

## SCHEDULE 4

### LIFERAFTS

#### PART I

#### INFLATABLE LIFERAFTS

#### (SOLAS)

##### General

###### 1

**1.1** All inflatable liferafts prescribed in this Part shall:

- (1.1.1) be constructed with proper workmanship and materials;
- (1.1.2) not be damaged in stowing throughout the air temperature range of  $-30^{\circ}\text{C}$  to  $+65^{\circ}\text{C}$ ;
- (1.1.3) be capable of operating throughout an air temperature range of  $-30^{\circ}\text{C}$  to  $+65^{\circ}\text{C}$ , and a sea water temperature range of  $-1^{\circ}\text{C}$  to  $+30^{\circ}\text{C}$ ;
- (1.1.4) be rot-proof, corrosion-resistant, and not be unduly affected by sea-water, oil or fungal attack;
- (1.1.5) be resistant to deterioration from exposure to sunlight;
- (1.1.6) have a canopy of a highly visible colour;
- (1.1.7) be fitted with retro-reflective material where this will assist in detection and the dimensions and location of the material shall be to the satisfaction of the Secretary of State; and
- (1.1.8) when fully inflated and floating with the canopy uppermost be stable in a seaway.

##### Construction

###### 2

**2.1** Every liferaft shall be so constructed as to be capable of withstanding exposure for 30 days afloat in all sea conditions without such deterioration as would involve any loss of seaworthiness.

**2.2** The liferaft shall be so constructed that when it is dropped into the water in its container from a height of 18 metres, the liferaft and its equipment will operate satisfactorily. If the liferaft is to be stowed at a height of more than 18 metres above the waterline in the lightest seagoing condition, it shall be of a type which has been satisfactorily drop-tested from at least that height.

**2.3** The floating liferaft shall be capable of withstanding repeated jumps on to it from a height of at least 4.5 metres above its floor both with and without the canopy erected.

**2.4** The liferaft and its fittings shall be so constructed as to enable it to be towed at a speed of 3 knots in calm water when loaded with its full complement of persons and equipment and with one of its sea-anchors streamed.

**2.5** The liferaft shall have a canopy to protect the occupants from exposure which is automatically set in place when the liferaft is launched and waterborne. The canopy shall comply with the following:

- (2.5.1) it shall provide insulation against heat and cold by means of either two layers of material separated by an air gap or other equally efficient means; means shall be provided to prevent accumulation of water in the air gap;

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(2.5.2) its interior shall be of a colour that does not cause discomfort to the occupants;

(2.5.3) each entrance shall be clearly indicated and be provided with efficient adjustable closing arrangements which can be easily and quickly opened from inside and outside the liferaft so as to permit ventilation but exclude seawater, wind and cold; liferafts accommodating more than eight persons shall have at least two diametrically opposite entrances;

(2.5.4) it shall admit sufficient air for the occupants at all times, even with the entrances closed;

(2.5.5) it shall be provided with at least one viewing port in liferafts accommodating up to 25 persons and at least two diametrically opposite viewing ports in liferafts accommodating more than 25 persons;

(2.5.6) it shall be provided with means of collecting rain water;

(2.5.7) it shall have sufficient headroom for seated occupants under all parts of the canopy.

**2.6** The main buoyancy chamber shall be divided into:

(2.6.1) not less than two separate compartments, each inflated through a non-return inflation valve on each compartment;

(2.6.2) the buoyancy chambers shall be so arranged that in the event of one of the compartments being damaged or failing to inflate, the intact compartment shall be able to support, with positive freeboard over the liferaft's entire periphery, the number of persons which the liferaft is permitted to accommodate, each having a mass of 75 kg., and seated in their normal positions.

**2.7** The floor of the liferaft shall be waterproof and shall be capable of being sufficiently insulated against cold either:

(2.7.1) by means of one or more compartments that the occupants can inflate, or which inflate automatically and can be deflated and reinflated by the occupants; or

(2.7.2) by other equally efficient means not dependent on inflation.

**2.8** The liferaft shall be inflated with a non-toxic gas by an inflation system complying with the requirements of Part VIII of Schedule 4. Inflation shall be completed within a period of 1 minute at an ambient temperature of between 18°C and 20°C and within a period of 3 minutes at an ambient temperature of -30°C. After inflation the liferaft shall maintain its form when loaded with its full complement of persons and equipment.

**2.9** Each inflatable compartment shall be capable of withstanding a pressure equal to at least 3 times the working pressure and shall be prevented from reaching a pressure exceeding twice the working pressure either by means of relief valves or by a limited gas supply. Means shall be provided for fitting the topping-up pump or bellows required by Part IV of Schedule 4 so that the working pressure can be maintained.

**2.10** The number of persons which a liferaft shall be permitted to accommodate shall be equal to the lesser of:

(2.10.1) the greatest whole number obtained by dividing by 0.096 the volume, measured in cubic metres of the main buoyancy tubes (which for this purpose shall include neither the arches nor the thwarts if fitted) when inflated; or

(2.10.2) the greatest whole number obtained by dividing by 0.372 the inner horizontal cross-sectional area of the liferaft measured in square metres (which for this purpose may include the thwart or thwarts, if fitted) measured to the innermost edge of the buoyancy tubes; or

(2.10.3) the number of persons having an average mass of 75 kg., all wearing lifejackets, that can be seated with sufficient comfort and headroom without interfering with the operation of any of the liferaft's equipment.

**2.11** No liferaft shall be approved which has a carrying capacity of less than six persons calculated in accordance with the requirements of paragraph 2.10.

**2.12** Unless the liferaft is to be launched by an approved launching appliance complying with the requirements of Part III of Schedule 6 and not required to be portable, the total mass of the liferaft, its container and its equipment shall not be more than 185 kg.

## **Liferaft Fittings**

### **3**

**3.1** Liferafts shall be securely becketed around the inside and outside of the liferaft.

**3.2** The liferaft shall be provided with arrangements for adequately siting and securing in the operating position the antenna provided with the portable radio apparatus where this is to be carried.

**3.3** The liferaft shall be fitted with an efficient painter of length equal to not less than twice the distance from the stowed position to the waterline in the lightest seagoing condition or 15 metres whichever is the greater.

**3.4** The breaking strength of the painter system including its means of attachment to the liferaft except the weak link required by Part VI of Schedule 4 shall be:

(3.4.1) 7.5 kilonewtons for liferafts accommodating up to 8 persons;

(3.4.2) 10.0 kilonewtons for liferafts accommodating 9 to 25 persons;

(3.4.3) 15.0 kilonewtons for liferafts accommodating more than 25 persons or have a factor of safety of 3 in association with the requirement of paragraph 2.4 above whichever is the greater.

**3.5** At least one entrance shall be fitted with a semi-rigid boarding ramp to enable persons to board the liferaft from the sea so arranged as to prevent significant deflation of the liferaft if the ramp is damaged. Liferafts accommodating more than 25 persons shall have at least two diametrically opposite entrances fitted with semi-rigid boarding ramps. In the case of davit-launched liferafts a boarding ramp shall not be fitted at the entrance where bowsing lines and embarkation facilities are fitted.

**3.6** Entrances not provided with a boarding ramp shall have a boarding ladder, the lowest step of which shall be weighted and float at a level not less than 0.4 metres below the liferaft's light waterline.

**3.7** There shall be means inside the liferaft to assist persons to pull themselves into the liferaft from the ladder.

**3.8** The stability of liferafts capable of carrying 25 persons or less when in the inverted position shall be such that they can be righted in a seaway and in calm water by one person. Liferafts in excess of 25 persons capacity shall have righting facilities acceptable to the Department of Transport. The righting position of the liferaft shall be suitably marked and have a non-skid surface.

**3.9** The stability of the liferaft when loaded with its full complement of persons and equipment shall be such that it can be towed at speeds of up to 3 knots in calm water.

(3.10.1) The liferaft shall be fitted with water pockets complying with the following requirements:

(3.10.1.1) The cross-sectional area of the pockets shall be in the shape of an isosceles triangle with the base of the triangle attached to the underside of the liferaft;

(3.10.1.2) The design shall be such that the pockets fill to approximately 60% of capacity within 15–25 seconds of deployment;

(3.10.1.3) The pockets shall normally have an aggregate capacity of between 225 litres and 250 litres for inflatable liferafts up to and including the 10 person size;

(3.10.1.4) The pockets to be fitted on liferafts certified to carry more than 10 persons shall have an aggregate capacity of  $(20 \times N)$  litres, where N = Number of persons carried.

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- (3.10.1.5) The pockets shall be attached on all of their sides to the underside of the liferaft.
- (3.10.1.6) The pockets shall be distributed symmetrically round the circumference of the liferaft either side of the CO<sub>2</sub> bottle with sufficient separation between each pocket to enable air to escape readily. The minimum number of pockets shall normally be in the order of:

RAFT CAPACITY	NO OF POCKETS
6–8 inclusive	5
9–16 inclusive	7
17–25 inclusive	11

**3.11** At least one manually controlled lamp complying with the requirements of Part VII of Schedule 4 shall be fitted to the top outside of the liferaft canopy.

**3.12** A manually controlled lamp complying with the requirements of Part VII of Schedule 4 shall be fitted inside the liferaft.

**3.13** Each inflatable liferaft shall be fitted with equipment complying with the relevant requirements of Part IV of this Schedule.

#### **Containers for inflatable liferafts**

##### **4**

**4.1** The liferaft shall be packed in a container that is:

- (4.1.1) so constructed as to withstand conditions encountered at sea;
- (4.1.2) of sufficient inherent buoyancy, when packed with the liferaft and its equipment, to pull the painter from within and to operate the inflation mechanism should the ship sink;
- (4.1.3) as far as practicable watertight, except for drain holes in the container bottom.

**4.2** The liferaft shall be packed in its container in such a way as to ensure, as far as possible, that the waterborne liferaft inflates in an upright position on breaking free from its container.

**4.3** The container shall be marked with:

- (4.3.1) maker's name or trade mark;
- (4.3.2) serial number;
- (4.3.3) DOT(UK) APPROVED, and the number of persons it is permitted to carry;
- (4.3.4) SOLAS 86;
- (4.3.5) type of emergency pack enclosed;
- (4.3.6) date when last serviced;
- (4.3.7) length of painter;
- (4.3.8) maximum permitted height of stowage above waterline (depending on drop-test height and length of painter); and
- (4.3.9) launching instructions.

#### **Markings on inflatable liferafts**

**5.** The liferaft shall be marked with:

- 5.1** maker's name or trade mark;
- 5.2** serial number;

- 5.3 date of manufacture (month and year);
- 5.4 DOT(UK) APPROVED;
- 5.5 name and place of servicing station where it was last serviced; and
- 5.6 number of persons it is permitted to accommodate over each entrance in characters not less than 100 mm, in height of a colour contrasting with that of the liferaft canopy.

## **Davit-launched inflatable liferafts**

### **6**

6.1 In addition to the above requirements, a liferaft for use with an approved launching appliance complying with Part III of Schedule 6 shall:

(6.1.1) when the liferaft is loaded with its full complement of persons and equipment, be capable of withstanding a lateral impact against the ship's side at an impact velocity of not less than 3.5 metres per second and also a drop into the water from a height of not less than 3 metres without damage that will affect its function;

(6.1.2) be provided with means for bringing the liferaft alongside the embarkation deck and holding it securely during embarkation. The distance between the liferaft and the bowing line securing point shall be kept to a minimum to restrict movement of the liferaft during boarding;

(6.1.3) when suspended from its lifting hook or bridle withstand a load of:

(6.1.3.1) 4 times the mass of its full complement of persons and equipment, at an ambient temperature and a stabilised liferaft temperature of  $20 \pm 3^{\circ}\text{C}$  with all relief valves inoperative; and

(6.1.3.2) 1.1 times the mass of its full complement of persons and equipment at an ambient temperature and a stabilised liferaft temperature of  $-30^{\circ}\text{C}$  with all relief valves operative.

6.2 Rigid containers for liferafts to be launched by a launching appliance shall be so secured that the container or parts of it are prevented from falling into the sea during inflation and launching of the liferaft.

6.3 Every davit-launched liferaft shall be so arranged that it can be rapidly boarded by its full complement of persons.

## **Instructions and Information**

### **7**

7.1 Instructions and information required for inclusion in the training manual specified in Part I of Schedule 11, and in the instructions for on-board maintenance specified in Part II of Schedule 11 shall be in a form suitable for inclusion in such training manual and instructions for on-board maintenance. Instructions and information shall be in English in a clear and concise form and shall include as appropriate the following:

- (7.1.1) general description of the liferaft and its equipment;
- (7.1.2) installation arrangements;
- (7.1.3) operational instructions including use of associated survival equipment;
- (7.1.4) survival instructions;
- (7.1.5) emergency repair instructions;
- (7.1.6) deployment, boarding and launching instructions;
- (7.1.7) method of launching from within the raft;

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- (7.1.8) release from launching appliance;
- (7.1.9) on board maintenance requirements; and
- (7.1.10) servicing requirements.