, and MSC.226(82);

(4) ISO 15516-2006, Ships and Marine Technology — Launching Appliances for Davit-launched Lifeboats;

(5) CCS Rules for Materials and Welding and its amendments.

3 Definitions

3.1 The definitions given in Chapter III of the International Convention for the Safety of Life at Sea, the International Life-saving Appliances Code and ISO 15516 apply to this Guideline.

3.2 For the purpose of this Guideline:

(1) Hanging-off pendants mean an appliance, provided onboard a lifeboat as required in Regulation III/16.2 of SOLAS, for hanging-off the lifeboat to free the release gear for maintenance.

(2) Foul weather recovery strops mean an appliance, provided onboard a lifeboat for use in foul weathers as required in Regulation III/17.5 of SOLAS, for safety if heavy fall blocks constitute a danger to boarding persons.

4 Plans and documents

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

(1) main performance and specifications;

(2) general assembly;

(3) main components plan;

(4) schematic diagram and safety alarms of main systems;

(5) calculations;

(6) a list of physicochemical properties of main part materials;

(7) type test program.

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

(1) main relevant acceptance criteria;

(2) technical conditions of products delivery acceptance;

(3) instruction manual (including maintenance manual).

5 Materials and components

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

5.2 The following purchased products used for launching appliances are to be furnished with manufacturer's certification documents and to satisfy the intended use:

(1) electromagnetic (hydraulic) reversal valves;

(2) relief valves.

5.3 The design of automatic release hook used for davit liferaft launching appliances is to comply with the requirements in 6.1.5, Chapter VI of LSA Code and be subject to related tests in accordance with 8.2 of PART 1 and 6.2 of PART 2 of MSC.81(70).

6 Qualification of welding procedures

6.1 The welding procedures of the essential welding structural members, such as davit arms, frames, rotating supports, ramps, guide sheaves for launching appliances, are to be approved by CCS prior to manufacture.

7 Design and technical requirements

7.1 The technical requirements for launching appliances are given in Table 7.1.

Table 7.1

No.	Content	Paragraphs for approval and inspection	Remarks
1	Performance and arrangement	Paragraph 6.1.1.1 of LSA Code	The combination of trim, list and lightest load line may cause the over-length of embarkation ladders (III/11.7) and of falls (III/16.6), due to the increase of a ship's size. IACS has provided a reasonable less length, which is measured under the conditions of lightest load line, a list of 20°, and a trim that the highest point of bow is in water or the No.1 hold hatch coamings are flooded (whichever is the larger, but not more than 10°).
		Paragraph 6.1.1.2 of LSA Code	
		Paragraph 6.1.1.3 of LSA Code	Except for free-fall secondary launching appliances
		Paragraph 6.1.1.4 of LSA Code	
		Paragraph 6.1.1.7 of LSA Code	
		Paragraph 6.1.1.8 of LSA Code	
		Paragraph 6.1.1.10 of LSA Code	
		Paragraph 6.1.2.2 of LSA Code	The launching appliances using falls and winches; except for free-fall secondary launching appliances
		Reg.Ⅲ/16.3 of SOLAS	
		Reg.Ⅲ/17.1 of SOLAS	

Continued Table 7.1

No.	Content	Paragraphs for approval and inspection	Remarks
1	Performance and arrangement	Paragraph 6.1.4 of LSA Code	Free-fall
		Paragraph 6.1.5 of LSA Code	Liferafts
		Reg.Ⅲ/23 of SOLAS	Additional requirements for passenger ships
		Reg.Ⅲ/33.1 of SOLAS	Additional requirements for cargo ships
		Reg.Ⅲ/26.3 of SOLAS	Additional requirements for ro-ro passenger ship
2	Launching speed	Paragraph 6.1.2.8 of LSA Code	The launching appliances using falls and winches; except for free-fall secondary launching appliances
		Paragraph 6.1.2.9 of LSA Code	The launching appliances using falls and winches; except for free-fall secondary launching appliances
		Paragraph 6.1.2.10 of LSA Code	The launching appliances using falls and winches; except for free-fall secondary launching appliances; MSA required that for sea-going ships engaged on international voyages the maximum lowering speed ≤1.3 m/s
		Paragraph 5.1.1.4 of ISO 15516	
3	Recovery time and speed	Reg.Ⅲ/17.4 of SOLAS	Rescue boats
		Paragraph 6.1.1.9 of LSA Code	
		Paragraph 5.1.2.2 of ISO 15516	

Continued Table 7.1

No.	Content	Paragraphs for approval and inspection	Remarks
4	Strength and safety factor of design	Paragraphs 6.1.1.5, 6.1.1.6, 6.1.2.5 of LSA Code	The launching appliances using falls and winches
5	Materials	Paragraph 5.2.1 of ISO 15516	
6	Davit arms and frames	Paragraph 5.2.3 of ISO 15516	
7	Loose gears	Paragraph 5.2.4.1 of ISO 15516	
8	Falls and drums	Paragraphs 6.1.2.3, 6.1.2.4 of LSA Code; Reg.Ⅲ/16.6 of SOLAS; Paragraph 5.2.4.3 of ISO 15516; Paragraph 5.2.4.4 of ISO 15516; Paragraph 5.2.8 of ISO 15516	The launching appliances using falls and winches
9	Blocks and guide sheaves	Paragraph 5.2.5 of ISO 15516	
10	Safety means	Paragraph 6.1.2.7 of LSA Code; Paragraph 5.3, ISO 15516	The launching appliances using falls and winches
11	Brake	Paragraphs 6.1.2.5, 6.1.2.11, 6.1.2.12 of LSA Code	The launching appliances using falls and winches
12	Hand gears and operating device	Paragraph 6.1.2.6 of LSA Code	The launching appliances using falls and winches; except for free-fall secondary launching appliances
		Paragraph 5.2.12 of ISO 15516	
		Paragraph 5.2.15 of ISO 15516	

Continued Table 7.1

No.	Content	Paragraphs for approval and inspection	Remarks
13	Bowsing gears and lifeline gears	Reg.III/11.8 of SOLAS; Reg.III/16.10 of SOLAS; Paragraph 5.2.7 of ISO 15516	
14	Launching controlled from a position within boats	Paragraph 5.2.14 of ISO 15516	
15	Hanging-off pendant units	Reg.III/16.2 of SOLAS	
16	Recovery strops units	Reg.III/17.5 of SOLAS	Rescue boats
17	Winches for fast rescue boats	Paragraph 5.2.13 of ISO 15516	Fast rescue boats
18	Maintenance	Reg.III/20 of SOLAS; Reg.III/36 of SOLAS; Paragraph 5.4 of ISO 15516	
19	Test and approval	Reg.III/4 of SOLAS; MSC.81(70)1/8.1 and 2/6.1	

7.2 Additional technical requirements

7.2.1 The safe working load of the hanging-off pendants and recovery strops as required by Regulation III/16.2 and 17.5 of SOLAS is not to be less than the design lifting load of launching appliances, and the test load is to be 2.2 times its safe working load.

7.2.2 The materials containing asbestos are prohibited in the brake-block and clutch disk for the winches of the launching appliances so as to meet the requirement of Regulation II-1/3.5 of

SOLAS.

7.2.3 The hydraulic system of the launching appliances is subject to the tightness test under 1.25 times the design pressure (but not to exceed the design pressure plus 7 MPa). The piping of hydraulic system is subject to the pressure test under 1.5 times the design pressure (but not to exceed the design pressure plus 7 MPa). And the relief valves of the hydraulic system are subject to performance test.

8 Type test

8.1 Selection of typical samples is to comply with the following requirements.

(1) When applying for type approval of single type of product, the applicant may randomly select one for type test.

(2) When applying for type approval of different types of the same model of products, the applicant may select one of representative or with maximum size for type test.

(3) In renewal test, at least one sample of the same structure and configuration is to be selected.

8.2 Type test items

8.2.1 The type test items for launching appliances are given in Table 8.2.1.

Type test item table **Table 8.2.1**

No.	Test items	Test loads	Simulated shipboard condition	Paragraphs for approval and inspection to be complied with	Remarks
1	Loose gear test	/	/	See Table 8.2.2 of this Guideline	
2	Hydraulic system test	/	/	See Table 8.2.3 of this Guideline	
3	Winch test	/	/	See Table 8.2.4 of this Guideline	

Continued Table 8.2.1

No.	Test items	Test loads	Simulated shipboard condition	Paragraphs for approval and inspection to be complied with	Remarks
4	Launching test	Lightest launching load	List of 0°, Trim of 0°	Items 1, 2, Table 7, paragraph 6.3.1 of ISO 15516; MSC.81(70)1/8.1.2	For free-fall secondary launching appliances, the test is in the condition of list 2°, and trim 5°
			Inboard list of 20°, Trim of 10°		
5	Recovery test	Maximum recovery load	List of 0°, Trim of 0°	Item 3, Table 7, paragraph 6.3.1 of ISO 15516; MSC.81(70)1/8.1.3; MSC.81(70)2/6.1.9 and 2/6.1.10	
		Maximum working load		MSC.218(82) 6.1.7.5	Fast rescue boat
6	Dynamic load test	1.1 times maximum working load	List of 0°, Trim of 0°	Items 4-6, Table 7, paragraph 6.3.1 of ISO 15516; MSC.81(70)1/8.1.2; MSC.81(70)1/8.1.3; paragraph 6.1.4.7 of LSA Code	For free-fall secondary launching appliances, the test is in the condition of list 2°, and trim 5°
			Inboard list of 20°, Trim of 10°		
7	Static load test	2.2 times maximum working load	List of 0°, Trim of 0°	Items 7-9, Table 7, paragraph 6.3.1 of ISO 15516; MSC.81(70)1/8.1.1	Free-fall secondary launching appliances
			Inboard list of 20°, Trim of 10°		
			Outboard list of 20°, Trim of 10°		
8	Operation in a sea state	Maximum working load	Foul sea state	MSC.81(70)1/8.1.8	Fast rescue boats

8.2.2 The type test items for loose gears of launching appliances are given in Table 8.2.2.

Type test item table of loose gear for launching appliance Table 8.2.2

No.	Test items	Test loads	Paragraphs for approval and inspection to be complied with	Remarks
1	Static load test	2.2 times maximum working load	Table 4, paragraph 6.1 of ISO 15516; paragraph 6.1.1.5 of LSA Code	

8.2.3 The type test items for hydraulic systems of launching appliances are given in Table 8.2.3.

Type test item table of hydraulic system for launching appliance Table 8.2.3

No.	Test items	Test pressure	Test methods	Requirements	Remarks
1	Pressure/tightness test	1.5/1.25 times design pressure	Piping/hydraulic system to keep test pressure for at least 5 min	No leaking	
2	Relief valve performance test	Set pressure of relief valve	Increase the pressure of hydraulic system to the relief valve set pressure	Satisfactory operation of the relief valve	

8.2.4 The type test items for winches of launching appliances are given in Table 8.2.4.

Type test item table of winch for launching appliance Table 8.2.4

No.	Test items	Test loads	Paragraphs for approval and inspection to be complied with	Remarks
1	No load test	No load	Item 1, Table 5, paragraph 6.2.1 of ISO 15516	
2	Powered hoisting test	Hoisting load of winch	Item 2, Table 5, paragraph 6.2.1 of ISO 15516	
			Paragraph 6.1.1.9 of LSA Code; MSC.81(70)1/8.1.5	Rescue boats
3	Lowing test	Maximum setting load of winch	Item 3, Table 5, paragraph 6.2.1 of ISO 15516; paragraph 6.1.2.8 of LSA Code; paragraph 6.1.2.9 of LSA Code; paragraph 6.1.2.11 of LSA Code	Except for free-fall
			MSC.81(70)1/8.1.8	Fast rescue boats
4	Dynamic load launching test	1.1 times maximum working load of winch	Item 4, Table 5, paragraph 6.2.1 of ISO 15516; paragraph 6.1.2.5.2 of LSA Code; MSC.81(70)1/8.1.4	

Continued Table 8.2.4

No.	Test items	Test loads	Paragraphs for approval and inspection to be complied with	Remarks
5	Static load test	1.5 times maximum working load of winch	Item 5, Table 5, paragraph 6.2.1 of ISO 15516; paragraph 6.1.2.5.1 of LSA Code; MSC.81(70)1/8.1.4	
6	Manually hoisting test	Hoisting load of winch	Item 6, Table 5, paragraph 6.2.1 of ISO 15516; paragraph 6.1.2.6 of LSA Code; MSC.81(70)1/8.1.6	
		1.5 times the weight of all loose gears	Item 7, Table 5, paragraph 6.2.1 of ISO15516; MSC.81(70)1/8.1.6	If the winch is designed for quick recovery by hand with no load
7	Overhauling of winch after test		MSC.81(70)1/8.1.7	

9 Unit/batch inspection

9.1 Inspection items

9.1.1 The inspection of launching appliances is to be carried out after type approval, which includes information examination, manufacturing process inspection and function tests.

9.1.2 The inspection of manufacturing process mainly includes material test, main parts and welds tests (if required), inspection of components manufacturing and assembly quality, etc.

9.1.3 The main materials of launching appliances, such as transmission shaft, gears, guide sheaves, sheave shaft, suspension chains, main strength steel plate, etc. are subject to mechanical performance test.

9.1.4 The launching appliances are classified in terms of configurations and specifications. The first product is subject to type test according to 8 of this Guideline, while the subsequent products are to be tested according to the approved product test items.

9.2 The records or reports to be submitted by the manufacturer are to contain at least:

(1) the material quality warranty and/or physicochemical review report of the main product parts processed in the manufacturer;

(2) the qualification documents and relevant certificates of main purchased or outsourced products;

(3) the manufacturer's inspection, measuring and test conditions, and a list of test and inspection equipment for use and copies of their valid calibration certificates;

(4) the manufacturer's test report, which is to include the products or samples models, specifications, serial numbers., test place and date, test environment, test items and all test data, as well as the issues found in tests and inspection together with explanation for countermeasures, and test conclusions.

9.3 Test items of approved unit/batch inspection

9.3.1 The test items for launching appliances are given in Table 9.3.1.

Launching appliance test item table **Table 9.3.1**

No.	Test items	Test loads	Simulated shipboard condition	Paragraphs for approval and inspection to be complied with	Remarks
1	Loose gear test	/	/	See Table 9.3.2 of this Guideline	
2	Hydraulic system test	/	/	See Table 9.3.3 of this Guideline	
3	Winch test	/	/	See Table 9.3.4 of this Guideline	
4	Launching test	Lightest launching load	List of 0°, Trim of 0°	Item 1, Table 7, paragraph 6.3.1 of ISO 15516; MSC.81(70)2/6.1.3	
5	Recovery test	Maximum recovery load	List of 0°, Trim of 0°	Item 3, Table 7, paragraph 6.3.1 of ISO 15516; MSC.81(70)1/8.1.3; MSC.81(70)2/6.1.9 and 2/6.1.10	
6	Dynamic load test	1.1 times maximum working load	List of 0°, Trim of 0°	Item 4, Table 7, paragraph 6.3.1 of ISO 15516; MSC.81(70)2/6.1.5	

Continued Table 9.3.1

No.	Test items	Test loads	Simulated shipboard condition	Paragraphs for approval and inspection to be complied with	Remarks
7	Static load test	2.2 times maximum working load	List of 0°, Trim of 0°	Item 4, Table 8, paragraph 6.3.1 of ISO15516; MSC.81(70)2/6.1.1	

9.3.2 The test items for loose gears of launching appliances are given in Table 9.3.2.

Test item table of loose gear for launching appliance Table 9.3.2

No.	Test items	Test loads	Paragraphs for approval and inspection to be complied with	Remarks
1	Static load test	2.2 times maximum working load	Table 4, paragraph 6.1 of ISO 15516; paragraph 6.1.1.5 of LSA Code	Exempt from the test when solely having a CCS product certificate.

9.3.3 The test items for hydraulic systems of launching appliances are given in Table 9.3.3.

Test item table of hydraulic system for launching appliance Table 9.3.3

No.	Test items	Test pressure	Test methods	Requirements	Remarks
1	Pressure/tightness test	1.5/1.25 times design pressure	Piping/hydraulic system to keep test pressure for at least 5 min	No leaking	

9.3.4 The test items for winches of launching appliances are given in Table 9.3.4.

Test item table of winch for launching appliance Table 9.3.4

No.	Test items	Test loads	Paragraphs for approval and inspection to be complied with	Remark
1	No load test	No load	Item 1, Table 5, paragraph 6.2.1 of ISO 15516	
2	Powered hoisting test	Hoisting load of winch	Item 2, Table 5, paragraph 6.2.1 of ISO 15516	
			Paragraph 6.1.1.9 of LSA Code; MSC.81(70)1/8.1.5 and 2/6.1.11;	Rescue boat

Continued Table 9.3.4

3	Lowering test	The load held by falls at the winch drum when loading a fully-loaded boat The load held by falls at the winch drum when loading a non-loaded boat	Item 3, Table 6, paragraph 6.2.1 of ISO 15516; Paragraphs 6.1.2.8, 6.1.2.9, 6.1.2.11 of LSA Code; MSC.81(70)2/6.1.2; MSC.81(70)2/6.1.3; MSC.81(70)2/6.1.7;	Except for free-fall
4	Dynamic load test	1.1 times the calculated load of the winch when loading a fully-loaded boat	Item 4, Table 6, paragraph 6.2.1 of ISO 15516; MSC.81(70)2/6.1.5	
5	Static load test	1.5 times maximum working load of winch	Item 5, Table 5, paragraph 6.2.1 of ISO 15516; paragraph 6.1.2.5.1 of LSA Code; MSC.81(70)1/8.1.4 and 2/6.1.1	