

Working translation of

Ship Safety Ordinance

of 7 March 2018

Annex 1a

Part 6

Safety requirements for cargo ships

(in any case the German text prevails)

Chapter 1

General provisions

1 Application

1.1 This part shall apply to:

1. cargo ships undertaking domestic voyages, irrespective of the gross tonnage;
2. cargo ships undertaking international voyages where the SOLAS Convention does not apply;

1.2 This part shall not apply to

- .1 Federal German Navy ships and German Maritime Search and Rescue Service ships;
- .2 inland waterway vessels with a technical approval for waterways in zones 1 and 2 pursuant to Appendix 1 to the "Binnenschiffsuntersuchungsordnung" (Inland Waterway Vessel Inspection Ordinance) of 6 December 2008 ("Bundesgesetzblatt" – Federal Law Gazette I p. 2450), as amended, on voyage on these waterways;
- .3 fishing vessels;
- .4 recreational craft as defined by the "See-Sportbootverordnung" (Ordinance on seagoing recreational craft);
- .5 small craft which are not used on a commercial basis for sports and leisure purposes;
- .6 traditional ships subject to part 3;
- .7 workboats up to 8 m long.

2. Definitions

2.1 For the purposes of this part, the following definitions apply:

1. **cargo ship:** a ship which is not a passenger ship;
2. **small craft:** a cargo ship with a gross tonnage of up to 100;
3. **special vessel:** a cargo ship with a gross tonnage in excess of 100 for a particular purpose, subdivided into:
 - a) **tugboat:** a cargo ship which is built and designed to haul and push water craft, floating tools and other floating equipment;
 - b) **authority vessel:** a cargo ship which is used for official and not commercial purposes, in particular a service vessel within the meaning of section 3(c) of the German "Flaggenrechtsgesetz" (Flag Act);
 - c) **water craft with no independent propulsion:** a cargo ship which is built so as to be hauled or pushed by other craft, in particular barges or pontoons;
 - d) **floating tool:** a cargo ship built in such a way that it can only accommodate a specific tool and which does not have any other means of loading, in particular dredgers, floating cranes, pile drivers, hoisting devices, drilling, jack-up and production platforms;
 - e) **jack-up vessel:** a cargo ship which is built and designed to transport and erect structures at sea;
4. **Special purpose ship:** a cargo ship with mechanical propulsion which, on account of its role, carries in excess of 12 individuals in the form of specialist personnel within the meaning of the SPS Code;
5. **Offshore supply vessel:** a cargo ship used primarily to transport supplies, material and equipment to offshore facilities and which is designed in such a way that the superstructure with the quarters and the bridge is located in the front part of the vessel and a load deck which is exposed to the weather for handling/dealing with cargo at sea is located in the aft part of the vessel;
6. **Offshore service vessel:** a cargo ship or high-speed craft used to transport offshore service personnel who do not work on board, whereby the number of persons on board, including the crew, may not exceed 60, while the number of passengers who are not offshore service personnel may not number more than 12;
7. **Offshore service personnel:** individuals involved in the construction, operation and maintenance of offshore wind farms and other offshore structures;
8. **Safety training:** training with respect to safety procedures, operating personal protective equipment and a vessel's protective gear on the basis of Resolution A.891(21) of the IMO Assembly ("Verkehrsblatt" – Transport Gazette 2000 S. 129);
9. **Fitness for sea service:** medical fitness to perform deck service in accordance with the "Verordnung über maritime medizinische Anforderungen auf Kauffahrteischiffen" (Ordinance concerning the maritime

medical requirements on merchant vessels) of 14 August 2014 (Bundesgesetzblatt I p. 1383), as amended;

10. **High-speed craft:** a craft which attains a maximum speed in m/s equal to or greater than:
 $3.7\sqrt[0.1667]{\nabla}$
where:
 ∇ = the volume of displacement corresponding to the design waterline (m³), with the exception of craft where the hull is kept entirely above the surface of the water in the non-displacement state by means of aerodynamic forces which are generated by the ground effect;
11. **Mobile Offshore Drilling Unit (MODU):** a craft capable of engaging in drilling operations for the exploration for, or exploitation of, resources beneath the seabed, such as liquid or gaseous hydrocarbons, sulphur or salt;
12. **Workboat:** an open or partly covered craft for use in transport, rescue, salvage and work operations and for similar purposes, in a limited scope and over short distances inshore, or as a dinghy to be used within sight of the mother ship;
13. **Near-coastal:** a distance of not more than 5 nautical miles from the coastline at mean high water;
14. **Domestic voyage:** the voyage in sea areas from a German port to the same or another German port;
15. **International voyage:** the voyage from a German port to a port outside Germany, or conversely;
16. **New ship:** a ship, the keel of which was laid on or after 01 October 2015 or which was at a similar stage of construction at this time; a 'similar stage of construction' means the stage at which:
 - a) construction identifiable with a specific ship or craft begins, and
 - b) assembly of that ship has commenced, comprising at least 50 t or 1 % of the estimated mass of all structural material, whichever is less;
17. **Existing ship:** a ship which is not a new ship;
18. **SOLAS Convention:** International Convention for the Safety of Life at Sea 1974, with Protocols from 1978 and 1988 (Bundesgesetzblatt 1979 II p. 141, 1980 II p. 525, 1983 II p. 784, 1994 II p. 2458 and the Annexes), as amended;
19. **Convention on Load Lines:** International Convention on Load Lines from 1966, including Annex and Protocol from 1988 (LL 66, Bundesgesetzblatt 1969 II p. 249, 1977 II p. 164, 1994 II p. 2457 and the Annexes to the Bundesgesetzblatt 1994 II No 44 of 27 September 1994, p. 2), as amended;
20. **SPS Code:** Code of safety for special purpose ships
 - a) for ships built or approved as special purpose ships prior to 1 January

2009: Code of Safety for Special Purpose Ships (Resolution A.534(13)), adopted on 17 November 1983 (Verkehrsblatt 1993 p. 671), as amended;

- b) for ships built or approved as special purpose ships on or after 1 January 2009: Code of Safety for Special Purpose Ships (Resolution MSC.266(84)), adopted on 13 May 2008 (Verkehrsblatt 2009 p 84), as amended;

21. MODU Code: Code for the construction and equipment of mobile offshore drilling units

- a) for platforms whose keel was laid prior to 1 January 2012 and which are not at a similar stage of construction as at 1 January 2012: Code for the construction and equipment of mobile offshore drilling units (MODU Code 89, Resolution A.649(16)), adopted on 19 October 1989, as amended;
- b) for platforms whose keel was laid on or after 1 January 2012 or which are at a similar stage of construction at this time: Code for the construction and equipment of mobile offshore drilling units (MODU Code 2009, Resolution A.1023(26)), adopted on 2 December 2009 (Verkehrsblatt 2011 p. 747, special edition B 8150), as amended;

22. HSC Code: International Code of Safety for High-Speed Craft

- a) for ships built prior to 1 January 2002: International Code [of Safety] for High-Speed Craft (HSC Code 1994, Resolution MSC.36(63)), adopted on 20 May 1994 (Verkehrsblatt No 21 a of 31 January 1996), as amended;
- b) for ships built on or after 1 January 2002: International Code of Safety for High-Speed Craft (HSC Code 2000, Resolution MSC.97(73)), adopted on 5 December 2000 (Verkehrsblatt 2002 p. 449), as amended;

23. Code on Intact Stability: Resolution MSC.267(85) on the International Code on Intact Stability 2008 (Verkehrsblatt 2009 p. 724), as amended;

24. Offshore Supply Vessel Guidelines (OSV Guidelines): Guidelines for the design and construction of offshore supply vessels, 2006, (MSC.235(82)), adopted on 1 December 2006 (Verkehrsblatt 2010 p. 451), as amended;

25. Directive 2009/15/EC: Directive 2009/15/EC of the European Parliament and of the Council of 23 April 2009 on common rules and standards for ship inspection and survey organisations and for the relevant activities of maritime administrations (OJ L 131 of 28 May 2009, p. 47), as amended;

26. Regulation (EC) No 391/2009: Regulation (EC) No 391/2009 of the European Parliament and of the Council of 23 April 2009 on common rules and standards for ship inspection and survey organisations (OJ L 131 of 28 May 2009, p. 11), as amended;

27. Directive 2014/90/EU: Council Directive 2014/90/EU of the European Parliament and the European Council of 23 July 2014 on marine equipment and repealing Council Directive 96/98/EC (Marine Equipment Directive) (OJ

L 257 of 28 August 2014 p. 146), as amended;

28. **BG Verkehr:** the Ship Safety Division of the German Social Accident Insurance Institution for Commercial Transport, Postal Logistics and Telecommunication (BG Verkehr);
29. **Recognised organisation:** a classification society recognised in conformity with Regulation (EC) No 391/2009 by means of which the working relationship as defined by Article 5(2) of Directive 2009/15/EC has been established;
30. **RO Code:** Code for recognised organisations within the meaning of the SOLAS Regulation XI-1/1 (MSC 349(92) and MEPC 237(65)), adopted on 17 May 2013 (Verkehrsblatt 2014 p. 942), as amended;

2.2 Otherwise, the definitions specified in the SOLAS Convention shall apply.

2.3 DIN, DIN EN and DIN EN ISO standards, to which reference is made in this part, are published by Beuth Verlag GmbH, Berlin and Cologne.

3. Safety requirements

3.1 New and existing cargo ships must comply with the requirements laid down in Chapter 2 to this part, unless otherwise stipulated below.

3.2 As regards new and existing small craft, the requirements laid down in Chapter 2 shall only apply unless otherwise specified in Chapter 3.

3.3 As regards new and existing special vessels, the provisions under Chapter 4 must also be applied.

3.4 As regards new and existing workboats, the provisions under Chapter 5 shall apply.

3.5 As regards jack-up vessels, the BG Verkehr may also consult the provisions of the SPS Code and the MODU Code if this is necessary to account for the specific requirements of the ship. The BG Verkehr shall determine which provisions are to be applied in a given case.

3.6 In the case of special purpose ships and offshore service vessels which are not high-speed craft, the BG Verkehr may consult the regulations under the SPS Code in place of the provisions of this part if this is necessary to account for the specific requirements of the ship. The BG Verkehr shall determine which provisions are to be applied in a given case.

3.7 As regards offshore service vessels which, based on their design, constitute high-speed craft, the requirements laid down in Chapter 6 shall apply.

3.8 For offshore supply vessels, the provisions of the OSV Guidelines must be applied. If, according to the OSV Guidelines, the requirements laid down by the administration have to be observed, the provisions under Annex 1 shall apply.

3.9 For high-speed craft, the requirements laid down in the HSC Code shall apply, unless regulation 3.7 applies.

3.10 As regards mobile offshore drilling units, the requirements laid down in the MODU Code shall apply.

4. Surveys and the issuing of certificates

4.1 Cargo ships must be surveyed in accordance with Chapter I Regulations 8 to 10 of the SOLAS Convention. Regulation 1.5 of the HSC Code shall apply to the surveying of high-speed craft. Mobile offshore drilling units are subject to the surveys as per Regulation 1.6 of the MODU Code.

4.2 Workboats, with the exception of dinghies, shall

- a) undergo an initial survey prior to commissioning;
- b) followed by an interim survey between years 2 and 3 prior to the expiry date of the safety certificate if the certificate has been issued for a period of more than three years; and
- c) a renewal survey within 3 months before the date of expiry of the safety certificate.

4.3 Dinghies and their launching appliances must be tested in accordance with SOLAS Regulation III/20.

4.4 Once a survey has been carried out, no modifications may be made to the construction, the facilities, the machinery, the equipment and the other devices covered by the survey without the approval of the BG Verkehr.

4.5 If the survey reveals compliance with the applicable provisions of this part, the BG Verkehr shall issue a Ship Safety Construction and Equipment Certificate and a Ship Safety Radio Certificate. SOLAS Regulations I/12, 14 and 16 shall apply accordingly.

4.6 As regards special purpose ships and offshore service vessels as per regulation 3.6, in place of the Ship Safety Construction and Equipment Certificate as per regulation 4.5, the BG Verkehr shall issue a Special Purpose Ship Safety Certificate as per the model in the Annex to the SPS Code.

4.7 As regards offshore supply vessels, in addition to the Ship Safety Construction and Equipment Certificate as per regulation 4.5, the BG Verkehr shall issue a Document of Compliance as per the model in Annex 2 to the OSV Guidelines.

4.8 As regards offshore service vessels as per regulation 3.7, in place of the Ship Safety Construction and Equipment Certificate as per regulation 4.5, the BG Verkehr shall issue a national High Speed Craft Safety Certificate and a permit to operate high speed craft.

4.9 As regards high-speed craft, in place of the Ship Safety Construction and Equipment Certificate as per regulation 4.5, the BG Verkehr shall issue a High Speed Craft Safety Certificate as per Regulation 1.8 of the HSC Code and a permit to operate high-speed craft as per Regulation 1.9 of the HSC Code.

4.10 As regards mobile offshore drilling units, in place of the Ship Safety Construction and Equipment Certificate as per regulation 4.5, the BG Verkehr shall issue a Mobile Offshore Drilling Unit Safety Certificate as per Regulation 1.6 of the

MODU Code.

- 4.11 Dinghies shall not receive a safety certificate.
- 4.12 Obligations to conduct surveys and issue certificates arising from other legal provisions shall not be affected.

5. Incidental provisions

- 5.1 Depending on the structural condition in respect of which proof has been furnished and the existing equipment, the BG Verkehr can limit the trading area or impose conditions as long as this serves the preservation of safety on board the ship.
- 5.2 Attestations and certificates awarded up to 30 September 2015 on the basis of the Ship Safety Ordinance in the version published on 3 September 1997 (Bundesgesetzblatt I p. 2217), as last amended by the Ordinance of 19 June 1998 (Bundesgesetzblatt I p. 1431), shall remain in force until they expire.
- 5.3 By way of deviation from regulation 3, as regards existing vessels, the BG Verkehr may grant the protection of prior rights to existing ships if these vessels satisfy the provisions and technical regulations applicable to them previously. A safety certificate assigned on this basis may involve incidental provisions if the purpose of this directive necessitates it.

Chapter 2 Cargo ships

1. Basic principles

- 1.1. SOLAS Chapters II-1, II-2, III, IV, V, VI, VII and XI-1 and C. I (SOLAS) of Annex 1 of this Ordinance shall apply accordingly to cargo ships in accordance with this part, unless otherwise specified in the following provisions.
- 1.2. If the requirements of one of the provisions of the SOLAS Convention or this part to be applied in a given case in accordance with regulation 1.1 cannot be satisfied, taking under consideration the trading area, vessel type and size, the BG Verkehr can specify equivalent facilities, tools and measures.
- 1.3. On cargo ships with a gross tonnage below 150, SOLAS Regulations V/15, 20 to 26 shall not apply.
- 1.4. The construction and maintenance of the hull, the main and auxiliary machinery and electrical and automatic installations must comply with the standard prescribed by the classification rules of a recognised organisation for the respective vessel type, unless stipulated to the contrary in the regulations below.
- 1.5. The equipment prescribed in the areas of fire protection, life-saving appliances, radio and navigation must be approved in accordance with Directive 2014/90/EU, unless stipulated to the contrary in the regulations below. Equipment prescribed, as well as voluntary and additional equipment as per SOLAS Regulation V/18.7, which is not subject to Article 3 of Directive 2014/90/EU, must be approved by the BG Verkehr, the Federal Maritime and Hydrographic Agency (BSH) or a

recognised organisation¹.

- 1.6. Prescribed equipment which is lawfully manufactured or placed on the market in another Member State of the European Union or Turkey, or in an EFTA State which is a signatory to the Agreement on the European Economic Area, is recognised as being equivalent.

2. Machinery and electrical installations

On request, the BG Verkehr may approve the supplying of the electrical or electro-hydraulic main steering gear by an electrical circuit fed from the main switchboard provided an auxiliary steering system which is not power operated is sufficient according to SOLAS Regulation II-1/29.

3. Fire protection

- 3.1. On cargo ships with a gross tonnage of less than 300, with the exception of tank ships, the fire pump prescribed in accordance with SOLAS Regulation II-2/10 may be attached to the main propulsion if the shafting can be separated easily from it. The capacity of this pump and the associated piping system must be sufficient such that at least one powerful water jet can be delivered to every point of the vessel.
- 3.2. On cargo ships with a gross tonnage of less than 300, an adequate number of fire hydrants must be available and distributed in such a way that every part of the ship can be reached using a water jet fed by a single length of hose. In engine rooms, no hydrant and no international shore connection as per SOLAS Regulation II-2/10.2.1.7 are required.
- 3.3. Every cargo ship with a gross tonnage of less than 500 must carry on board at least three fire hoses, three multi-purpose spray/jet fire nozzles and three hose coupling wrenches. The individual hose length may not exceed 15 m, 10 m in engine rooms. Only standardised 52 mm Storz connections shall be used as hose and spray/jet fire nozzle couplings.
- 3.4. On cargo ships with a gross tonnage of less than 300, at least 3 portable 6 kg fire extinguishers for fire classes ABC must be provided in the accommodation area.
- 3.5. In engine rooms, the portable foam extinguishers as per Regulation II-2/5.3.2.1 and 5.3.2.2 are not required. On cargo ships with a gross tonnage of less than 300, in spaces containing internal combustion engines, a foam fire extinguisher with a volume of at least 45 l or another equivalent device is only required in case of a total output of 746 kW or higher; the installation of a fixed fire extinguishing system is not required.
- 3.6. On all cargo ships with a gross tonnage in excess of 250 but less than 500, two fire-fighter's outfits must be carried on board. Reserve compressed air cylinders with a total air volume of at least 3 200 l must be carried on board.
- 3.7. On cargo ships with a gross tonnage of less than 250, a smoke detection system for corridors, flights of stairs and emergency escape routes corresponding to

¹ Approval shall be carried out in accordance with the responsibilities assigned in the German Federal "See-Aufgabengesetz" (Federal maritime responsibilities act).

SOLAS Regulation II-2/7.2.1 is not required.

- 3.8. The exhaust ducts from galley stoves do not need to comply with SOLAS Regulation II-2/7. They must, however, be constructed from steel and areas at risk must be protected against exposure to heat.
- 3.9. In spaces, lockers and cabinets for flammable liquids (including paints), an integral fire extinguishing system is not required if a portable fire extinguisher (6 kg, fire classes ABC) is arranged at the entrances.
- 3.10. The liquefied gas installation for domestic purposes must comply with the technical rules and regulations of the German Technical and Scientific Association for Gas and Water (DVGW).

4. Life-saving appliances

- 4.1. Cargo ships with a gross tonnage of less than 500 must carry the following life-saving appliances on board:
 - a) on each side of the vessel, one or more automatically inflatable life-rafts as per paragraph 4.2 of the International Life-Saving Appliances (LSA) Code for all persons on board in a position such that they are able to float freely,
 - b) additionally, on one side of the vessel, a rescue boat as per paragraph 5.1 of the International LSA Code beneath a launching appliance. If the rescue boat also satisfies the requirements pertaining to lifeboats as per paragraph 4.4 of the International LSA Code and if the holding capacity is sufficient for all persons on board, life-rafts situated on the side on which the boat is positioned can be dispensed with. If the remaining life-rafts prescribed cannot be brought over quickly from the other side of the vessel, automatically inflatable life-rafts for all persons on board must also be provided on this side.
- 4.2. By way of derogation from regulation 4.1 letter a), tank ships must carry the following life-saving appliances on board:
 - a) on each side, a motor lifeboat as per paragraph 4.9 of the International LSA Code beneath launching appliances, the holding capacity of which is sufficient on each side for all persons on board. If one of these lifeboats also satisfies the requirements pertaining to a rescue boat as per paragraph 5.1 of the International LSA Code, the need for the separate rescue boat pursuant to regulation 4.1 letter b) can be dispensed with,
 - b) one or more automatically inflatable life-rafts with a total capacity designed to accommodate all the persons on board,
 - c) if the life-rafts prescribed under letter b) cannot be conveyed rapidly from one side of the vessel to the other, additional life-rafts so that the total capacity available on each side is sufficient for accommodating all persons on board.
- 4.3. Cargo ships within the meaning of regulations 4.1 and 4.2 may carry the following life-saving appliances on board instead of the equipment prescribed therein:
 - a) a fully enclosed lifeboat as per paragraph 4.6 of the International LSA

Code, with a total capacity designed to accommodate all the persons on board, which

- aa) is positioned in such a way that it can be launched from the stern by free-fall being manned,
 - bb) in the case of tank ships, also satisfies the requirements under paragraph 4.9 of the International LSA Code, and
 - cc) is positioned beneath a launching appliance for controlled launching and resetting in the embarkation position;
- b) additionally, one or more automatically inflatable life-rafts with a total capacity designed to accommodate all the persons on board;
 - c) if the life-rafts prescribed under letter b) cannot be conveyed rapidly from one side of the vessel to the other, additional automatically inflatable life-rafts must be provided so that the total capacity available on each side is sufficient for accommodating all persons on board;
 - d) additionally, on one side of the vessel, a rescue boat as per paragraph 5.1 of the International LSA Code beneath a launching appliance.

4.4. On vessels within the meaning of regulations 4.1 to 4.3, a life jacket complete with light must be provided for every person on board, on vessels 50 m long or more, six lifebuoys must also be provided, while at least four lifebuoys must be available on vessels less than 50 m long; lifebuoys must be provided with self-activating lights, while a further two must each be provided with a 30 m long floatable lifeline.

4.5. If the deck from which the life-rafts in the water can be boarded at the lightest seagoing condition of the ship at sea is located more than 4.50 m above the surface of the water, in place of the life-rafts prescribed in regulations 4.1 to 4.3, manned, launchable life-rafts with launching appliances shall be provided, which, however, have to be positioned in such a way that they float freely and can be thrown over board.

4.6. Cargo ships with a gross tonnage of 250 and more, but less than 500, navigating in the shallow water trade must be equipped with one or more automatically inflatable life-rafts with a total capacity designed to accommodate all persons on board, along with a rescue boat beneath a launching appliance or a motorised boat approved by the erstwhile Seamen's Accident Prevention and Insurance Authority (See-Berufsgenossenschaft). In addition, at least four lifebuoys must be available along with a life jacket complete with light for every person on board; two lifebuoys must be provided with self-activating lights, while both of the others must each be provided with a 30 m long floatable lifeline.

4.7. Cargo ships with a gross tonnage of less than 250 navigating in the shallow water trade must be equipped with a rescue boat beneath a launching appliance which offers room for the regular crew. Existing motorised boats which have been approved by the erstwhile Seamen's Accident Prevention and Insurance Authority (See-Berufsgenossenschaft) may continue to be used. If additional persons are transported, an additional automatically inflatable life-raft must be carried on board. Furthermore, at least two lifebuoys, one of which must have a self-activating light, the other a 30 m long floatable lifeline, as well as a life jacket complete with light for every person on board, must be provided.

4.8. A line-throwing appliance does not have to be carried on board.

5. Subdivision and stability

5.1. Existing approved stability documents shall continue to be valid provided nothing has changed as regards the preconditions for their approval.

5.2. If a change is detected in the vessel's lightship displacement or its centre of gravity in terms of length or height, as a minimum, the intact and damage stability criteria applicable hitherto in relation to this vessel must continue to be observed.

5.3. If modifications are carried out which affect the hydrostatics of the vessel, new stability documents shall be drawn up on the basis of new lightship data and the new hydrostatics. The intact and damage stability criteria valid at the time of the modification must be observed.

5.4. If new stability documents are drawn up in relation to a vessel on the basis of the Code on Intact Stability, the inclining test for determining the lightship data may not date back more than 5 years.

6. Carriage of cargo

6.1. Upon application, the BG Verkehr may exempt vessels which, according to this part, are subject to SOLAS Regulation VI/5.6, from having to carry a Cargo Securing Manual.

6.2. Grain may only be carried as solid bulk cargoes if an authorisation as per SOLAS Regulation VI/9 is available and the loading is consistent with the grain loading plans or is effected in accordance with Section A9 regulations 9.1.1 to 9.1.5 of the International Code for the Safe Carriage of Grain in Bulk (IMO Resolution MSC.23(59), Verkehrsblatt 1993 p. 835), in which connection regulation 9.1.1 shall not apply to vessels whose keel was laid prior to 25 May 1980.

6.3. The Document of Authorisation for the Carriage of Grain in Bulk is issued by the BG Verkehr which is also responsible for approving the proofs as per SOLAS Chapter VI and issuing the permit as per Section A 9 of the International Code for the Safe Carriage of Grain in Bulk.

6.4. The documentation as per regulation A 3.4 of the International Code for the Safe Carriage of Grain in Bulk must be carried on board and presented to the competent authority in the port of loading on request.

Chapter 3 Small craft

1. Design and structural facilities

1.1. The small craft must have a ship's length [L] of at least 8 m and a maximum gross tonnage of 100. In the case of craft of less than 24 m load line length, the ship's length [L] shall be specified as the hull length in accordance with the definition of length as per DIN EN ISO 8666, issued April 2003. The load line length shall be determined in accordance with the International Convention on

Load Lines. The hull or load line length [L] shall be consulted in the dimensioning of components and/or used in the issuing of certificates, if necessary.

- 1.2. The strength of the hull and the ship's structure must be consistent with the actual draught and the trading area applied for, as well as the requirements of a recognised organisation. A collision bulkhead must be provided which is constructed in a watertight manner as far as the main deck (bulkhead deck). This bulkhead must be arranged at a distance of at least 5 % of the ship's length and, provided the BG Verkehr does not authorise anything to the contrary, a maximum of 8 % of the ship's length, from the forward perpendicular. The collision bulkhead may be penetrated by no more than one pipe for pumping water out of the forepeak and flooding it and the shut-off valve must be capable of being operated from a position above the main deck (bulkhead deck). No doors, manholes, access openings, ventilation shafts or other openings may be arranged in the collision bulkhead. If feasible and consistent with the design and proper operation of the vessel, further bulkheads (stuffing-box bulkhead, front and aft limiting bulkheads in the engine room, etc.) and a double bottom shall be provided.
- 1.3. The sealing state of the craft must be consistent with the trading area applied for. The small craft must be entirely covered.

2. Fire protection

By way of derogation from Chapter 2 regulation 3, the following regulations shall apply:

- 2.1 If, for accommodation spaces which are situated below deck and which cannot be accessed directly from the open deck, the danger exists that in the event of a fire, the escape route through the adjacent spaces is cut off, an emergency exit must be provided. The clear width of the emergency exit must be at least 400 mm x 400 mm. Where possible, however, it should be 600 mm x 600 mm.
- 2.2 Power operated ventilation must be capable of being shut down from the outside.
- 2.3 Openings in the ventilation appliances for accommodation and machinery spaces must be closable from outside.
- 2.4 Each space shall be equipped with one 6 kg fire extinguisher with an extinguishing agent for fire classes ABC. Where several spaces are interconnected, one fire extinguisher shall suffice. An additional 6 kg fire extinguisher for fire classes ABC shall be provided in the wheelhouse, in the cockpit or on the outside at the entrance to the accommodation area. As regards the cooking area, an integral 6 kg fire extinguisher for fire classes BC which can be activated from outside the installation space shall be provided.
- 2.5 The cooking area or galley must be covered with non-combustible tiling.
- 2.6 Exhaust gas tubes passing through decks must be fireproof. smoke hoods must be provided.
- 2.7 An air vent which is capable of being shut off with a minimum exhaust gas tube cross-section of 150 cm² must be provided for the galley and the living spaces.
- 2.8 Oil-fired heating systems must be equipped with suitable oil regulators to be

installed along the length of the vessel. Oil drip trays must be provided beneath oil burners and suchlike. Emergency stopping devices shall be provided for oil-fired heating systems, engine room ventilators and fuel supply pumps.

- 2.9 Engine room walls must be insulated with non-combustible material, the surface of which shall be flame-retardant and tight to oil mist. Steel walls only need to be insulated in relation to adjacent spaces. The minimum thickness of the insulating material with steel walls shall be 30 mm and with other walls 50 mm with a minimum density of 150 kg/m³ each. Engine room skylights must be furnished with wire reinforced glass and closable from the outside. The engine room door must be sufficiently gas-tight and equipped with a self-closing device. Fuel and bilge pumps, including the filters and mountings, must be made of steel.
- 2.10 Aluminium fuel tanks are not permissible for installation in the engine room. If the fuel tank is positioned outside the engine room and, hence, outside the area where internal combustion engines are installed, aluminium may be acceptable provided that the tank wall is not directly adjacent to the engine room or to the front engine room bulkhead. Approved remote shut-off devices (quick-closing valves) operable from outside the engine room must be provided at the fuel tanks. Fuel tanks must be equipped with a tank level indicator.
- 2.11 Flexible hose connections in the fuel and seawater systems may not be longer than 500 mm.
- 2.12 Exhaust gas pipes must be made of steel, insulated and covered with sheet steel.
- 2.13 The engine room must have a fixed fire extinguishing system (e.g. CO₂, powder, FM 200) which can be activated manually from outside the engine room. For powder extinguishing systems, the required quantity of powder is 0.5 to 1 kg per m³ of empty space. The extinguishing agent must be dispersed by pipes and powder nozzles which must especially be arranged above the propulsion units.
- 2.14 All insulation materials have to be non-combustible; all surface materials have to be flame-retardant.
- 2.15 All waste containers must be manufactured from non-combustible materials and may not have any openings in their side walls or bottoms. Wastepaper baskets must be designed in such a way that flames are prevented from leaping out.
- 2.16 Curtains and drapes must be flame-retardant.
- 2.17 The individual hose length of fire hoses may not exceed 20 m, 15 m in engine rooms.
- 2.18 A fire-fighter's outfit need not be carried on board.

3. Life-saving appliances

By way of derogation from Chapter 2 regulation 4, the following regulations shall apply:

- 3.1 Inflatable life-rafts with a total capacity designed to accommodate all persons on board must be carried. The rafts may be packed in certified flat containers if the setting up of round containers is not feasible on account of local circumstances and the BG Verkehr has given its explicit consent in a given case. The rafts must

be stored on board in such a way that they are able to float free. Lashings must be provided with hydrostatic release units.

- 3.2 For every person on board, a life jacket must be available, while every member of the watch must also have an approved, inflatable work vest based on an EU standard.
- 3.3 For every crew member, an immersion or anti-exposure suit must be provided on board.
- 3.4 As regards commercial use in the offshore industry, an immersion or anti-exposure suit must be provided for every person being on board in addition to the crew.
- 3.5 Lifebuoys shall be carried on board according to the following requirements:
 - a) Ship's length **up to** 15 m: two lifebuoys, one of which should have a self-activating night light and the other a 30 m long floatable line. In case of training craft, one of the lifebuoys must be provided with a sea anchor, flag, dual tone whistle and a bag with a colouring agent.
 - b) Ship's length **in excess of** 15 m: four lifebuoys, one of which should have a self-activating light and another a 30 m long floatable line. In case of training craft, one of the lifebuoys must be provided with a sea anchor, flag, dual tone whistle and a bag with a colouring agent.

Horseshoe lifebuoys may be used.

- 3.6 A ladder with fixed cross-beams and spokes which, when deployed, extends at least 50 cm beneath the surface of the water once folded down from the deck, and which can be attached securely on deck, must be provided.

4. Other equipment

- 4.1 A NAVTEX receiver need only be fitted if the VHF area covered by German coast stations is exceeded.
- 4.2 The mounting of the navigation lights, the sound signalling equipment and the assembly of radio equipment, compasses and nautical devices and instruments must be reviewed and approved by the Federal Maritime and Hydrographic Agency (BSH).

The following must be carried on board:

- 1 anchor equipment according to the building regulation of a classification society,
- 1 towing rope at least 5 times the length of the vessel,
- 1 storm jib (sailing vessels only),
- 1 cutting device for standing rigging (sailing vessels only),
- 1 rescue signal board,
- 2 buckets,
- 1 safety belt for every person on board,
- 1 jury rudder or an emergency tiller.

5. Trading area

The trading area is granted according to the intended service including, if required because of particular features of the vessel, a weather clause and a regional limitation. Regarding voyages, a distance of 10 nautical miles from the coast-line, at mean high water, may only be exceeded if proof is furnished by a recognised organisation that the strength of the hull is sufficient for a correspondingly large distance from the shore. A seat must be available for every passenger in covered spaces that are secured for the sea.

6. Exceptions and exemptions

The BG Verkehr may authorise exemptions if a similar level of craft safety can be guaranteed in another way. In particular, as regards a small craft in respect of which, given its modest size or special design, the requirements under this Chapter cannot be satisfied, it can be determined in a given case which requirements have to be satisfied so that the persons on board and other traffic are not endangered.

7. Supplementary requirements

As regards craft which do not comply with the classification rules of a recognised organisation, the following shall apply.

7.1 Design and construction

no content

7.2 Machinery installations

7.2.1 Main propulsion and auxiliary diesel engines

7.2.1.1 The main propulsion engines must be diesel engines. Petrol engines are only permitted as outboard motors.

7.2.1.2 Main propulsion engines must be equipped with a specification plate. The following data shall be provided on the specification plate of the main propulsion engines: continuous rated output and the corresponding rated speed, engine number, year of manufacture, type designation of the engine, manufacturer.

7.2.1.3 The main propulsion engines must be mounted on steel engine pads. This shall apply to both rigid and elastic mounting. Foundations with laminate as the top layer are not permitted in the area of the engine pads.

7.2.1.4 Main propulsion engines must be equipped with devices which ensure their automatic stop if the lubrication oil supply fails (lubrication fault protection). The setting of the lubrication fault protection pressure sensors must comply with the following table:

Setting of the pressure sensors	Switching pressure of the pressure sensor	Time delay
Alarm	0.8 or 0.9 bar	none or 2 s
Automatic shutoff	0.6 bar	none or 2 s

A means of disconnecting the lubrication fault protection can be provided in the wheelhouse. Disconnection must be indicated visually by a warning light in the wheelhouse.

- 7.2.1.5 The lubricating oil system of the main propulsion engines must be designed in such a way that, even under the most unfavourable swell conditions, the intake opening of the suction line of the lubricating oil pump is immersed into the lubricating oil in the oil sump.
- 7.2.1.6 For water-cooled main propulsion engines, there shall be two pumps in the seawater cooling system. The second pump may also be a power-operated bilge pump or a deck-washing pump. For water-cooled main propulsion engines with an output of 75 kW and more, there shall be two pumps in the fresh water cooling system. One pump shall suffice if emergency cooling can easily be established via a hose connection and a spare pump is available. With an output of up to 75 kW, one pump shall suffice if emergency cooling can easily be established via a hose connection. In case of keel pipe cooling, gate valves on the inner side of the ship's side shall be provided in the fresh water cooling system.
- 7.2.1.7 If diesel engines are started electrically on vessels with a gross tonnage of 50 and more, separate starter batteries must be provided for main propulsion and auxiliary diesel engines which are to be wired such that each engine can also be started with the battery of the other engine. Starter batteries for diesel engines may not be used as batteries for the ship's mains. Bearing in mind the mechanical and thermal loads on the starter, the capacity of the battery used for a certain starter size must be limited. For vessels with a gross tonnage of up to 50 navigating in the tidal flats and coastal trade, one starter battery for the main and auxiliary engine shall suffice. An additional battery, provided to supply the ship's mains, must also be capable of being wired in such a way that the main propulsion engine can also be started with the aid of this battery. Operation involving only one battery – both for starting the main engine and for supplying the ship's mains – is only permitted if a monitoring instrument displays the charging and capacity condition of the battery.
- 7.2.1.8 If starting is carried out with compressed air, two starting air receivers and two starting air compressors must be provided for main propulsion engines with an output of 75 kW and more. One of the compressors can be attached to the main engine. One starting air receiver shall suffice in the case of reversing gear units or controllable pitch propeller units.
- 7.2.1.9 Starting devices of non-reversible main propulsion engines must be designed such that 6 consecutive starting procedures are possible.
- 7.2.1.10 Main propulsion engines must be equipped with switchable lubricating oil duplex filters. With main propulsion engines with a rated output of up to 150 kW where the lubricating oil is supplied from the engine oil sump, single filters can be used if they are fitted with a pressure alarm downstream of the filter and allow a filter change during operation. To this end, bypassing with manually operated shut-off valves has to be provided.
- 7.2.1.11 Diesel engine exhaust gas pipes must be insulated so that they are entirely free from asbestos. All of the gas line insulation in the area of the diesel engine must be covered with a sheet metal cladding. For diesel engines with an exhaust pipe below the waterline, a vent or equivalent arrangement shall be provided at the highest point of the exhaust pipe which ensures that no seawater gets into the

propulsion engines.

- 7.2.1.12 The engine room must be ventilated by means of engine room ventilators, whereby the required intake of combustion air for the diesel engines and heating units as well as the air needed for removing heat from the above mentioned installations shall be considered. The minimum volume flows shall be determined individually for every water-cooled main propulsion engine and auxiliary diesel engine in accordance with the following table and then added together; air required for heating units need not be determined additionally.

Output of a main propulsion / auxiliary diesel engine	Airflow volume	Cross-section of the air supply line*	Output of a main propulsion / auxiliary diesel engine	Airflow volume	Cross-section of the air supply line
kW	m ³ /h	m ²	kW	m ³ /h	m ²
10	270	0.02	200	4 800	0.33
20	540	0.04	250	5 800	0.40
30	800	0.06	300	6 600	0.46
40	1 080	0.08	350	7 400	0.52
50	1 350	0.10	400	8 100	0.57
100	2 700	0.20	450	8 900	0.62
150	3 800	0.26	500	9 600	0.67

* For the calculation of the cross-section, a suction speed of 4 m/s is taken as the basis.

- 7.2.1.13 If engines with outputs in excess of 500 kW are installed, the engine room ventilation shall be designed in accordance with DIN ISO 8861: October 1998-10. If clear suction pipe cross sections are not possible, pressure fans with the volume flows as per the table under DIN ISO 8861: October 1998-10 must be provided. When using pressure fans, the clear suction pipe cross-sections can be reduced by 40 % compared to the values in the table.
- 7.2.1.14 Adequate supply and exhaust air conditions must be ensured at all times. The opening to the supply air pipe and the discharge air opening must be arranged in such a way that satisfactory purging of the space is ensured. Air short circuits must be avoided. Discharge air openings with an adequate cross-section are to be provided. Ventilation duct outlets in engine rooms may not be arranged in such a way that seawater entering the ducts can come into contact with electrical installations. In case of air-cooled main propulsion engines, the cooling air shall be discharged directly outside, or the calculated cooling air shall be added to the aforementioned values.
- 7.2.1.15 The air intake and discharge air openings in the engine room must be arranged in such a way that they can be closed using fire dampers which have to be operated from the open deck. They are to be arranged as high as possible. Devices for establishing the closed-down state, especially fire dampers, and doors must be hinged in such a way that the closures or locking mechanisms can be operated without having to step or reach into the area of the cross-sections to be locked. Closing and locking devices must be easily and quickly unlockable without having to use tools. The securing of closure covers on studs is not permitted. In respect of the combination of materials and bearing clearances, hinges and the

equipment of fire dampers must be resistant to seawater maintenance-free and accessible.

7.2.2. Bilge and drainage system

- 7.2.2.1 Small craft must be equipped with two power-operated bilge pumps. One of the power-operated bilge pumps can be attached to the main propulsion engine.
- 7.2.2.2 Small craft with a gross tonnage of 10 and above navigating in the tidal flats and coastal trade must be equipped with two bilge pumps. One bilge pump must be power-operated and can be attached to the main propulsion engine. The second bilge pump must be independent of the main propulsion plant and may be an integral manual bilge pump.
- 7.2.2.3 Small craft with a gross tonnage of less than 10 need only be equipped with one manual bilge pump having a delivery volume of at least 5 m³/h.
- 7.2.2.4 Manual bilge pumps may be installed in the engine room or on deck. The power-operated and manual bilge pumps must be capable of pumping out water from all compartments of the ship – with the exception of the forepeak. It must be possible to disengage the bilge pumps attached to the main engine.
- 7.2.2.5 Transportable electric immersion pumps and transportable bilge pumps with a petrol engine may not replace the integral power-operated and manual bilge pumps.
- 7.2.2.6 The minimum delivery volume of the power-operated bilge pumps should be 12 m³/h for vessels with a gross tonnage in excess of 50 and 8 m³/h for vessels with a gross tonnage in excess of 10.
- 7.2.2.7 In combined bilge/seawater systems, the following fittings, especially the non-return valves or angle cocks, shall be provided as a safety measure against the ingress of seawater:
 - a) on the pressure side of the pump
one non-return valve or
the discharge pipe extending up in a bend and the discharge ending sufficiently high above the water line
 - b) on the suction side of the pump
two non-return valves or
one angle cock and one non-return valve or
one L-cock (no T-cock) and one non-return valve.
- 7.2.2.8 In case of a bilge pumping system which is separate from the seawater system, one non-return valve shall suffice on the suction side; on the pressure side of the pumps, the fittings shall be the same as for a combined bilge/seawater system. Only a limited number of hoses may be incorporated in bilge and seawater systems. The hoses must be flame-resistant, type-tested by a recognised organisation and labelled as such. The hose connections may not exceed a length of 500 mm.
- 7.2.2.9 Vessels with power-operated bilge pumps must be equipped with an oil separator drum (bilge pumping and drainage equipment for separating oil and water) or an approved oil filtering equipment (15 ppm equipment). When using an oil separator pan for pumping out the residual oil in the bilge, a manual bilge pump shall be

provided.

- 7.2.2.10 The hand wheels for operating the valves in the seawater cooling intake pipes must be arranged above the bottom boards or the sea cocks must be provided with a remote control from the open deck.
- 7.2.2.11 A bilge level alarm shall be provided in closed engine rooms with enough delay that variations in the water level caused by the vessel's movements do not trigger the alarm. The electric signal generator (horn) shall be mounted outside on top of, or at, the wheelhouse. If a switch-off control is provided for the acoustic signal, a warning light must light up in the wheelhouse if the signal generator is switched off.

7.2.3 Fuel system

- 7.2.3.1 Fuel tanks must consist of sheet steel. Permanently laid filling pipes or flame-resistant hoses which lead from the open deck to the fuel tank must be provided for bunkering. The filler necks for the fuel tanks must be arranged in such a way that oil pollution during bunkering is precluded by special safeguards, especially by means of laminated drip trays.
- 7.2.3.2 Remote actuation of shut-off valves in the discharge lines of fuel tanks (remote fuel shut-offs) must be carried out from outside the engine room. Cable controls for remote fuel shut-off must be protected in the passage area, stairways in particular, by means of pipes or protective metal panels to prevent unintentional actuation.
- 7.2.3.3 Air pipes of fuel tanks must end on the open deck, be protected against the ingress of seawater and, altogether, have a clear minimum cross-section of 1.25 times the clear cross-section of the filling pipe.
- 7.2.3.4 Fuel level indicators on tanks made of glass, Plexiglas or similar material may not be used. Fuel tanks with a capacity of up to 50 l and fuel tanks in partly covered craft are exempted from this. In this case, the fuel level indicators must be provided with self-closing valves. No hose connection may exceed 500 mm in length.
- 7.2.3.5 Fuel pipes must be manufactured from steel tubes in a standardised design. Only a limited number of hoses may be incorporated in the fuel system. They must be flame-resistant, type-tested by a recognised organisation and labelled as such.
- 7.2.3.6 At internal combustion engines, exposed high-pressure fuel delivery pipes between the fuel injection pumps and fuel injector valves must be protected by a jacketed piping system. Any leakage fuel must be caught in a collector that is alarm monitored.
- 7.2.3.7 Fuel system components, especially casings of fuel filters and priming pistons, may not be made of glass, Plexiglas or similar material.
- 7.2.3.8 Fuel filters shall be designed as switchable duplex filters. They may not be arranged above flywheels of main and auxiliary diesel engines which are only covered with guard plates.

7.2.4 Control of propulsion plant

7.2.4.1 Steel wires used to operate the main engine, reversing gear units, speed reduction gears and the variable pitch propeller unit must be designed in such a way that the redirecting is effected by means of rollers 80 mm in diameter and the wire eyes of the cable controls secured using three cable clamps. The control cables must be protected in the passage area, stairways in particular, by pipes or protective metal panels to prevent unintentional actuation.

7.2.4.2 Bowden control cables for actuating main engines, reversing gear units, speed reduction gears and variable pitch propeller units must be designed as slide or ball types. During installation, the manufacturer's instructions must be observed. In particular, the points below must be considered during installation:

- a) no transverse forces (at right angles to the direction of pressure or tension) may occur at the ends of the Bowden control cables; for this reason, for example, the deflection angles are limited;
- b) the minimum values for the bending radii must be observed;
- c) the manufacturers' pipe clamps must be used and provided at intervals specified in the installation instructions;
- d) when using pipe connectors, mounting mandrels must be used, if necessary; and
- e) proper mounting in the area of the ball joints.

7.2.4.3 Monitoring devices must be provided in the engine control panel as minimum for the lubricating oil, cooling water, the temperature in the exhaust gas manifold of the main engine for engines of 250 kW and more, the starting air and control air. In addition, a turning and rotation indicator for the propeller shaft, for controllable pitch propellers also a device indicating the initial position of the blades, and an ammeter for monitoring the battery recharging equipment must be installed. Alarms indicating excessively low lubricating oil pressure and an excessively high cooling water temperature are to be provided.

7.2.5 Propeller shafts and gears

7.2.5.1 The propeller shafts² are calculated according to the formula

$$d \geq C \sqrt[3]{P / n_w}$$

d	[mm]	Required diameter of the propeller shaft
P	[kW]	Output of the main propulsion engine
n_w	[rpm]	Shaft speed ($n_w = n_m/i$)
n_m	[rpm]	Engine speed
i		Gear reduction (e.g. $i = 4 : 1$, corresponds to $i = 4$)
C values		From the table below:

² Propeller shafts which are lubricated with grease manually or automatically. The efficiency of the main gear is set at 0.97.

		C
Quenched and tempered steels DIN EN 10083-1: October 2006 DIN EN 10083-2: October 2006	C 35	132
	C45	126
Stainless steels DIN EN 10083-1: 2014	X10CrNiTi 18 9	131
	X10CrNiNb 18 9	131
	X35CrMo 17	117
	X22CrNi 17V	116

If the material is not known in detail, C is to be set

for quenched and tempered steels C = 132 and
for stainless steels C = 131.

7.2.5.2 In case of propeller shafts of elastically mounted main propulsion engines with an output of more than 40 kW, a twofold bearing system of the shaft shall be provided. An adequately sized flexible coupling must be installed between the engine/gear unit and the driveshaft.

7.2.5.3 As regards the design and installation of the gears, the following principles must be observed:

- a) the engine output which cannot be overloaded, e.g. output B, DIN 6271 or ISO 3046/1, shall be taken as a basis;
- b) the rated output of the gear unit shall be planned to be approximately 25 % greater than the rated output of the drive motor;
- c) when installing the gear unit, attention must be paid to the required clearance of the gearshift for the trouble-free operation of the shifting clutch; and
- d) as regards gear units with integrated thrust bearing, particular consideration must be given to the reception of the propeller thrust in the mechanical engineering foundation.

7.3 Electrical installations

7.3.1 The electrical installations must comply with the generally recognised rules of marine electro technology and electronics. They shall be dimensioned and constructed so that they function perfectly under the anticipated angles of heel, temperatures and vibrations, and frequency and voltage deviations. All electrical installations must be encapsulated or installed in such a way that they cannot be damaged by water, moisture, fuel and oils of any type.

7.3.2 Small craft must be equipped with 2 generators, one of which can be attached to the main propulsion engine (shaft generator). One of the two generators must be driven by an auxiliary diesel engine. The output of the attached generator must be 1.25 times the power rating of the ship's mains. For small craft with a gross tonnage of up to 50 navigating in the tidal flats and coastal trade, one generator attached to the main engine shall suffice.

7.3.3 Switchboards and electrical equipment such as sockets and plugs must comply with recognised technical regulations.

- 7.3.4 If the free work space cannot be observed on small vessels, the switch boards and switching devices must be mounted at easily accessible locations. As regards occasional operating in switchboards on some components and controls with push buttons, turning knobs or toggle levers, especially fuses and lamps, protected areas shall be provided within the switchboard to prevent contact with live parts under current. On vessels which can navigate without engineer officers, only switchboards which allow the replacement of fuses and the operation of reset devices from the outside should be installed.
- 7.3.5 Insulated wires and cables, and their installation, must comply with the classification rules of a recognised organisation. As far as possible, wires and cables shall be laid in such a way that they are accessible and exchangeable. Cables shall not be laid within room insulations. Bulkhead and deck penetrations must be watertight and fireproof in accordance with the requirements pertaining to these bulkheads and decks.
- 7.3.6 In case of vertical arrangements and protective tubes, as well as cables with small cross-sections, strain relief must be provided or it must be ensured by means of cable fastening that the tensile strains remain within permissible limits.
- 7.3.7 Cable terminals may only be tied up in accordance with regulations. As a rule, only two cores may be connected for every terminal.
- 7.3.8 The minimum degrees of protection of the electrical devices as per DIN EN 60529 and VDE 0470-1:2014-09 must be consistent with the following table:
- | | | | |
|----|------------------------------------|----|----|
| a) | engine rooms, service rooms | IP | 13 |
| b) | below deck, accommodation, cabins | IP | 20 |
| c) | enclosed control panel | IP | 23 |
| d) | open deck, open control panels | IP | 55 |
| e) | devices which can be flooded | IP | 56 |
| f) | ventilation ducts | IP | 44 |
| g) | accumulator rooms, cabinets, boxes | IP | 44 |
- 7.3.9 Protective earthing must be provided for all electrical systems with a voltage of 50 V and more. Exposed conductive parts of equipment which are not live but which, in the event of a fault, may carry dangerous contact voltage, must be connected electrically conducting to the ship's hull (earthed).
- 7.3.10 As regards wooden craft and vessels which are manufactured from electrically non-conductive material, accessible earthing bolts within the craft's interior which are connected to a non-laminated metal keel or copper plate or an equivalent metal at least 0.2 m² in size are to be provided. Earthing conductors of electrical consumer loads which do not have protective insulation must be connected to an earth plate on the underwater hull if it consists of GRP or wood.
- 7.3.11 The zinc anodes on the underwater hull must be arranged such that they are not located on the hull at the level of the propeller blade ends.
- 7.3.12 Terminal boxes for the shore connection shall be provided. The cables must be permanently connected to the main switch board. The shipboard connection shall be made by means of a plug-in connection.

- 7.3.13 Accumulators must be installed in well-ventilated boxes, cabinets or rooms which are easily accessible for maintenance.

Chapter 4 Special craft

1. Design and construction

- 1.1. Chapter 2 regulation 1.4 shall not apply to special craft which had a valid Ship Safety Construction and Equipment Certificate on 30 September 2015.
- 1.2 In terms of their design and sturdiness, as well as the construction of the machinery and electrical installations, craft as per regulation 1 must be designed and equipped in such a way and be of such a condition that they satisfy the stresses necessitated by their intended use. As regards modifications which may impair the strength of the vessel, proof must be furnished of the ample strength of the hull by means of a calculation-based verification.

2. Tugboats

As regards tugboats which are also used as harbour tugs, the following applies:

- 2.1 Operator platforms on the bridge must be arranged and designed in such a way that a complete overview of every manoeuvring situation by the ship's master is guaranteed. The view astern from the main propulsion operating stations and winches must be guaranteed from the bridge.
- 2.2 The bridge must be equipped with daylight radar and an additional monitor with daytime viewing properties. This monitor shall be arranged in such a way that even when moving astern, the radar image can be observed in the direction of movement.
- 2.3 The existing eye-level front, side and rear windows in the wheelhouse have to be inserted at a downwards angle, as they have to be non-reflecting.
- 2.4 For all existing wheelhouse windows at eye level, with the exception of windows in doors and adjustable windows at the sides, wipers driven by electric motors must be provided.
- 2.5 Tugboats providing assistance in sea ports must be equipped with 2 main propulsion units which, including the propeller system, are independent of each other. In the event of one of the two main propulsion units breaking down, the second one must remain fully manoeuvrable. They are to be equipped with a drive unit arranged in the front third of the ship, in particular Voith Schneider or Schottel propulsion.
- 2.6 All the important control and monitoring instruments for the main propulsion units, the associated units and the other installations essential for propulsion must be installed on the bridge.
- 2.7 As regards the towing winches, operator stands on the bridge are to be provided, while as regards store winches, the same are to be provided on the bridge and on deck. The operator stands must be equipped with control and monitoring elements.

- 2.8 Two devices acting independently of each other must be provided which facilitate the slipping of the tow hook or the unlocking of the towing winch. One of these devices must also continue to function in the event of operational malfunctions. Equipment which facilitates the rapid release of tow hooks and winches from the bridge and from the deck must be provided. If the tugboats are equipped with a hydraulic tow hook, one release system shall be sufficient. Release elements for the tow hook must be arranged on the bridge and on deck.
- 2.9 There has to be a gap in the bulwarks on each side so that assistance can be provided in the event of someone falling overboard.

3. Authority vessels

As regards authority vessels, the BG Verkehr may authorise exemptions from requirements to be met as per this part if this is required in order to fulfil official duties.

4. Water craft with no independent propulsion

- 4.1 Water craft with no independent propulsion, but with a permanent crew, must be treated as vessels which have independent means of propulsion with regard to the provisions concerning intact and damage stability and life-saving appliances.
- 4.2 The GMDSS radio equipment can be replaced by a hand-held transceiver with DSC capability³.

5. Floating tools

For floating tools, the BG Verkehr shall determine which other requirements have to be satisfied with respect to the execution of construction work, equipment and operation, taking account of size and intended use.

Chapter 5 Workboats

1. General provisions

- 1.1 For workboats more than 8 m long that are deployed independently within sight of the shore, the requirements under Chapter 3 shall apply accordingly, unless something to the contrary is specified below.
- 1.2 The buoyancy of the boat filled with water must be guaranteed by means of buoyancy floats. The reserve buoyancy [kN] of the unmanned boat which is filled with water must be at least $0.3 \times L_B \times B_B \times H_B$.
Where
 L_B is the length of the boat in m;
 B_B is the width of the boat in m;

³ The device must comply with the stipulations of the European directives concerning making available on the market and the commissioning of radio installations (e.g. Directives 1999/5/EC and 2014/53/EU).

H_B is the moulded depth of the boat in m.

- 1.3 Global Maritime Distress and Safety System (GMDSS) radio equipment is not required if a hand-held transceiver with DSC capability⁴ is provided.
- 1.4 As regards a workboat for which, given its modest size or special design, the requirements under Annex 2 cannot be satisfied, the BG Verkehr can determine in a given case which requirements have to be satisfied so that the persons on board and other traffic participants are not endangered.
- 1.5 Workboats which are only deployed as dinghies within sight of the mother ship must at least satisfy the requirements laid down in Chapter V of the International LSA Code for standard or fast rescue boats.

2. Supplementary provisions

As regards craft which do not comply with the classification rules of a recognised organisation, the following shall apply.

2.1 Design and construction

- 2.1.1 In terms of their design and sturdiness, as well as the construction of the machinery and electrical installations, workboats must be designed and equipped in such a way and be of such a condition that they satisfy the stresses necessitated by their intended use.
- 2.1.2 Inflatable boats and rigid inflatable boats must at least comply with standard DIN EN ISO 6185 Part 4:2011-10.
- 2.1.3 Partly covered workboats must be equipped with a collision bulkhead. On craft with a hull length in excess of 15 m, the collision bulkhead must be installed at a distance of at least $0.035 \times LH$, but not exceeding $0.05 \times LH$, behind the stem. The collision bulkhead shall extend as far as to the exposed deck and shall not contain any openings.
- 2.1.4 On partly covered craft, the hull, including the deck and superstructure, along with all other parts, must form a watertight entity. If they extend beneath the level of the main deck, the main stairways in cockpits must be capable of being sealed as far as the main deck level. Deckhouses and other entrances or ladderways, as well as hatchways on the main deck level, must have a coaming height of at least 300 mm. Direct accesses from the deck to the engine room must have a coaming height of at least 460 mm.
- 2.1.5 Cockpits and all other areas which cannot be sealed in a watertight manner must be self-draining or equipped with other devices which prevent the penetration of water into the boat's interior. If the craft has a closed bulwark, freeing ports must be provided. The calculation is based on the provisions of the International Convention on Load Lines.
- 2.1.6 The height of the bulwarks or guard rails must be at least 1 m above the deck. A rail must be equipped with at least two through passages or longitudinal beams. If, as a result of this height, the routine operation of the workboat is

⁴ The device must comply with the stipulations of the European directives concerning making available on the market and the commissioning of radio installations (e.g. Directives 1999/5/EC and 2014/53/EU).

impeded, a lower height can be authorised if the BG Verkehr considers adequate protection to be a given. Approval may be accompanied by incidental provisions.

2.1.7 The intact stability must satisfy the requirements under DIN EN ISO 12217- 1: 2002.

2.1.8 The minimum freeboard, measured from the upper edge of the keel to the upper edge of the gunwale at its lowest point above the water line, shall be 6 % of the length overall or 40 % of the moulded depth, whichever value is greater, but not more than 800 mm. If the bottom edge of an opening in the hull through which water can penetrate into the craft is situated deeper above the water line than the bottommost point of the gunwale, the moulded depth shall be measured as far as the bottom edge of the lowest opening.

2.2 Machinery installations

2.2.1 Main propulsion and auxiliary diesel engines

2.2.1.1 Water-cooled main propulsion engines are to be provided with 2 cooling water pumps. The second pump can also be a power-operated standby pump which is connected via a hose connection. In the case of keel tube cooling, gate valves along the interior of the ship's side must be provided in the fresh water cooling system. Air-cooled engines are permitted.

2.2.1.2 One single filter suffices for the lubricating oil system. A lubricating oil protection system for main propulsion engines is not required.

2.2.1.3 If the main propulsion engines are started electrically, the capacity of the starter battery must be sufficient in order to ensure at least six consecutive starts of the main propulsion engine. Every craft must have at least one starter battery and one service battery. The circuit shall be effected in such a way that the service battery can also be used to start the engine, the starter battery, however, cannot be connected to the load circuit.

2.2.1.4 It must be ensured that the engine room has adequate ventilation. Engine room ventilation openings must be provided with fire dampers which can be closed from the outside.

2.2.1.5 A bilge level alarm must be provided in the engine room.

2.2.1.6 All parts of the fuel system must be arranged and accessible in such a way that a visual inspection for fuel leaks can be carried out easily. A jacketed piping system for exposed high-pressure fuel pipes between the fuel injection pumps and valves can be dispensed with. Fuel filters can be executed as single filters.

2.2.1.7 In the wheelhouse, control indicators must be installed according to the stipulations of the engine manufacturer, although as a minimum, there should be indicators for engine revolutions, lubricating oil pressure and temperature, engine coolant, including the associated visual and audible alarms, and the visual and audible bilge alarm signal generator.

2.2.2 Bilge and drainage system

2.2.2.1 All craft must be equipped with 2 bilge pumps. One bilge pump must be power-operated and can be attached to the main propulsion engine. The second bilge

pump must be independent of the main propulsion plant and may be a manual bilge pump.

- 2.2.2.2 In the case of a bilge pumping system which is separate from the seawater system, one non-return valve shall suffice on the intake side. On the discharge side of the pumps, the fittings shall be executed in the same way as with a combined bilge/seawater system.

2.3 Electrical installations

- 2.3.1 A shaft generator is sufficient for the supply of electrical energy.
- 2.3.2 Accumulators must be installed in well-ventilated boxes, cabinets or rooms which can be accessed easily for maintenance. They must be designed in a way that a shifting and discharging of the electrolyte is prevented up to an angle of inclination of 40°. As regards accumulators with a charging capacity in excess of 2 kW, the containers or rooms must be ventilated to the open deck.
- 2.3.3. A terminal box for the shore connection is not required.

Chapter 6 Offshore service vessels

1. Offshore service vessels have to be constructed and maintained in such a way that they comply with the regulations of a recognised organisation in respect of the ship's hull, engines and machinery and lifting gear, as well as electrical equipment and devices for control, adjustment and monitoring.
2. Offshore service vessels which, based on their design, constitute high-speed passenger craft must comply with the requirements under Chapter X of the SOLAS Convention and the HSC Code 2000, unless otherwise specified below.
3. Offshore service personnel must have completed safety training and be fit for sea service in accordance with maritime labour law.
4. The intact stability must be according to the intact stability requirements of the HSC Code 2000 for cargo ships, as amended.
5. The subdivision and damage stability of offshore service vessels must comply with the requirements laid down in the HSC Code 2000 in relation to cargo ships. Regulation 2.6.9 of the HSC Code 2000 regarding the extent of bottom damage in areas vulnerable to raking damage does not apply to offshore service vessels with a length L of less than 45 m. Regulations 2.6.7 and 2.6.10 of the HSC Code 2000 regarding the position of the damage at any location on the craft shall only apply in the area of one third of the length from the forward perpendicular to craft up to 45 m length. Only 1 compartment status is required in the other length areas of these craft.
6. The requirements of the recognised organisation, the monitoring of which the vessel is subject to according to regulation 1, must be adhered to when using lifting gear at sea. Unless the requirements of the recognised organisation dictate otherwise, the following shall apply: The lever arm curves of the vessel have to be calculated on the wave crest. The wave length shall be assumed to be equal to the length of the vessel and the wave height set at L/20. The difference between

the curves of the righting lever arms and the heeling lever arms caused by the load at the hook and with lateral wind pressure of 300 N/m² must be at least 0.05 m.

Heeling moment as a result of the load at the hook: $M_k = P * y * \cos(\phi)$
where:

P = load at hook and

y = distance of the load suspension point from MS

7. Chapter 7 sections C and D of the HSC Code 2000 shall not apply. SOLAS Regulation II-2/17 shall apply.
8. As regards equipping with life-saving appliances, the following applies:
 - a) Regulation 8.3.5.1 of the HSC Code 2000 does not apply.
 - b) Regulations 8.7.6 and 8.7.8 of the HSC Code 2000 do not apply.
 - c) SOLAS Regulation III/20.4 applies to the maintenance of the runners.
 - d) Immersion suits have to be provided for all persons on board.
 - e) Open, reversible life-rafts according to Appendix 11 of HSC Code 2000 may not be used.
9. The equipment prescribed in the areas of fire protection, life-saving appliances, radio and navigation must be approved in accordance with Directive 2014/90/EU, unless stipulated to the contrary in the regulations below. Equipment prescribed, as well as voluntary and additional equipment as per SOLAS Regulation V/18.7, which is not subject to Annex I to Directive 2014/90/EU, must be approved by the BG Verkehr, the Federal Maritime and Hydrographic Agency or a recognised organisation⁵.
10. The area pressed against components of the offshore installation during embarking to and disembarking from the offshore structure by offshore service personnel must be built and protected in such a way that the resulting loads can be tolerated and damages by contact are avoided. The requirements of the recognised organisation whose monitoring the ship is subject to according to regulation 1 must be observed.

Chapter 7 Model certificates

The models of the following certificates will be published in the German Verkehrsblatt as per section 3 regulation 3.4 of this Ordinance:

1. Ship Safety Construction and Equipment Certificate (Bau- und Ausrüstungs-Sicherheitszeugnis);

⁵ Approval is effected in accordance with the responsibilities assigned in the German Federal "See-Aufgabengesetz" (Federal maritime responsibilities act).

2. Ship Safety Radio Certificate (Funk-Sicherheitszeugnis);
3. Special Purpose Ship Safety Certificate (Sicherheitszeugnis für Spezialschiffe);
4. Document of Compliance (Übereinstimmungsbescheinigung) as per OSV Guidelines;
5. High Speed Craft Safety Certificate (Sicherheitszeugnis für Hochgeschwindigkeitsfahrzeuge); and
6. Mobile Offshore Drilling Unit Safety Certificate (Sicherheitszeugnis für bewegliche Offshore-Bohrplattformen).