The Swedish Maritime Administration's Code of Statutes

SJÖFS 2005:25

SFH 1.2.2.1

The Swedish Maritime Administration's regulations and general advice on safety arrangements and safety measures on board ships

Translation
In the event of disagreement concerning the interpretation and content of this text, the printed Swedish version shall have priority.

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The Swedish Maritime Administration's statute book

SJÖFS 2005:25

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SFH 1.2.2.1

The Swedish Maritime Administration's regulations and general advice on safety arrangements and safety measures on board ships

adopted on 15 November 2005.

The Swedish Maritime Administration stipulates[1] the following pursuant to Chapter 2, Section 1 and Chapter 5, Section 10 of the Ship Safety Ordinance (2003:438) as well as Section 18 of the Work Environment Ordinance (1977:1166) and decides upon the following general advice.

Chapter 1. General

Area of application

Section 1 These regulations apply, unless otherwise specifically stated, to Swedish ships where employees carry out work for an employer's account with the following exemptions:

- fishing vessels with a length between the perpendiculars of less than 15 metres, and
- naval ships.

The provisions whereby these regulations can apply to employers and to commercial activity without employees are shown in Chapter 3, Section 5 of the Work Environment Act (1977:1160).

Further provisions regarding the working environment for fishermen are to be found in the Swedish Maritime Administration's regulations and general advice (SJÖFS 1999:27) regarding fishing vessels that have a length of 24 metres or more, as well as the Swedish Maritime Administration's regulations and general advice (SJÖFS 2005:23) regarding the working environment on board ships.

[1] Cf. The Council's directive 93/103/EEC of 23 November 1993 regarding the minimum requirements for safety and health in respect of work on board fishing vessels (thirteenth special directive according to article 16.1 in directive 89/391/EEC) (ECT L 307, 23.11.1993 p. 1, Celex 31993L0103)
Notification has been made in accordance with The European Parliament and Council's directive 98/34/EC of 22 June 1998 regarding an information procedure in respect of technical standards and regulations and regarding regulations governing the information society's services (ECT L 204, 21.7.1998, p. 37, Celex 31998L0034), amended by the European Parliament and Council's directive 98/48/EC (ECT L 217, 5.8.1998, p. 18, Celex 31998L0048).

Fishing vessels built before 23 November 1995

Section 2 For fishing vessels built before 23 November 1995 according to the definition in Chapter 1, Section 6 these regulations only apply in the following parts.

- Chapter 1,
- Chapter 2, Sections 1 and 2,
- Chapter 3, Sections 2 and 6,
- Chapter 10, Section 12,
- Chapter 11, Section 2,
- Chapter 13, Section 1,
- Chapter 14, Sections 1–9,
- Chapter 17, Sections 9–10 and Section 12 second paragraph, and
- Chapter 18, Sections 2–20.

Fishing vessels built after 23 November 1995 but before 1 January 2006

Section 3 For fishing vessels built after 23 November 1995 but before 1 January 2006 according to the definition in Chapter 1, Section 6 these regulations only apply in the following parts.

- Chapter 1,
- Chapter 2, Sections 1 and 2,
- Chapter 3, Sections 2 and 6,
- Chapter 10, Section 12,
- Chapter 11, Section 2,
- Chapter 13, Section 1,
- Chapter 14, Sections 1–9,
- Chapter 17, Sections 9–10 and 12 second paragraph, and
- Chapter 18, Sections 2–20.

Fishing vessels built on 1 January 2006 or later

Section 4 For fishing vessels built on 1 January 2006 or later according to the definition in Chapter 1, Section 6, these regulations only apply in the following parts.

- Chapter 1,
- Chapter 2, Sections 1–2,
- Chapter 3, Sections 1–10 and 12–20,
- Chapter 4, Sections 1–7 and 10–18,
- Chapter 5, Sections 3–17, 20–27, 30 and 32–39,
- Chapter 6, Sections 1–11 and 17–55,
- Chapters 7–10,
- Chapter 11, Sections 1–11 and 14–24,
- Chapter 13, Section 1, Section 3 first paragraph and Section 4,
- Chapter 14, Sections 1–13, 29 and 30,
- Chapter 15, Sections 1–20 and 24,
- Chapter 16,
- Chapter 17, Sections 1–7 and 9–13, and
- Chapter 18.

Section 5 What is stipulated in these regulations regarding material choice does not apply to ships built in accordance with the Swedish Maritime Administration's regulations and general advice (SJÖFS 2002:2) regarding safety on board high-speed craft (HSC Code 1994) or the Swedish Maritime Administration's regulations and general advice (SJÖFS 2003:12) regarding safety on board high-speed craft (HSC Code 2000).

Definitions

Section 6 Terms are employed in these regulations with the following meanings, unless otherwise specifically stated.

Automatic mooring winch: Winch that winds in or lets out line when the pulling power reduces or increases above/below determined limits.

BCH Code: The international code for ships that transport hazardous substances in bulk (International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk), adopted by IMO through resolution MSC.9(53), as amended.

Steep stairs: Stairs that have an inclination angle greater than 40 degrees against the ground plane.

Recognised organisation: Such organisation as referred to in Chapter 1, Section 5 of the Ship Safety Act (2003:364) and to which tasks have been assigned by the Swedish Maritime Administration, pursuant to Chapter 9, Section 2 of the Ship Safety Ordinance (2003:438).

Fishing vessel built on 1 January or later: A fishing vessel with a length between the perpendiculars of at least 15 metres and for which

– a building contract or a contract for a major reconstruction has been signed before 1 January 2006 and where the vessel is delivered at least three years after 1 January 2006,

– a building contract or a contract for a major reconstruction has been signed on 1 January 2006 or later, or

– on 1 January 2006 or later, in the absence of a building contract, the keel has been laid or construction has commenced that can be attributed to a certain vessel, or the joining together has commenced involving at least 50 tons or 1 % of the calculated volume of all the construction material, at which the lowest indication shall apply.

Fishing vessel built after 23 November 1995 but before 1 January 2006: A fishing vessel with a length between the perpendiculars of at least 15 metres and for which

– a building contract or a contract for a major reconstruction has been signed before 23 November 1995 and where the vessel is delivered at least three years after 23 November 1995,

– on 23 November 1995 or later, but before 1 January 2006 a building contract or a contract for a major reconstruction has been signed, or

– on 23 November 1995 or later but before 1 January 2006, in the absence of a building contract, the keel has been laid or the construction commenced that can be attributed to a certain vessel, or the joining together has commenced involving at least 50 tons or 1 % of the calculated volume of all the construction material, at which the lowest indication shall apply.

Fishing vessel built before 23 November 1995: A fishing vessel with a length between the perpendiculars of at least 18 metres and that is not a fishing vessel built after 23 November 1995.

Footbridge: A permanent horizontal connection link above the weather deck between the deck house, forecastle deck and poop.

Walking line: An envisaged line 300 millimetres from banister or handrail at the outer edge of the flight of stairs.

Walk tunnel: Easily accessible connection link with limited other use.

Walkway: An arranged horizontal connection link on decks, hatches or cargo, between the deck house and forecastle deck and the poop.

IBC code: The international code for ships that transport dangerous substances in bulk (International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk), adopted by the IMO through resolution MSC.4(48), as amended. For ships built before 1 July 1986 the BCH Code applies instead.

Combined walk and pipe tunnel: A pipe tunnel that is also used as a connection link.

Load line convention: The international load line convention (ICLL) as well as related protocols and amendments, as amended.

Ladders: Permanently arranged connection links between different levels that have an inclination angle between 55 and 90 degrees in relation to the horizontal plane.

Length between the perpendiculars: The measured distance between the forward and after perpendiculars, as laid down in the international Torremolinos Convention (1977) for the safety of fishing vessels. The length between the perpendiculars shall be measured in metres with an accuracy to two decimal places.

Tread: The horizontal surface of a step (ladder step).

Pipe tunnel: Enclosed trunk intended only for passing pipes through with their associated fittings. Access may be gained through a manhole.

SOLAS 1974: The 1974 international convention for the safety of life at sea as well as related protocols and amendments, as amended.

Spools: Connecting guides and handrails/top guides.

Tread breadth (effective breadth)*:* The horizontal distance between the plumblines through the leading edges of the step (nosings) to two adjoining steps.

Tread height: The vertical distance between two adjoining steps.

Step length: The distance between the string's inner edges.

Riser: The vertical part that connects two adjoining treads (angled variants may occur).

Stairs: Fixed connection link between different levels, which have an inclination angle between 20 and 55 degrees in relation to the horizontal plane.

Flight of stairs (ladder flight): An unbroken straight or curved succession of steps (ladder steps) between two stair levels (ladder levels).

Stair landing (ladder landing): Upper side of or floor plate to which flight of stairs (ladder flight) leads.

Stair step (ladder step): Step parts comprising tread, step leading edge and riser, if any.

String: The edge beams to which the stair step or ladder step is fixed.

Half-landing: Such dividing stair landing (ladder landing) in stairs (ladders) that is needed in addition to existing stair landings (ladder landings) and to which doors and similar lead.

Covered walkway: Enclosed or partly enclosed trunk on the weather deck.

General requirements

Section 7 Connecting ways and safety arrangements shall be constructed in a satisfactory manner with regard to the forces that can affect them, the method of use and accessibility, and in conformity with these regulations or other solutions that are at least as secure and, in working environment respects, equally favourable.

The Swedish Maritime Administration may, in the latter case, require documented risk assessments or risk analyses.

Section 8 Upon the construction of ships and the organisation of these, good ergonomic conditions shall be aimed at.

Section 9 Machines, appliances and equipment, shall satisfy the requirements that derive from these regulations or, with the Swedish Maritime Administration's consent, the requirements of equal standing that are imposed by a recognised organisation.

Section 10 Machines, appliances and equipment shall be employed in conformity with the manufacturers' instructions.

Machines, appliances, equipment and connecting ways shall be maintained in a satisfactory manner. Damaged or defective items of importance in terms of safety, shall be replaced or repaired before the machine, appliance, equipment or connecting way is employed.

Section 11 If, from a safety perspective, it is deemed necessary, the Swedish Maritime Administration may, in individual cases, issue further instructions in respect of appliances or equipment and their employment.

Drawings

Section 12 Provisions whereby drawings and calculations shall be submitted to the Swedish Maritime Administration are to be found, in addition to what is stated in these regulations, in the Swedish Maritime Administration's regulations (SJÖFS 1999:17) on supervision of ships and shipping companies' safety organisation.

Mutuality clause

Section 13 Ships or equipment on board ships that are approved in accordance with the rules in other member states within the European Union and the European Economic Area (EEA) as well as in Turkey, are equated with ships and equipment that satisfy the requirements in these regulations, on condition that an equivalent safety level is thereby achieved.

Exceptions

Section 14 The Swedish Maritime Administration may grant exception from the requirements in these regulations if this may be deemed to be reasonable with regard to the ship's size, limited field of application or if other special reasons exist.

Exceptions shall not be in breach of international agreements or Community law legislation.

Penalties

Section 15 With regard to liability upon breach of regulations issued pursuant to Section 18 first paragraph 1–3 of the Work Environment Ordinance (1977:1166), regulations are given in Chapter 8 Section 2 of the Work Environment Act (1977:1160).

Chapter 2. Arrangements on deck and floor

Section 1 Fittings or other protruding small objects that are fixed to the deck, on the double bottom in cargo holds or on, or near, commonly used access ways, shall have a colour that is markedly different from that of the floor or deck. Where so appropriate the fitting shall be flush with the bottom facing or floor.

Deck or floor surfaces on connecting ways shall, if possible, be free of access hatches, pipes or other objects that can involve the risk of stumbling or impede accessibility.

Section 2 Deck or floor surfaces around rescue equipment, around windlasses and winches, outside refrigeration rooms, in shaft tunnels as well as in other places where so required, shall be rough.

General advice

Painting or other surface treatment of deck or floor should be chosen, on the one hand, with regard to hygienic conditions and, on the other, with regard to the risk of slipperiness.

Section 3 Floor or other underlay in places where work is often carried out shall, to the greatest possible extent, be vibration-damping. If

troublesome vibrations occur, a vibration-damping underlay shall be employed.

Section 4 Fixtures and equipment, such as lockers, benches and the like, shall be fitted close to the floor or deck or be set up on supports or suspended at a height of at least 250 millimetres above the deck or floor. If the locker's depth is 300 millimetres or less, then a minimum clear height of 150 millimetres is acceptable.

General advice

Work benches and similar equipment shall be so set up that the person working has his face turned towards the bow or stern. Permanently fixed machine tools should be set up in a like manner.

Chapter 3. Access to connecting ways and links on the same level and between different levels

Doors

Section 1 Entrances and exits to and from spaces one normally needs to use, shall be arranged as a door if this is practicably possible. Manholes are not acceptable as entrances or exits for such spaces.

Section 2 Doors intended for evacuation shall be easy to open by a person, from both sides.

Section 3 Doors in evacuation routes shall open outwards in the evacuation direction, as long as this does not inhibit the evacuation of corridors or similar spaces. Cabin doors may open inwards when they face a corridor. Doors may not open directly towards flights of stairs.

Section 4 Doors positioned next to each other shall, if possible, be arranged so that they cannot hit against each other and cause squeeze injuries. Swing-doors and sliding doors shall be so arranged that the risk of being squeezed between the door leaf and the side of the frame can be prevented.

Section 5 Doors shall be fitted with such an arrangement whereby they may be safely kept in the open position. The hooking up system for doors shall be of a satisfactory construction. Fire-doors and watertight doors may only have such hooking up systems that do not impede the door's special safety function.

Section 6 Sliding doors shall be easy to move even in the event of unfavourable listing and trim conditions, and be so constructed that they cannot fall out of their groove and fall over.

Section 7 Doors for passages shall have a clear height of at least 1.95 metres. The clear height is the distance from the lower edge of the frame top piece to the upper edge of the deck or deck covering or, where appropriate, to the intermediate step.

The door sill shall not be made higher than the function or relevant freeboard provisions require. In the latter case, however, the height clearance must not be less than 1.65 metres.

Sills that are higher than 0.45 metres shall be fitted with intermediate steps on both sides.

Doors for passages may not have a frame breadth clearance that is less than 600 millimetres.

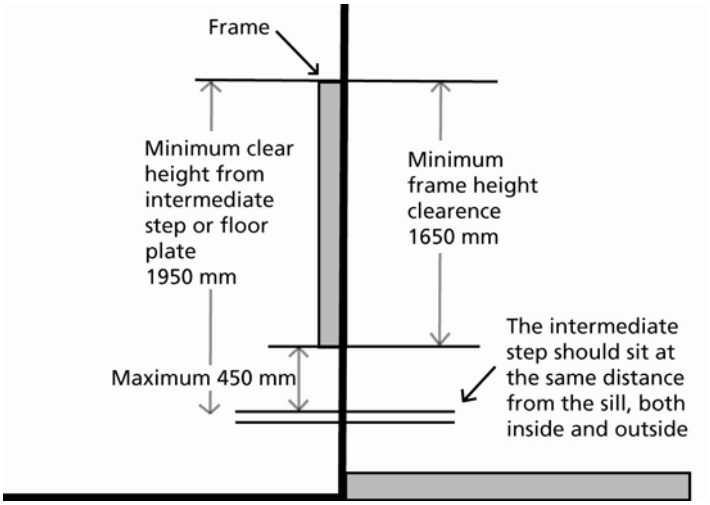

Figure 2

Hatch covers and passages

Section 8 Hatch covers and hatches shall, as far as practicably possible, be arranged so that the risk of squeezing is prevented. Edges shall be well rounded.

Section 9 Hatches or openings in connection with cargo holds, cargo tanks, cofferdams, pipe tunnels or similar spaces, shall have a clear square opening that is not less than 600 x 600 millimetres.

Section 10 Access hatches to rooms or tanks other than those stated in Section 9 shall have a clear opening that is not less than 400 x 600 millimetres. Corners shall be rounded off. The curve radius shall not exceed 200 millimetres.

Section 11 Passages in floors or wash bulkheads shall, if no other connection exists, have a clear opening that is not less than 600 x 800 millimetres and shall lie no more than 600 millimetres from the bottom or rungs.

The curve radius shall not exceed 300 millimetres.

Section 12 Hatches or other passages as stated in Sections 9–11 shall permit the passage of a person wearing breathing apparatus. If necessary the conditions shall be tested on board.

Section 13 In the clear opening to the hatch or manhole as stated in Sections 9–12, no ladders, rungs, fixed steps, deck plates or other component may be included in the minimum measurement.

Section 14 A hatch with ahinge may not be fitted so that when opened it covers another ladder. Ladders to small, rectangular or oval-shaped hatches shall be fixed on the hatch's short side so that access with breathing apparatus may take place easily.

Section 15 A hatch for a passage shall be easy to open by a person from both sides.

Section 16 Small hatches on hinges or sliding hatches shall be fitted with an adequate, automatic securing arrangement by means of which the hatch can be secured in the open or closed position. Automatic securing arrangements shall, if necessary, be supplemented by manual securing arrangements.

Section 17 Horizontal hatches on hinges that are not opened by means of a special mechanical arrangement shall, in addition to what is shown in Section 16, also be able to open to at least 110 degrees, so that it remains stable in the open position.

Entrances and exits

Section 18 Access down to cargo holds shall be free-standing from the cargo hatches.

General advice

The access should be positioned in the mast house or other deck house.

Section 19 The access route between cargo hatches shall be so wide that there shall be no danger in standing between the cargo hatches upon covering or uncovering.

Section 20 Entrances to rooms for storage of gas containers as well as oils, paints, injurious or strong-smelling substances shall face the open deck or towards ways to the open deck, but not towards ways to the living quarters.

Section 21 On tug-boats the steps down from the deck shall be placed or arranged so that the swinging of the towline does not constitute any danger.

Chapter 4. Connection links – stairs, ladders, fixed steps etc.

Common provisions

Section 1 Permanently arranged connection links shall be present between separated levels. Ladders or straight stairs shall be arranged where this is practicably possible. Winding stairs should be avoided.

High sills shall be fitted with steps or rungs. Pipes and other obstacles shall, if necessary, be fitted with suitable connection links in order to pass the obstacle in comfort.

Section 2 In cargo holds, cargo tanks or in combined cargo holds and cargo tanks the depth of which does not exceed 1.5 metres calculated from the deck beams' upper side in the ship's centre line to tank top or to the upper edge of the floor as well as in cargo holds for bulk fish cargoes, no permanent connection links need to be arranged.

Section 3 What is stated in Sections 1–2 also applies to air pipes or similar arrangements, where the height difference between the levels is less than 1.5 metres.

Section 4 There shall be connection links to the mast-head.

Section 5 Connection links shall be designed and constructed in an appropriate manner and shall also be placed with regard to access and to possible risks, such as falling goods from lifting gear.

Section 6 Connection links on deck should not be placed closer than 1 metre from cargo hatches or the ship's outside. If it is not possible to avoid this, there shall be protection along the connection link that is at least 30 centimetres higher than the connection link's handrail if that comprises steps, and a side protection that is at least 60 centimetres deep if it comprises ladders.

Section 7 Cargo holds with a breadth or length in excess of 20 metres shall have at least two connection links placed diagonally in the hold, if this is possible, and as far from each other as possible. A connection link shall, however, as a minimum, exist at every 40 metres of the hold's length.

Section 8 Gas, cargo oil and chemical tanks as well as adjacent spaces such as cofferdams, shall have connection links to such an extent that they can be reached within a distance of 20 metres.

Section 9 Connection links in accordance with Sections 7–8 shall permit, in principle, unbroken vertical movement.

Section 10 Connection links of steel or other corrodible material shall undergo protective treatment, if it is exposed to strong corrosive attack or similar.

Section 11 On ships that only carry bulk cargoes or similar cargoes and where it is not necessary for stevedores to stay in the cargo holds, or where the stern- or bow-doors provide satisfactory evacuation opportunities, the number of connection links may be reduced with the consent of the Swedish Maritime Administration.

Section 12 Treads or rungs on connection links shall be horizontal. What is now stated shall also apply when several rungs constitute one tread.

Section 13 The upper tread in the stairs shall connect to the upper level, unless otherwise stated. The distance between the lower tread and the lower level shall not differ from the connection link's graduation measure.

Section 14 Vertical ladders shall be placed with their upper step 150 millimetres below the upper level. The distance between the lowest step and the lower level shall be the same as the connection link's graduation measure, though not more than 300 millimetres.

Section 15 Half-landings shall, in the most feasible manner, divide the connection link into intervals of equal distance and be arranged horizontally.

Section 16 Ladders or steep stairs with half-landings shall be displaced in relation to each half-landing so that a fall along the entire length of the connection link, is prevented to the greatest feasible extent.

Section 17 Supports for handrails may not incline away from the string or platform by more than five degrees from the vertical plane. What is stated here does not apply to connection links which have an inclination angle that exceeds 70 degrees in relation to the horizontal plane.

Section 18 If steep stairs or ladders with steps have been installed transversely within living quarters, provisions premises and engine–room, it shall be fitted at least on one side with suitably arranged supports at a maximum of 400 millimetres distance, measured along the connection link, so that the link may also be employed for emergency evacuation purposes in the event of heavy list.

Connection link to pump–rooms for cargo oil or chemicals

Section 19 Access to pump-room shall be via stairs. On ships with a length overall of less than 50 metres, however, the connection link may be ladders.

Section 20 Treads shall be of chequered plate or grating plate.

Section 21 Guard railing and toe rails shall satisfy the requirements in Chapter 11, Sections 2 and 8–9.

Section 22 In the pump-room there shall be enough clear space for an unconscious person to be lifted up by means of a rescue line or lift arrangement from the floor or platform. The lift arrangement shall be spark-free.

A rescue line or lift arrangement shall always be accessible on site.

Chapter 5. Stairs

General

Section 1 Connection links between different levels in the living quarters, within the provisions premises and the storage spaces as well as exterior connection links that are often used between separate decks, shall be stairs.

Section 2 On passenger ships as well as on cargo ships with a gross tonnage greater than 500, stairs in accordance with Section 1 shall not have a greater inclination angle than 45 degrees in relation to the horizontal plane and shall preferably be orientated longitudinally.

General advice

This should also apply to ships with a gross tonnage that is less than 500.

Section 3 The main access to the engine-room and, if possible, also to the pump-room, shall be via stairs.

Access to the engine-room from the living quarters shall, if possible, be executed as a sound lock.

Section 4 On ships with an overall length of less than 50 metres, exterior connection links between separate decks as well as the main access to the engine-room and pump-room, may be ladders. If such ladders are employed daily, they may not have an inclination angle of more than 60 degrees in relation to the horizontal plane.

Section 5 Stairs in engine-rooms shall be fitted with screens on the underside.

Section 6 Stairs shall preferably be executed as straight stairs.

Stair treads

Section 7 Stair treads in one and the same stair flight shall have a uniform execution in terms of colour and pattern.

Section 8 Treads shall be fitted with durable anti-slip protection or be made so that slipping is prevented.

On passenger ships consideration shall be given to the risk of heels getting caught in grating plates.

Where risers are absent the nosing shall be rounded off on the underside so that heels cannot get caught or damaged when going down the stairs.

General advice

In engine-rooms and pump-rooms as well as on open deck, treads should be made of floor plate or grating plate with a plate thickness of c. 5 millimetres or material that may be deemed to be equivalent.

Section 9 Treads may have a metal lining or similar only if this is executed so that the risk of stumbling does not exist.

Section 10 Rungs may not be employed as a replacement for treads on stairs.

Section 11 Stair treads in one and the same stair flight shall have the same height and depth, measured along the walking line. Where the stair flights have connections with each other, such as in a stairwell or outdoors between different decks, the stair flights shall have the same tread height and tread breadth.

Section 12 Single steps in passages or similar spaces, shall be avoided, especially in connection with doors. Stairs comprising one or two steps shall be indicated by means of special lighting or painted in a clearly different colour in relation to the surroundings.

Stair measurements

Section 13 Steps in stairs shall be dimensioned in the following manner:

1. *Tread breadth* (B) in straight stairs shall be at least 200 millimetres. The tread breadth in the outer walking line in curved stairs shall, however, amount to at least 270 millimetres. The inner walking line in curved stairs should be adjusted to accepted practice.
2. *Tread height* (H) shall, as a rule, be no more than 200 millimetres and no lower than 150 millimetres. In steep stairs the tread height may be increased with the consent of the Swedish Maritime Administration.
3. *Clear breadth* between handrails is measured at right angles to the walking line.
4. *Landing breadth* and *half-landing breadth* are measured between the *step leading edge* and the opposite bulkhead or the outside of the railing.
5. The inclination of the stairs is measured between the horizontal plane and *the string.*

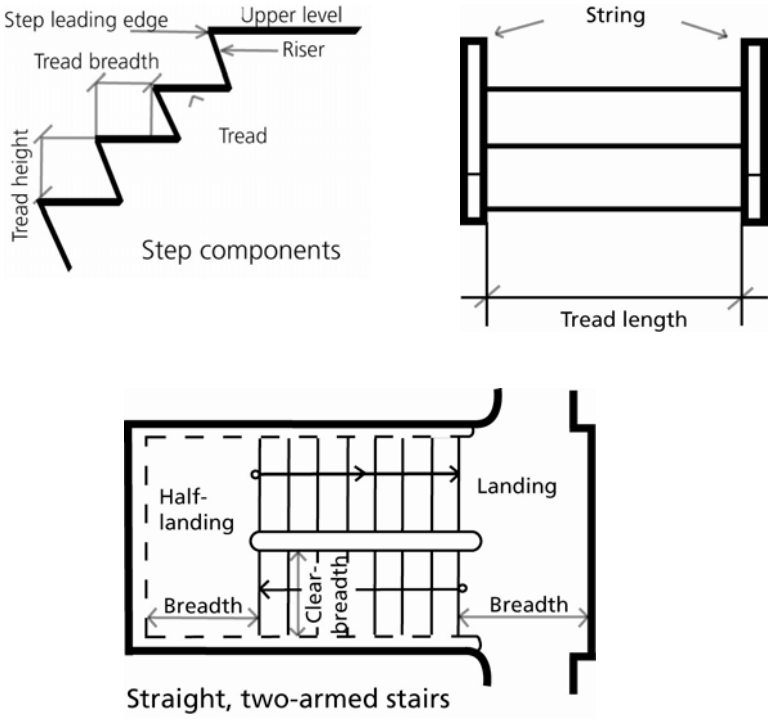

Figure 3

General advice

Calculation of tread height should be made with consideration given to the connection between the tread height and tread breadth. The walk pattern (B/H) should be 1.35.

Stair's clear breadth and height

Section 14 Straight stairs within provisions premises and living quarters shall have a clear breadth between the handrails of at least 900 millimetres.

Section 15 Stairs on open deck, on which people often progress, shall have a clear breadth between the handrails of at least 650 millimetres.

Section 16 Stairs to the engine-room shall have a clear breadth between the handrails of at least 800 millimetres.

Section 17 Stairs, the main access to the engine-room and ladders in ships that are shorter than 50 metres, shall have a clear breadth between the handrails of at least 650 millimetres.

Section 18 The breadth of interior and exterior evacuation stairs shall be calculated in accordance with the evacuation plans on passenger ships that are covered by SOLAS 1974, the Swedish Maritime Administration's regulations (SJÖFS 2002:17) on passenger ships in domestic traffic as well as the Swedish Maritime Administration's regulations and general advice (SJÖFS 2000:2) on safety on board high-speed craft (HSC code 1994) or the Swedish Maritime Administration's regulations and general advice (SJÖFS 2003:12) on safety on board high-speed craft (HSC code 2000). The clear breadth between the handrails shall, however, be at least 900 millimetres.

Section 19 Stairs shall be divided so that the greatest clear breadth between the handrails is a maximum of 1 800 millimetres.

Section 20 The tread length shall be at least as great as the clear breadth between the handrails.

Section 21 In stairs the clear height, measured perpendicularly between the step leading edge and the overhanging part, shall be at least 2 metres.

Landings

Section 22 Stairs shall be fitted with the necessary landings, the breadth of which shall be at least as great as the stair breadth.

Half-landings

Section 23 Straight stair flights shall be fitted with half-landings at no less than every fourth metre, measured vertically between levels.

Section 24 Curved stair flights shall be fitted with half-landings at no less than every third metre, measured vertically between levels.

Section 25 Half-landings for stairs shall have a breadth that is at least as great as the breadth of the stairs.

Section 26 The clear area on the half-landing of the stairs may not be less than 0.36 m^2. The half-landing's clear breadth shall not be less than 0.6 metres.

Handrails

Section 27 Stair flights and landings and half-landings that are not next to walls or other arrangements that afford corresponding protection against falling, shall be fitted with handrails. The height of such handrails, measured vertically from the step leading edge to the upper edge of the handrail may not be less than 1.1 metres on passenger ships, and not less than 1.0 metre on other ships.

Handrails with rails on cargo ships

Section 28 The right-angle distance between the handrail's lower edge (under-rails, if such exist), and the floor plate on the half-landing and landing or string, may not exceed 50 millimetres.

Section 29 The right-angle distance between adjacent vertical rail edges in the handrails, landing handrail or handrail on the half-landing, may not be greater than 170 millimetres.

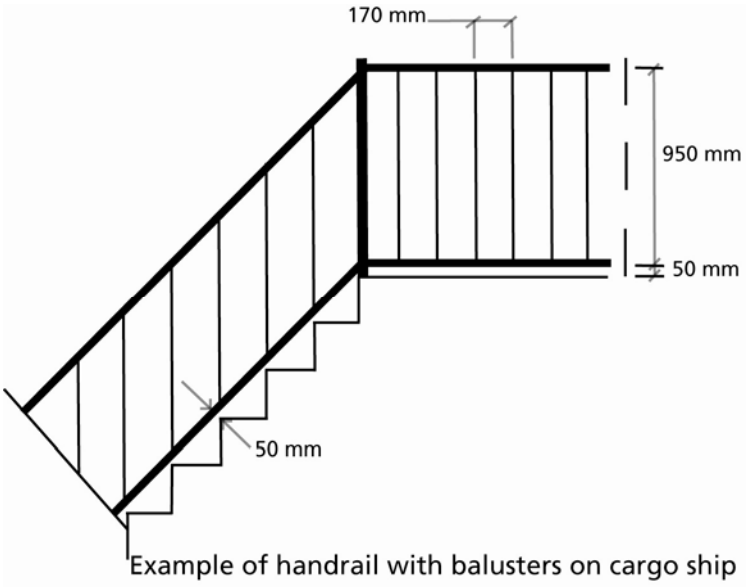

Figure 4

Handrails with roller rails

Section 30 On stairs with associated half-landing and landing, the right-angle distance between roller rails that are parallel with a level or stair, shall not exceed what is stipulated in Chapter 11, Section 8.

Handrails with rails on passenger ships

Section 31 On stairs for passengers the distance between adjacent rail edges, irrespective of inclination, may not exceed 100 millimetres.

Securing

Section 32 Parts that are included in stairs shall be put together so well that they shall be plastically deformed under stress, before the assembly breaks down.

Section 33 Bolts in stairs shall be efficiently secured.

Material

Section 34 Stairs in engine-rooms, pump-rooms, tanks, evacuation routes to lifeboats and other evacuation routes as well as on deck or in cargo holds where they can be damaged by cargo or similar, shall be made of steel or other equivalent material from a safety perspective, that is approved by the Swedish Maritime Administration.

Resistance

Section 35 Stairs within living quarters or that are used only for traffic by persons, and where significant damage and corrosion need not be feared, shall be designed for a load factor of at least 2 000 N/m^2 in all reasonable positions and directions.

Section 36 In cases other than those stated in Section 35, stairs shall be designed for a load factor of at least 4 000 N/m^2 in all reasonable positions and directions.

Stairs that may be exposed to seas breaking over them shall, however, be designed for a load factor of at least 6 000 N/m^2.

On ships operating in service area B or in wider service areas, stairs that may be exposed to seas breaking over them shall be dimensioned for a load factor of at least 8 000 N/m^2.

Section 37 Stairs and half-landings shall withstand a vertically positioned point load in the most unfavourable load case of 2 000 N or such greater load that may normally be envisaged as occurring.

Where the risk of corrosion or damage to material or other risk exists, the point load shall not be less than 3 000 N.

Section 38 Half-landings shall be designed for a load factor of at least 5 000 N/m^2.

Section 39 The stair arrangement shall have a safety factor against rupture of at least 6.

Chapter 6. Ladders, fixed steps and rungs

General

Section 1 Upon the dimensioning of ladders, ladder fixtures, half-platforms and similar equipment, consideration shall be given to the effects of cargo, vibrations, natural frequency and similar conditions.

Section 2 Special attention shall be paid to the prevention of fractures on ladders, rungs and handrails on ladders in spaces where explosive vapours or gas mixtures may be generated.

Section 3 Any large temperature changes that may occur shall be considered upon the fastening of ladders.

General advice

This can be achieved through the use of joints that provide the necessary expansion possibilities.

Section 4 Where ladders are unsuitable, fixed steps or rungs may be fitted instead. Where necessary, suitable grab-rails or handrails shall be fitted to both sides of connection links.

Section 5 Passage in gas, cargo oil and chemical tanks, in ballast and bunker tanks as well as in cargo holds, cofferdams and similar spaces, shall be such that it is possible to take up an adult person on a stretcher. The passage shall, if possible, provide a clear space of at least 600 x 600 millimetres along its entire length.

Section 6 Connection links that comprise fixed steps or rungs may not incline towards the person climbing.

Section 7 Tunnels, floor and loose middle bulkheads in cargo holds or other arrangements, that divide cargo holds or tanks in two or more parts and that are higher than 1.0 metres, shall be fitted with ladders, fixed steps or rungs on both sides for passage past the obstacle when no other suitable way through is available.

Section 8 Ladders that form a continuation of another ladder shall be positioned in line with the latter ladder if this is technically possible.

Section 9 When ladders are separated, handrails shall be set up between them, if this is practicably possible.

Section 10 That which is stipulated in Sections 8–9 applies also in respect of fixed steps or rungs in connection with ladders, or simply fixed steps and rungs.

Section 11 That which is stipulated in Sections 8–9 does not apply where a half-landing or landing with railings, is set up between separated ladders.

Connection links to cargo holds, cargo tanks or similar

Section 12 Connection links to cargo tanks and cargo holds on tankers and combined tanker and dry-cargo ships as well as to deep tanks with a depth greater than 4 metres on dry cargo ships, may not have a greater inclination angle in relation to the horizontal plane than 70 degrees.

Section 12 On ships that are for bulk cargoes, ladders in cargo holds may be vertical and placed in bulkhead corrugation only if a particular risk exists that the ladder may be damaged by the cargo or grabs. If the depth exceeds 18 metres, however, ladders with a maximum inclination angle in relation to the horizontal plane of 70 degrees, may be installed.

Section 14 Connection links on dry-cargo ships to cargo holds with a greater depth than 12 metres, may not have a greater inclination angle than 70 degrees in relation to the horizontal plane, unless there are special reasons.

Section 15 Ladders in bunker and ballast tanks and to special pump-rooms for emergency fire pumps or similar, where the depth exceeds 6 metres, may not have a greater inclination angle in relation to the horizontal plane than 70 degrees.

Section 16 On ships where there are passenger lifts in cargo holds, The Maritime Administration may approve ladders with a greater angle of inclination than that stated above.

Connections of ladders etc. to hatch

Section 17 When access to rooms or tanks is via a hatch, then ladders or other connection link in connection with the hatch shall be positioned so that it is easy to climb down on treads or rungs.

Section 18 If the coaming's height above deck exceeds 900 millimetres, then ladders, fixed steps or rungs shall be fitted on the outside of the coaming in connection with the connection link to the room.

Section 19 On the outside of the coaming ladders, fixed steps or rungs shall, if possible, reach up to a distance of at least 450 millimetres from its upper edge, where this is required in accordance with Section 18. On the coaming's inside these shall commence no higher than 350 millimetres from the upper edge.

Ladder steps ands rungs

Section 20 Distance between ladder steps, fixed steps and rungs in conjunction with ladders or merely fixed steps or rungs shall be equally great along the entire length of the connection link.

Section 21 Rungs in ladders or fixed rungs shall be executed so that they provide a good grip and prevent slipperiness.

Rungs of square steel shall have two of the opposite edges in the same vertical line. Smooth round steel may not be employed as rungs in ladders or on fixed rungs.

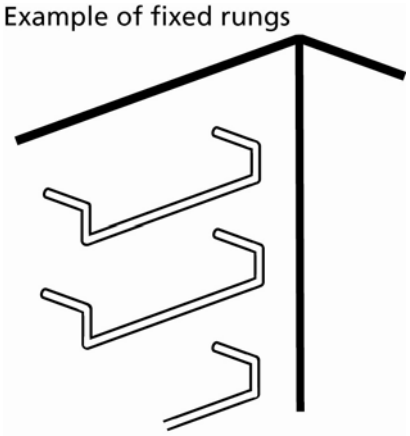

Figure 5

Fixed rungs may also be executed in accordance with SS-ISO 9519.

Section 22 In ladders with an inclination angle of ≥55 and ≤70 degrees in relation to the horizontal plane, the vertical distance between treads or rungs shall not be less than 200 millimetres or exceed 250 millimetres.

Section 23 In ladders with an inclination angle of >70 degrees in relation to the horizontal plane, the vertical distance between ladder steps shall not be less than 250 millimetres.

Section 24 Ladder steps in ladders with rungs shall comprise at least two 22 mm of square steel or equivalent. Rungs in ladders shall lie at a centre distance, measured horizontally, of around 45–50 millimetres.

Section 25 Perpendicular, or almost perpendicular, ladders do not need to be fitted with steps of more than 22 mm square steel or equivalent.

Section 26 Ladder steps and fixed steps on masts, deck house, cranes and the like, may be accepted with a 17 mm square steel or equivalent.

Section 27 Rungs on the outside of a coaming, bulkhead in a cargo hold and cargo tank or similar, shall be comprised of at least 22 mm square steel or equivalent.

Section 28 Treads on ladders shall be protected against slipperiness.

Ladder breadth

Section 29 Ladders, fixed steps or rungs shall have a step length and a clear breadth between handrails that is not less than 400 millimetres and not more than 700 mm.

Upon construction of broad ladders, special attention shall be paid to the risk of slipperiness sideways.

General advice

Ladders to cargo tanks, cargo holds, dry-tanks, ballast tanks, bunker tanks, masts, deck house, cranes and similar should not have a clear breadth between the strings that exceeds 500 millimetres.

Section 30 With regard to fixed steps, rungs or ladders above the shroud, masts, air pipes and similar places, the minimum permitted step length is 250 mm.

Clear space

Section 31 Behind the string on ladders and behind rungs closest to the bulkhead or from the step leading edge on fixed treads, there shall be a clear space with a depth of at least 150 millimetres.

Section 32 The clear height in ladders shall be at least 2 metres.

Section 33 It shall not be possible to place cargo, though not bulk cargo or similar, closer to the rear side of the ladder than 150 millimetres. If such is required then the necessary protection shall be set up.

Half-landings

Section 34 Ladders, fixed steps or rungs with an inclination angle of ≥55 degrees in relation to the horizontal plane, that connects separate levels with a height difference that exceeds 6 metres, shall have half-landings every sixth metre.

Section 35 Half-landings on ladders shall have a minimum clear breadth and length of 600 millimetres.

Section 36 Half-landings, walkways and similar arrangements shall, if it cannot be considered to be unnecessary, be fitted with a toe guard and shall also be suitably drained.

Section 37 Half-landings are not required where specially designed emergency stairs as well as stairs from a pipe tunnel are arranged.

Handrails for ladders

Section 38 Ladders that are not bounded by a wall or other arrangement that affords corresponding protection, shall be fitted with a satisfactory handrail, when the ladder has an inclination angle of ≥55 but ≤70 degrees in relation to the horizontal plane.

Section 39 Handrails according to Section 38 shall be at least 1.1 metre high on passenger ships and 1 metre high on other ships, measured vertically from the step leading edge.

There shall be handrails or corresponding protection on both sides along the full length of the ladder.

Section 40 With regard to ladders of 5 metres in height or greater above the deck or floor, and with an inclination angle that exceeds 55 degrees, but not 70 degrees in relation to the horizontal plane, the handrail shall be 1 300 millimetres high, measured vertically from the step leading edge.

Section 41 The clear opening between adjacent spools in such a handrail may not exceed 230 millimetres (measured at right angles to the ladder). If the distance between the supports in the handrail is a maximum of 1 metre, the opening between adjacent spools may be increased to a maximum of 380 millimetres.

Securing

Section 42 In tanks or cargo holds ladders shall be firmly fixed in such a manner that friction heat or spark generation cannot occur.

General advice

Ladders should be fixed in position by means of welding where they need not to be dismantled. One way of avoiding vibrations upon fixing by means of a bolt connection is to employ fitting bolts when installing.

Section 43 Single rungs or fixed treads shall be so securely fixed that they become plastically deformed before they loosen from the fitting. Rungs shall be inserted through the string of the ladder to at least half the thickness of the string.

Section 44 All welding on ladders and ladder fixtures shall be of double continuous execution. Rungs arranged against a bulkhead or similar shall be chamfered at the ends in order to achieve a good weld fixture.

Section 45 Welds on ladders and rungs shall have an effective throat of at least 5 millimetres.

Section 46 Screws by which ladders are fixed shall be locked.

Material

Section 47 Ladders, fixed treads and rungs with associated parts such as handrail, support, half landing, platform, walkway and the like, shall be made of steel or other materials approved by the Swedish Maritime Administration..

Section 48 In chemical tanks, gas tanks or similar spaces, connection links such as ladders, fixed steps and rungs as well as half landing, handrail and other parts, shall be constructed from material that possesses the same, or greater, resistance to corrosion as that of the rest of the tank.

Section 49 Ladders and ladder parts in spaces that contain liquid substances may not be made from hollow sections.

Resistance

Section 50 Ladders, on which only personal traffic occurs and that cannot be exposed to damage by cargo, material, significant risk of corrosion or other damage, shall be dimensioned for a load factor of at least 2 000 N/m^2 in all reasonable positions and directions.

Section 51 Ladders other than those referred to in Section 50 shall be dimensioned for a load factor of at least 4 000 N/m^2 in all reasonable positions and directions. Ladders that may be exposed to breaking seas shall be dimensioned for a load factor of at least 6 000 N/m^2.

On ships operating in service area B and in wider service areas, ladders that may be exposed to breaking seas on the open deck shall be dimensioned for a load factor of at least 8 000 N/m^2.

Section 52 Ladders, fixed treads, rungs or half landings shall, in addition, withstand a vertically positioned point load in the most dangerous load position of at least 2 000 N or such greater load as can be envisaged. Where the risk of corrosion, or the risk of damage to material or similar, exists the load point shall be not less than 3 000 N.

Section 53 Half-space landings shall be dimensioned for a load factor of at least 5 000 N/m^2.

Section 54 Inspection platforms shall be dimensioned for a load factor of at least 3 000 N/m^2.

Section 55 The entire ladder system shall be dimensioned with a safety factor against fracture of at least 6.

Chapter 7. Portable ladders

General

Section 1 Where particular reasons preclude the installation of ladders, fixed steps or rungs, ladders in accordance with the Swedish Work Environment Authority regulations (AFS 2004:3) on ladders and work trestles may be acceptable subject to consent from the Swedish Maritime Administration.

Section 2 When fixed connection links are replaced by ladders, the number of ladders and their accessibility shall correspond to what, in these respects, is stipulated for fixed connection links.

Chapter 8. Protection against falls

General

Section 1 Ladders with an inclination angle greater than 70 degrees and with a greater height difference between levels than 4 metres, with no consideration given to any half-landings, shall be fitted with back protection or some other fall protection system.

Specially arranged emergency stairs as well as stairs from pipe tunnels are excepted from the fall protection requirement.

Section 2 Upon work or moving on portable steps at a height of over 4 metres, protection against falls shall be employed.

Back protection

Section 3 Back protection on ladders shall reach down to a height of 2.5 metres from the lower level to which the ladder leads. On half-landings, however, the back protection shall reach down to a height of c. 2 metres from the level.

Section 4 On half-landings the back protection for the downward ladder shall reach up to the railing on the half-landing.

Section 5 The distance between perpendicular ladders and the rear of the back protection shall be at least 600 millimetres and no more than 800 millimetres. The breadth of the back protection shall be at least 600 millimetres and no more than 800 millimetres.

Provisions regarding clear height in ladders are to be found in Chapter 6, Section 32.

Section 6 Back protection in cargo holds shall be so arranged that the ladder may be reached from different levels. On at least one side the back protection shall have an opening with a breadth of c. 400 millimetres so that it is possible for a person with breathing apparatus to go to and from the ladder.

Section 7 Back protection shall be fitted with at least four longitudinal flat bars with a breadth that is not less than 40 and not greater than 60 millimetres and a thickness of c. 10 millimetres. Between the edges of the flat bars there shall be a clear space of c. 170 millimetres.

Section 8 The flat bars shall be fixed in transverse, exterior bows with a maximum distance of 2 metres.

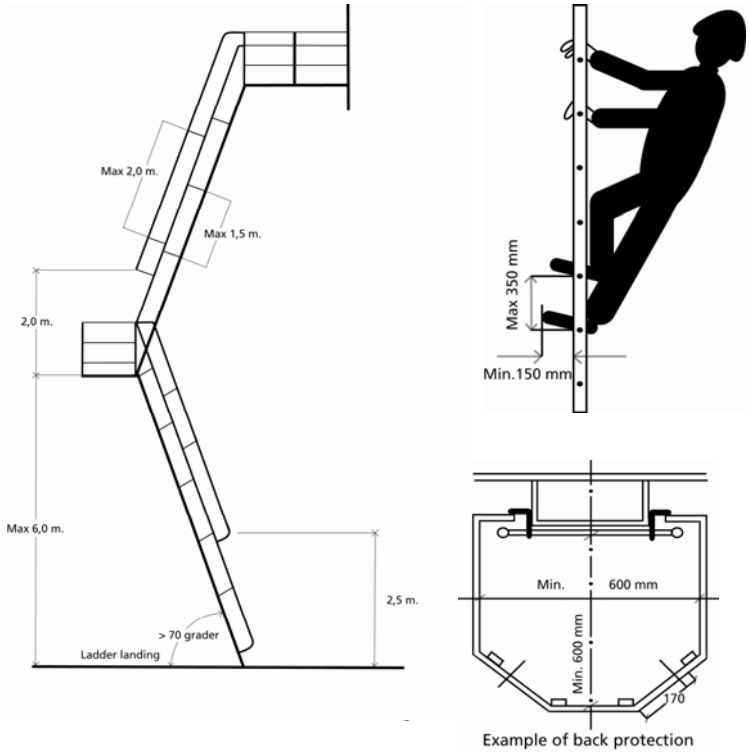

Figure 6

Chapter 9. Handrailing and grab-rails

Common provisions

Section 1 Handrails shall lie at least 900 millimetres above the step leading edge or above the floor, measured vertically. Handrails shall not be so executed that clothing can get caught.

Section 2 Handrails shall have an opening against the wall of at least 45 millimetres at smooth walls or similar. Where there are protruding fixed objects such as angle iron, the clear distance between the handrail and the object shall be increased to at least 75 millimetres.

Section 3 Handrails or their equivalent shall provide a secure hold for hands. They shall have a rounded cross-section with the greatest cross-measurement of about 45 millimetres.

Section 4 Handrails shall, as far as possible, be straight and in a single length.

Handrailing on stairs

Section 5 Where stair flights abut onto bulkheads or corresponding arrangement, handrails shall be fitted.

Section 6 Stairs shall be fitted with handrails or equivalent railing on both sides of the stair flight. Handrails or railing shall, if practicably possible, go past the upper tread's edge by 300 millimetres.

Handrails at the lowest tread may go edge to edge with the string's foremost edge and be arranged vertically.

General advice

On passenger ships there should also be handrails suited to children.

Handrails on ladders

Section 7 In respect of ladders separate handrails shall be arranged on each side along the total length of the ladder, when the ladder's string cannot be employed as a handrail.

Section 8 What is stated in Sections 1–4 and 6–7 regarding handrails for stairs, also applies in relevant parts to ladders.

Handrails, horizontal

Section 9 Handrails shall be fitted in all corridors in order to facilitate evacuation everywhere, under different conditions.

In longitudinal corridors broader than 1.8 metres and in transverse corridors broader than 1 metre, handrails shall be fitted on both sides.

Handrails on bulkheads or similar shall be executed in accordance with Sections 2–4.

Section 10 In engine-rooms there shall be handrails on both sides of passages, along bulkheads and other exposed places in a manner that is deemed necessary from a safety perspective.

Section 11 In walk tunnels, combined walk and pipe tunnels as well as in walkways in trunks on deck, there shall be handrails on at least one side.

Section 12 On bulkheads to the deck house and similar places, there shall be handrails.

Consoles

Section 13 Consoles that support handrails of wood or similar material shall lie at a distance of maximum 1 metre. Consoles that support metal handrails shall lie at a distance of maximum 2 metres.

Section 14 Consoles shall be formed and fixed so that the hand can slide along the handrails without being injured.

Material and resistance

Section 15 Handrails on fixed guard rails shall be made of steel or other acceptable material. Handrails should not be made of material that generates static electricity through friction.

Section 16 Handrails shall be designed for a load factor of at least 750 N/m if a point load of 750 N does not generate a greater strain, at right angles to the longitudinal direction, without permanent deformation occurring.

Grab-rails

Section 17 With regard to ladders, fixed steps or rungs that end level with the deck, platform or floor or in hatches where the coaming's upper part is so formed that it does not provide a satisfactory handhold, there shall be suitably arranged grab-rails.

Section 18 Grab-rails may also be required in other cases.

Section 19 Grab-rails may not be fixed to small hatches.

Chapter 10. Connecting ways on same level etc.

General

Section 1 Connecting ways shall be free from protruding objects that can catch or injure a passing person.

Section 2 Corners and edges of bulwarks, coaming and railing in the vicinity of normally used access ways or other places where a risk of personal injury may exist, shall be rounded off to the most feasible extent.

Section 3 Deck or floor surfaces on connecting ways shall be free of access hatches, pipelines or other objects that can involve the risk of stumbling or inhibit accessibility. On connecting ways, however, smaller objects such as fittings, may be permitted where such things are unavoidably necessary.

Horizontal connection links shall, if possible, be so formed that they afford the possibility of handling loads by rolling them.

Section 4 Access ways, such as walkways by the side of cargo holds on mud barge, around winches, cranes and the like, that are subjected to serious soiling by clay, earth, oil or the like, shall be fitted with grating plates, expanded metal or similar.

Grating plates, expanded metal plates or the like shall be arranged at least 50 millimetres above deck or floor. Such arrangements shall be easy to detach for cleaning purposes.

Section 5 Footways, platforms or similar arrangements around machines etc. shall be protected against slipperiness.

Platforms and footways in tanks shall, as far as is practicably possible, be so designed that the gathering of sludge is prevented.

General advice

The slipperiness protection may consist of fully patterned plate. Where so appropriate, such as in tanks, the underlay should consist of grating plate, however.

Clear width etc.

Section 6 Connection links shall permit the comfortable transportation of injured or unconscious persons out to the open deck.

Section 7 The clear breadth of the main walkway on the open deck amidships and around the poop or deck house, shall amount to at least 1 metre. Main corridors, walkways or similar shall also have this breadth within living quarters and provisions spaces.

On ships with an overall length of less than 25 metres, however, the clear breadth may be reduced to 0.8 metres.

Section 8 Other access ways shall have a minimum clear breadth of 600 mm, measured horizontally between the perpendiculars through the access ways' outer edges to the height stipulated in Section 11.

Section 9 Access ways shall, however, have at least such minimum breadth that doors that open on to the way and that are intended for through passage, can be opened at least 90 degrees without the risk of squeezing between the door leaf and opposite bulwark or other part.

Section 10 Special provisions apply to evacuation routes.

Clear height

Section 11 The clear height in spaces on ships on ships that are not covered by the load line convention, the Swedish Maritime Administration's announcement (1970:A4) on living quarters and catering premises on board ships or the Swedish Maritime Administration's announcement (1992:6) with regulations and general advice on the crew's living quarters on ships etc.[1] shall be at least 2.1 metres.

Section 12 Mountings, fire alarms and similar arrangements shall be positioned so that they do not represent any risk of accident to the crew.

Footbridge, walkway and walk tunnel

Section 13 Ships that are covered by the Load Line Convention shall have connecting ways in accordance with the convention as well as Section 14. For other ships the Swedish Maritime Administration determines which connecting ways shall exist in each separate case, based on Sections 14–35.

Section 14 When the possibility exist that a footbridge, walkway and walk tunnel can be used as a working space or transport link, the breadth shall be at least 0.9 metres and the height at least 2.1 metres.

Section 15 Ships shall have walkways on the hatches or deck. Walkways shall be arranged in accordance with Sections 16–25.

Section 16 Ships with a greater summer freeboard than 3 metres shall arrange walkways on deck on both sides of the cargo hatches.

Section 17 Walkways according to Section 16 shall have a direct connection with the connection link to the superstructure deck fore and aft in the form of stairs or ladders. On coaming steps shall be fitted for access to or from the walkways where this is required.

[1] Note that the Swedish Maritime Administration's announcement (1970:A4) on living quarters and catering premises on ships according to the interim provisions in SJÖFS 1992:6 still apply in certain respects for certain ships.

On the outer side and in places that are not protected by a coaming or deck house, there shall also, on the inner side of walkways, be supports with guard railing or stretched steel lines with a vertical distance between the spools or the lines of a maximum 300 millimetres as well as to a height of at least 1.1 metres on passenger ships and 1 metre on other ships.
Supports shall be placed at a relative distance of c. 1.5 metres.

Where the risk of falling does not exist, only two spools or lines in a railing by the walkway are required.

Section 18 Ships with a summer freeboard of at least 5 metres do not require any guard railing on the outer side of walkways alongside the cargo hatches, if a handrail or wire is set up on coaming and between the cargo hatches. There shall be supports between the cargo hatches with a relative distance of c. 1.5 metres.

Section 19 On ships that are fitted with guides for the opening of cargo holds transversely and where it is not practicably possible to arrange walkways under the guides by the cargo hatches, walkways may be set up outside the outermost vertical supports to the guides. Walkways between the guides shall be fitted with supports on both sides with guard railing or steel lines arranged in accordance with Section 22.

Section 20 On ships where the freeboard is not reduced by more than 60 per cent by the difference between the values according to the Load Line Convention's freeboard tables B and A, a footbridge between the poop and the amidships superstructure may be replaced by a walkway on the ship's cargo hatches, arranged in accordance with the above.

Section 21 Footbridge may be replaced by walkway between the bridge and stern if this distance does not exceed 30 metres.

Section 22 Instead of a footbridge or walkway as stipulated in accordance with Sections 13–22, a walk tunnel or other satisfactory walkway may be arranged below the deck, on condition that an adequate safety level is achieved.

Section 23 On a footbridge or walkway on open deck that is longer than 70 metres there shall be protection of a strong construction, which shall be positioned with an interval of maximum 45 metres.

The protection shall be dimensioned for at least one person and so constructed that it provides weather protection from both ahead, port and starboard.

Section 24 The Swedish Maritime Administration may, instead of what is stated in Section 23, accept an alternative or modified arrangement for tankers with limited space or tankers with a large freeboard, such as gas-tankers, on condition that such an alternative or modified arrangement brings about an equivalent safety level for access to the ship's forebody.

Section 25 On connecting ways no obstacles may occur other than small objects.

General advice

The obstacle may be suitably protected by slope plates.

Common provisions

Walk tunnel

Section 26 Walk tunnels may not contain pipes or other similar arrangements for the carrying of substances that can cause fire, explosion or danger to health. In such a tunnel there can be no pipelines to heating coils or similar arrangement to rooms where substances are to be found that can cause fire, explosion or danger to health.

Section 27 The walk tunnel's restrictions (bulkhead, ceiling, floor etc.) shall be oil- and gas-proof. If a tunnel is adjacent to tanks for substances that can cause fire or danger to health, there shall be a cofferdam between these and the tunnel. Pipes such as referred to in Section 26 may not exist in such cofferdams.

Section 28 Arrangements that can cause fire, explosion or danger to health may not exist in walk tunnels. Bunker pipes may, however, exist in walk tunnels.

Section 29 Stairs from walk tunnels shall be evenly distributed and the distance between these shall not exceed 80 metres.

Section 30 Walk tunnels shall be located as close to the freeboard deck as possible.

Combined walk and pipe tunnel

Section 31 Combined walk and pipe tunnels shall have satisfactory lighting and be well ventilated. Where necessary gas alarms shall be installed and electrical installations in the tunnel shall be explosion-proof.

From combined walk and pipe tunnels there shall be connection links every 80 metres.

At all entrances to pipe tunnels there shall be a sign that the tunnel must be well ventilated before being entered.

Pipe tunnel

Section 32 From pipe tunnels in double bottoms there shall be connection links every 40 metres. Such connection links may consist of manholes to cargo holds or similar with further connections up to the weather deck. Work in such tunnels shall be planned so that the covers can be kept open during the work. If this is not possible then safety measures shall be taken for work in enclosed spaces in accordance with the Swedish Maritime Administration's regulations and general advice (SJÖFS 2005:23) regarding the working environment on board ships.

Walkway in trunk on deck

Section 33 Instead of a footbridge or walk tunnel in accordance with the above, a wholly or partly enclosed trunk on the weather deck between the deck house and the stern on tankers may be arranged as a walkway. If such a trunk contains cargo oil pipes or is connected to the pump-room for cargo oil, it shall be regarded and equipped as a cargo oil pump-room.

Section 34 Exit to the weather deck shall be arranged every 40 metres.

At all entrances and exits to and from the trunk that is regarded as a cargo oil pump-room, there shall be a sign that states that the trunk must be well ventilated before being entered.

Section 35 On chemical tankers built after 1 July 1986 the requirements in the IBC code shall be applied to all electrical equipment. If the ship is built before 1 July 1986, then the BHC code shall be applied instead.

If the trunk is connected with, or has access directly to, the pump-room then it is regarded as being part of it.

Accessibility in tanks, cargo holds etc

Section 36 On ships with tanks, access to the entire bottom of the cargo tanks and bunker and ballast tanks as well as to valves and the like, shall be made possible by means of ladders, platforms, walkways and the like.

Section 37 Connection links in cargo tanks, cofferdams, pipe tunnels, cargo holds and the like shall be such that it is possible for a fully grown person to be brought through on a stretcher. In double bottoms on chemical tankers and in adjacent spaces outside the cargo tanks on gas tankers, as well as elsewhere where gas leaks may be feared, the possibility of stretcher transport shall be given particular attention.

Access ways shall, however, be such that it is possible to get around in cargo holds, cargo tanks, cofferdams, pipe tunnels and similar spaces while wearing breathing apparatus.

Section 38 Access ways to access hatches shall have a clear breadth of at least 600 millimetres and be free from obstacles.

Tracked cranes

Section 39 Connecting ways within work areas for tracked cranes or other lifting gear that can be driven, as well as workplaces that are used when cranes or other lifting gear that can be driven, are in operation, shall be appropriately positioned and provided with suitable protection where the risk of personal injury may exist when the crane or lifting gear is operated.

Section 40 Dangerous zones shall be clearly marked with protective paint. Suitably placed warning and prohibition signs shall be set up where required.

Section 41 On crane legs to lifting gear that can be driven, no arrangement on which clothes may get caught shall be located closer than 2.5 metres from the deck or floor.

Walkway for signalman

Section 42 Between the coaming and bulwark there shall be a walkway with a clear breadth of at least 900 millimetres at the fore and aft edge of the cargo hold if a signalman is required for loading and discharging. The distance between such walkways shall not exceed 20 metres, however.

Chapter 11. Bulwarks, railings and supports

Railings on open deck, platforms and the like

Section 1 Where there is a risk of falling overboard or down to a lower level on a ship, there shall be bulwarks or fixed railings of satisfactory strength. Where the risk only occasionally exists and a fixed railing would otherwise constitute an obstacle, another arrangement may be made in accordance with Sections 14–18 as well as Chapter 14, Sections 1–2.

Section 2 On ships bulwarks, fixed railing around an open deck, platforms, half-landings, footways, stair and ladder landings and the like, shall have a minimum height of 1 metre.

The Swedish Maritime Administration may consent to a lower height if the stipulated height could constitute an obstacle in the ship’s normal operation.

Section 3 On footways, platforms or similar arrangements, guard railing may be replaced by suitable handrails if the height above deck or floor is less than 1.5 metres, and if the risk of accident is not deemed to exist.

Section 4 Handrails or guard railing are not required if small platforms or similar arrangements exist that are less than 0.5 metres above the deck or floor and there are no special reasons why railing is required.

Opening in bulwarks and railings

Section 5 Closing arrangements for through passage in bulwarks and railings on the weather deck shall satisfy the same provisions as the bulwarks or railings in which they sit.

Such closing arrangements shall be executed so that they cannot be opened unintentionally.

Execution of fixed railings

Section 6 Fixed railings by openings, platforms, around decks or similar where the risk of falling exists, shall be 1 metre high and have three spools (triple-barred) unless special reasons militate otherwise.

For passenger ships, Section 12 shall apply instead to places where passengers have access.

Section 7 Where there is a risk of personal injury in respect of moveable devices, motors, electrical plant or similar, there shall be a guard railing present that completely avoids the risk.

Section 8 Railings may not have an opening greater than 230 millimetres below the railing's lowest spool. Relative distance between other spools may not exceed 380 millimetres.

Section 9 Overall in respect of fixed railings, there shall be a 100 millimetre high toe guard.

Section 10 Fixed supports to railings on open deck, platform, half-landing, walkway, stair or ladder landing and similar, shall not have a greater relative distance than 1.5 metres.

Section 11 Intermediate supports at stair flights may not have a greater relative distance than 1.5 metres measured along the stairs or ladder, if the railing is not of a particularly adequate construction.

Bulwarks or railings on passenger ships

Section 12 Bulwarks and railings on passenger ships shall have a height of at least 1.1 metres. In order to prevent climbing the railings, vertical spools shall be fitted with the greatest opening between the spools being 100 millimetres. If the railings in accordance with Section 6 have horizontal spools, then these shall be provided with protection in the form of a fine-mesh net or similar device that serves the same purpose.

Railings by walkways on barges

Section 13 On barges with walkways where persons work on board, there shall be railings with a height of at least 1 metre for setting up wingward

along the walkway. The railing may consist of moveable supports with three man-ropes. Wingward along the walkway there shall be a 100 millimetre high toe guard.

Movable or collapsible support

Section 14 Moveable or collapsible supports shall be at least 1 metre high and shall be able to be fitted with at least three man-ropes, chains or similar.

Section 15 The distance between supports according to Section 14 may not exceed 2 metres. Openings between man-ropes, chains or similar accessories shall, where there is a risk of falling, be in conformity with Section 8. If no such risk of falling exists then the opening between guard man-ropes and similar items, may be a maximum of 500 millimetres.

The distance between supports on gangways, accommodation ladders and similar, may not exceed 1.5 metres measured along the connection means.

Section 16 Support shoes for moveable supports shall be so formed that the support stands steady in the set up position and shall be so constructed and secured that the support cannot unintentionally be pushed out of position.

Section 17 Collapsible supports shall be fitted with adequate securing arrangement so that the support is secured in the upright position. Upon the use of collapsible railings, checks shall be made to ensure that the securing arrangement is satisfactorily connected.

Section 18 Moveable or collapsible supports shall be avoided as far as practicably possible.

Material

Section 19 Supports and handrails for fixed guard railings shall be made of steel or other acceptable material.

Section 20 Moveable or collapsible supports shall be made of steel or other material that is comparable from a safety perspective.

Resistance

Section 21 On ships in service area B and in wider service areas, fixed guard railings on open deck shall be dimensioned for a load factor at the railing's upper edge of at least 1 500 N per metre at right angles to its longitudinal direction and otherwise the most unfavourable direction for the railing, or the greater load that can normally be envisaged as arising.

Section 22 On ships in other service areas, fixed guard railing on open deck shall be dimensioned for a load factor of not less than 1 200 N per metre.

Section 23 Other fixed guard railing shall be dimensioned for at least 1 000 N per metre.

Section 24 Moveable or collapsible guard railing shall be dimensioned for a load factor at the railing's upper edge or on the railing support of at least 500 N per metre, at right angles to its longitudinal direction and otherwise the most unfavourable direction for the railing.

Chapter 12. Loose staging and platforms

Staging in rooms and tanks

Section 1 On ships on which cleaning and maintenance work with regard to bulkheads etc. in cargo holds and tanks takes place with the use of loose staging or platforms, there shall be drawings and descriptions that show how the staging or platform is to be arranged.

In cargo holds or tanks there shall be the requisite fixed fastening arrangements for staging or platforms.

Section 2 The entire arrangement shall be calculated with regard to the intended loading.

Own checks

Section 3 Checks of the fixture and suspension arrangements for staging and maintenance platforms shall be carried out by the master or person appointed by him at least once a year. The check shall be documented.

Chapter 13. Connection links with the shore (gangway, accommodation ladder etc.)

General

Section 1 Ships shall be fitted with satisfactory connection means so that embarkation and disembarkation can take place without danger.

When a ship's cargo ramps have to be employed as a connection link with the shore, there shall be a walkway that is at least 600 millimetres wide, separated from vehicular traffic.

Section 2 Ships shall be fitted with accommodation ladders where the vertical distance between the water surface and the place on the ship from which access to the connection link takes place, exceeds 3 metres, measured in the vertical plane at the most unfavourable trim and the lowest draught. The accommodation ladder shall be suspended by a davit or similar arrangement.

Section 3 The connection means shall be so positioned and stowed during the ship's voyages, that it does not represent an obstacle for the safe launching of lifeboats and life-rafts.

In the swung out or suspended position the accommodation ladder shall be positioned at a suitable distance from openings in the ship's side and so that cargo is not carried across it; it shall rest against the side of the ship practically vertically. If this is not possible due to the ship's construction, special measures shall be taken, e.g. through the use of suitable fenders.

The connection means shall otherwise be so positioned that it is easy to put out and is well protected during the ship's voyages.

Section 4 The connection means in the form of a gangway or accommodation ladder on a ship shall comply with the requirements of Sections 5–38 or the standards ISO 7061 for gangways and ISO 5488 for accommodation ladders. Even if ISO 5488 is employed, the requirements regarding accommodation ladders in Sections 14, 22, 24–26 and 30 shall be complied with.

Section 5 The connection means shall be constructed for a safety factor of at least 2.5 in relation to the material's guaranteed yield point. For aluminium the yield point is calculated at 0.2 per cent permanent extension.

Section 6 Connection means shall be fitted with the necessary fixing rings, lugs or the like, so that it can be safely secured with chains, lines and the like. Lugs, lashing fittings, rings, fixtures for suspension straps etc. shall be made of steel or equivalent material. Screws and the like shall be locked.

Section 7 Between aluminium and steel insulation shall be inserted with a non-hygroscopic material and in a manner that experience shows to be suitable.

Section 8 Connection means in the form of gangways, accommodation ladders or similar execution as well as associated platforms shall be fitted with a 3-barred railing that is fitted with netting, canvas or equivalent protection throughout the railing's entire height on both sides and along its entire length. Such protection shall form part of the equipment that is supplied together with the connection means.

The uppermost spool to the railing on the accommodation ladder shall be made of steel, light metal or equivalent.

Netting, canvas or equivalent protection shall be able to be easily fastened in a reliable manner. The mesh size in the netting should not exceed 50 millimetres.

Section 9 Connection means that, in their swung out position, rest on the quayside or similar, shall be fitted with rollers or wheels at the lower end. The rollers or wheels shall, as required, be fitted with a protection arrangement against squeezing.

Section 10 Connection means shall, at the lower end, be fitted with an arrangement that makes it possible to fasten and spread out the protective netting in a suitable manner.

Section 11 When the ship is at the quayside or similar mooring place, protective netting shall be set out so that the risk of injury as a result of falls between the ship and the quayside from the accommodation ladder, gangway, steps or similar, is minimised.

Section 12 Combined gangway and accommodation ladder shall have an angle in relation to the horizontal plane of maximum 55 degrees.

Section 13 Gangways and accommodation ladders shall, in an easily visible place, be supplied with a sign that clearly indicates the highest and lowest angle in relation to the horizontal plane, at which the connection means may be employed.

Section 14 Checking of gangways and accommodation ladders with associated lifting system shall take place every fifth year. Test loading does not need to take place, however, unless major repairs have been carried out or if the ship surveyor deems it to be necessary.

Section 15 Gangways and accommodation ladders with fixed railings that constitute an integral part of the connection means shall be included in the calculation of the connection mean's strength and do not need to be removed during test loading.

Construction requirements for gangways

Section 16 Gangways shall have a minimum clear tread length of 600 millimetres and a minimum clear breadth of 600 millimetres between handrails or railings.

Section 17 Gangways shall be fitted with suitably formed, transverse rungs that provide an adequate foothold at the permitted inclination of the gangway. The distance between the rungs shall not exceed 450 millimetres or be less than 350 millimetres, measured along the gangway. The gangway shall be fitted with protection against slipperiness.

Section 18 Gangways for use by people are dimensioned for a static load of 4 000 N/m^2 plus the gangway's own weight. The gangway shall also possess adequate security against buckling.

Section 19 Drawings and calculations for gangways shall be submitted to the Swedish Maritime Administration for examination.

Section 20 Before a gangway is brought into operation, it shall be load tested in a horizontal position. The test load shall be at least 5 000 N/m^2 and shall be evenly distributed. Deflection during the test first referred to shall not be greater than 1/100 of the gangway's length for steel and 1/75 for aluminium. No permanent deformation shall remain after the test loadings.

Section 21 For gangways that are also to be used as accommodation ladders, the provisions in Sections 22–31 shall also apply.

Construction requirements for accommodation ladders

Section 22 Accommodation ladders shall be so long that, at an inclination angle of 55 degrees in relation to the horizontal plane (50 degrees when fixed steps are used) they shall reach down to 1 metre above the surface of the water at the lowest draught.

Section 23 Accommodation ladders shall have a minimum clear step length of 550 millimetres and a minimum clear breadth of 600 millimetres between handrails or railings.

Section 24 Accommodation ladders shall have adjustable steps or other design that affords a good foothold at all angles between 0 and 55 degrees in relation to the horizontal plane. The steps shall be fitted with protection against slipperiness.

Section 25 Fixed steps are only permitted for accommodation ladders that have an inclination angle between 20 and 50 degrees in relation to the horizontal plane.

Section 26 Accommodation ladders shall be fitted with an upper and lower platform as well as with intermediate platforms at no less than every 15 metres of the accommodation ladder's length.

Section 27 Before an accommodation ladder is put into operation it shall be load tested in a horizontal position and only held up at the ends as well as in the normal manner as on board. The test load shall be at least 1 000 N or 2 x 1 000 N and placed as indicated in Section 28. Deflection during the test first referred to shall not be greater than 1/100 of the accommodation ladder's length for steel and 1/75 for aluminium and no permanent deformation shall remain after the test.

Section 28 Accommodation ladders for use by persons with a clear step length of >550 but ≤600 millimetres, shall be calculated for a static loading of at least 750 N, placed in the middle of each step + the accommodation ladder's own weight.

Where the step length is >600 but ≤1 000 millimetres, the accommodation ladder shall be calculated for a static loading of 2 x 750 N on each step, placed ¼ of the step length from the inner edge of the string + the

accommodation ladder's own weight. Accommodation ladders shall have satisfactory security against buckling and the strength shall be checked.

Section 29 Drawings and calculations for accommodation ladders shall be sent in to the Swedish Maritime Administration for examination.

Section 30 After an accommodation ladder is fitted on board it shall be load tested together with associated lifting equipment and accessories. The test load shall be in conformity with Sections 27 and 37–38. The accommodation ladder shall be in a horizontal position during the test loading.

Permanent deflection or damage shall not be found after the testing. During the testing the ship surveyor shall be present.

Section 31 For accommodation ladders that are to be used as gangways, Sections 16–21 additionally apply.

Construction requirements for platform to gangway and accommodation ladder

Section 32 Upper platforms and intermediate platforms shall be dimensioned for a static load of 5 000 N/m^2 + loading from accommodation ladder or gangway suspended in the most unfavourable position with a load factor as stated in Sections 18 or 28.

General advice

Upper platforms should be fitted with an arrangement whereby the connecting means can easily be turned in towards the quay.

Section 33 Lower platforms shall be dimensioned for a static load of 5 000 N/m^2.

Section 34 Platforms shall have a minimum clear square area of 0.36 m^2 and a triple-barred railing, arranged in accordance with Chapter 11, Section 8. The railing shall be 1.1 metres high on the upper platform and 1 metre high otherwise.

Section 35 Platforms shall be arranged horizontally when in use.

Section 36 The lower platform shall have a mounting or an extra strong railing that can be used upon embarking or disembarking to or from a boat.

Section 37 Platforms that are to be used together with an accommodation ladder shall be load tested together with the referred to type of accommodation ladder and/or gangway. For upper platforms and any intermediate platforms the test load shall be at least 6 000 N/m^2 + 50 per cent of the accommodation ladder or gangway's total weight in accordance with Sections 20 and 27.

For intermediate platforms the test load shall be 50 per cent of the part that hangs down below the platform.

Section 38 During the test the platforms shall be suspended in the normal manner as on board and the test load for the accommodation ladder or gangway shall be suspended in the intended means of attachment. The lower platform shall be suspended in the normal manner in the accommodation ladder and/or gangway and be test loaded with 6 000 N/m^2.

Chapter 14. Special arrangements

Protection by hatches

Section 1 In respect of hatches on deck or floor that lack coaming or where the coaming of which is lower than 900 millimetres above the deck or floor, there shall be an arrangement for the setting up of supports and guard railing or other equivalent safety arrangement that can be approved by the Swedish Maritime Administration.

Section 2 Protection in the form of supports or man-rope is not required if the coaming has a height of at least 600 millimetres and the length and breadth of the hatch do not exceed 750 millimetres.

Section 3 Railings that are set up as protection by access ladders shall also be able to be used as a satisfactory handhold when going onto or off the ladder.

Access to, and evacuation from, cranes, machines etc.

Section 4 For evacuation from cranes and access to mechanical and electrical appliances on cranes, lifting gear, auxiliary engines and radar antennae as well as other machines and appliances for lubrication, adjustment, lighting or other examination or for access to the driver cab or similar, there shall, if needed, be a walkway or platform at a suitable working height.

Section 5 Walkways shall run round lifting gear or machines if so required and the breadth shall be suited to the space requirements of the work operations. Walkways shall have a clear breadth of at least 400 millimetres.

Section 6 Setting down area for heavy spares shall be of the required extent. The setting down area shall be suitably positioned with regard to lifting gear and be of adequate strength.

Section 7 At places in the mast, around the deck house and similar where work is normally undertaken, platforms or walkways shall be set up with railings or, if this is not possible, safety hoops and side steps so that the work can be carried out safely and comfortably.

Section 8 For access to walkways, there shall be suitably arranged fixed connection links set up on portals, uprights, machines or other suitable places, with particular consideration given to the risks that can ensue from lifting gear's movements as well as the need to be able to take along tools or spares.

Section 9 Where crane windows are so arranged that they can be opened right down to the floor and there is a risk of falling, protective railings or chains shall be set up that prevent the driver from falling out. Protective railings or chains shall not be able to be loosened unintentionally.

High coaming

Section 10 If the height of a hatch coaming exceeds 1.1 metres a permanent or moveable work platform shall be arranged in the front and rear edge of the hatch and, if possible, on the part that faces wingward. The distance between the platforms or arrangement for setting them up shall not normally exceed 20 metres. The height from the platform to the coaming's upper edge shall not be less than 0.9 metres or exceed 1.1 metres

Section 11 Platforms according to Section 10 shall have grating plates or similar design that affords secure footing. Platforms shall be equipped with fixed railings or be able to be fitted with supports or guard railing if the height above deck exceeds 0.5 metres.

Section 12 Platforms shall measure at least 0.6 x 0.6 metres and be fitted with steps or equivalent for access, if their height above the deck is greater than 400 millimetres.

Section 13 If the coaming's height over the deck is less than 1.5 metres then platforms may be replaced by treads consisting of three pieces of 22 millimetre square steel, suitably arranged between coaming frames and with a distance in accordance with Section 10. The necessary grab-rail shall be set up.

Chain locker

Section 14 Chain lockers below deck for anchor chains shall be so arranged that it does not need to be entered upon the stowing of chains. If stowage by hand is necessary, suitable protection shall be set up.

Section 15 A permanently arranged connection link shall be present to the chain locker's bottom, so arranged that the chains cannot easily become caught up in it, such as – for example – suitably designed recesses or hatches/manholes in the side of the locker.

Safety arrangement for vehicle and vehicle transports

Section 16 On ships for vehicle transports or where vehicles are employed for loading and discharging, around hatch openings without coaming, at the side of the driving ramp, by ports in the ship's side and other openings that are level with the deck, there shall be a frame that prevents falling.

Section 17 The frame or equivalent shall have a height of at least 300 millimetres.

Section 18 Arrangements or frames that can be removed shall have the same strength as though they were permanently fixed.

Section 19 Arrangements or frames shall be so executed that they cannot be lifted or moved unintentionally.

Section 20 When an arrangement can be removed the foreman in charge shall ensure that it is in position before work with vehicles commences.

Section 21 Suspended decks and ramps shall, when in use, be protected against falling, both with regard to vehicles and persons.

Section 22 As required there shall be a satisfactory signal system that controls the traffic.

Section 23 There shall be an alarm system with sound and light for moveable ramps and decks.

Section 24 Control panels for ramps and decks shall be protected against operation by unauthorised persons.

Section 25 The emergency stop shall be positioned so that it is accessible in all positions.

Accessibility on passenger ferries' car-decks

Section 26 At the storage place for motor vehicles there shall be marked paths to the exits from the storage places. The paths shall have a breadth of at least 600 millimetres and, where it is reasonable and practicably possible, have a height of at least 150 millimetres above deck. The paths shall not be blocked.

Section 27 Motor vehicles shall be arranged so that the vehicles' doors are not blocked.

By this it is understood that on one side of the vehicle there shall be a clear passage with a breadth of at least 600 millimetres. At about every 24 metres there shall be a transverse clear passage with a breadth of at least 600 millimetres so that the exits may be reached from each vehicle.

Section 28 Exits shall be positioned so that the distance between parked vehicles and the nearest exit is no greater than 24 metres.

Contact protection against hot surfaces

Section 29 Outlets and systems that, by virtue of their positioning and temperature, can cause burns, shall be suitably provided with protection.

Skylights

Section 30 Skylights shall, as required, be provided with satisfactory protection so that falling down is prevented when the window is open.

Chapter 15. Mooring arrangements

Mooring arrangements

Section 1 Ships shall be fitted with suitable mooring equipment for safe mooring under all operational conditions.

Section 2 On ships with a length of up to and including 70 metres there shall be at least one mooring windlass fore and at least one aft, if it is not clearly unnecessary depending upon the ship's size and traffic pattern.

Arrangements that are of equal value from a safety perspective, such as fixed mooring arrangements for ferries with specially arranged port berths, may be acceptable as an alternative to a mooring windlass.

Section 3 On ships with an overall length exceeding 70 metres, the mooring arrangement should comprise automatic mooring windlasses so that winchhead work can be avoided to the greatest possible extent.

If synthetic mooring lines are employed on such ships, automatic mooring windlasses shall be present. In that respect at least two windlasses shall be positioned at the ship's fore section and two windlasses at the ship's stern section.

Mooring winches on tankers do not need to be automatic.

Section 4 Automatic mooring windlasses shall be fitted with brakes with a braking power that is in the region of the line's strength at break.

Section 5 The operating area for mooring windlasses shall be so designed that the operator is well protected and has a good overview of the working area.

Section 6 Mooring arrangements shall be so arranged and positioned that those who work with the mooring lines have adequate space and are able to stand well clear of windless ends, wire drums and the like and also so that there is sufficient space where the mooring lines are coiled.

Section 7 Space behind the winchhead, i.e. the place where a person stands when casting, shall be at least 2 metres. Alongside the winchhead there shall be a space of at least 1 metre.

Section 8 Next to, or behind, bollards the clear space shall be at least 0.4 metres. In front of the bollard or the place where a person works on securing or releasing, there shall be a clear breadth of at least 1.2 metres.

Section 9 Taking on board and securing towlines from a tug shall be so arranged that manual handling of the towing lines is avoided as far as possible.

Section 10 Next to the wire drum there shall be a clear space with a breadth of at least 0.6 metres if the wire has to be rolled manually.

Section 11 Wire drums shall be fitted with such arrangements that the wire end does not whip up towards a person upon winding on.

Section 12 Mooring arrangements shall, if possible, be so arranged that mooring lines can be led directly from the fairlead or snatch cleat to the winch or cable drum. Where this is not possible it is permitted, with the least possible deviation from the direct hauling rope, to have a maximum of two break rollers between the fairlead or snatch cleat and windless end or drum winding.

Section 13 A break roller and its fixing system shall have sufficient strength for the forces that can affect it with regard to different force directions.

Section 14 A break roller and its fixing arrangement shall at least comply with SS 78 90 03. Break rollers shall be dimensioned with regard to the mooring materials that are to be used on board.

Section 15 Break rollers shall be so arranged that significant axial forces are prevented upon them when used.

Stopping arrangements

Section 16 In connection with the mooring arrangement there shall be the requisite number of mechanical stopping arrangements or means of attachment for chain and manila stoppers, unless the running mooring gear is spun directly on to an automatic or specially constructed mooring windlass.

On large ships where slip-wires from buoys are employed, there shall be special arrangements that, in a satisfactory manner, hold the mooring line fast while it is being taken to the bollard.

Section 17 Mechanical stopping arrangements shall be placed near the fairlead or snatch cleat if the attachment place is not located close to the dragline between the fairlead and windlass. The fastening point for the second stopper shall be so placed that the stopper may be positioned at a suitable distance from the fairlead or snatch cleat.

Winchheads and cable drums

Section 18 Winchheads to windlasses or winches that are used in mooring work and similar work shall be fitted with edges the height of which shall be at least three-quarters of the diameter of the largest mooring line that is to be used on the winchhead. The warping end shall be so long that at least five or, where manila or equivalent mooring line is concerned, six turns of the mooring line can be laid on it.

Section 19 Cable drums shall have edges of satisfactory height on both sides and these may not be less than the wire's diameter times two, above a fully wound drum.

Where rope is used the edge on the cable drum shall be at least as high as the rope's diameter above a fully wound drum.

Communication

Section 20 Satisfactory speech connections shall exist between the bridge and the place where the mooring work takes place.

Tug boats

Section 21 On tugs with a bollard pull in excess of 25 tons there shall be a load indicator with reading-off at the control position on the navigation bridge, so that one may easily adjust the bollard pull to the connected towline.

Section 22 On tugs with a towing winch, it shall be possible in an emergency situation to immediately release the pull on the towing winch at all control points as well as on the gangways on the starboard and port sides.

General advice

One way of immediately releasing the pull on the towing winch can be by release of the windlass or an arrangement that cuts the wire in order to minimise the risks to the tug's crew. Such an arrangement shall be fitted so that the whipping end of the wire towards the tug is as short as possible. The wire end may not reach any release point for the arrangement.

Section 23 Tugs equipped with a hook shall have a remote release for this placed at the control point on the bridge and also on the gangway on the starboard and port sides.

Heaving line

Section 24 The weight of a heaving line shall not be of metal or similar hard substance and its weight may not exceed 400 grams.

Chapter 16. Hatches and coaming etc.

Patent hatches, cargo ports and ramps

Section 1 Patent hatches, cargo ports, ramps and the like, shall have a locking device, automatic if possible, of a suitable construction that affords satisfactory security against it unintentionally falling down from the raised position.

Section 2 Fixtures for wires, where these occur, shall be easily accessible on patent hatches.

Section 3 Care and handling regulations governing patent hatches, cargo ports, ramps or the like shall be set up at suitable locations, preferably in the vicinity of the control position.

Section 4 The control place for patent hatches, cargo ports, ramps or the like, shall be so located that the operator is well protected and shall have a good overview of the hatch, port or ramp.

Hatch beams, pontoon hatches and similar

Section 5 Hatch beams, pontoon hatches or other arrangements for covering hatch openings, shall be fitted with satisfactory securing arrangements to prevent unintentional lifting up.

Section 6 Pontoon hatches or similar shall, for lifting, have an attachment of suitable construction and strength at all four corners.

Section 7 Hatch beams and similar arrangements that cannot be easily lifted by two men, shall have a suitable attachment for lifting up and inserting, without any person needing to go onto it in order to attach or remove the lifting arrangement.

Section 8 Lifted pontoon hatches shall be secured in a satisfactory manner.

Section 9 There shall be adequate reserve equipment and equipment for the loosening of pontoon hatches and the like, on board.

Section 10 The underside of the hatch coaming shall be well rounded so that cargo or cargo hooks cannot easily foul up in it.

Wooden hatch covers

Section 11 Wooden hatch covers shall be fitted at both ends with a securely fastened, galvanised ferrule or equivalent.

Section 12 Wooden hatch covers intended for lifting by hand shall be fitted with suitably formed and sufficiently large handles that are securely fitted at both ends in such a manner that they cannot damage the covering.

Section 13 Hatch covers intended for lifting by hand shall not have a weight that exceeds 40 kg at a moisture ratio of 30 per cent.

Section 14 Hatch covers should be mutually interchangeable.

Section 15 Wooden hatch covers in cargo holds on an open deck, over which there is no superstructure, shall be of a satisfactory construction. Such hatch covers shall have a contact surface of at least 65 millimetres.

Section 16 For ships that are employed in service area D and more restricted areas, no greater contact surface than 50 millimetres is required for the hatches in question.

Section 17 On ships intended for service area C and wider service areas, the hatch covers may not extend beyond the coaming.

Section 18 Wooden hatch covers shall have at least the following thickness:

– On ships intended for service area C and wider service areas with a length less than 24 metres as well as on ships built before 21 July 1968, the gross tonnage of which is less than 150 according to the Load Line Convention, a final measurement of 60 mm if the hatch cover's non-supporting length does not exceed 1.5 metres.

– On ships intended for service area D and more restricted service areas, a final measurement of 38 mm, provided that no heavier cargo than timber is intended to be placed on the hatch cover, in which case the thickness shall be at least 50 mm.

Section 19 If there are more than one hatch beam in a hatch than what is required or if the cargo hatch is of an insignificant size, then the hatch cover may be of such lesser thickness that may be regarded as satisfactory.

Marking

Section 20 Coaming, cross-beams and hatch covers shall be marked so that it is clearly seen which deck and which hatch they belong to, as well as their place in the cover, unless coaming and hatch covers are mutually interchangeable

Numbering shall be from bow to stern.

Section 21 For decks and associated cargo holds the greatest load in tons (1 000 kg) to which the deck or hatch may be subjected as well as the axle pressure to which the deck or hatch may be subjected, shall be stated. Corrosion-proof signs with easily visible text shall be set up on the respective decks and in easily visible locations, stating:

Deck may be subjected to maximum load of …… ton/m^2
Axle pressure of vehicle with load, maximum……. ton
Hatch may be subjected to maximum load of…… ton/m^2
Axle pressure of vehicle with load, maximum ……. ton

Section 22 Also shown on the sign, if required, is the intended tyre type and number of wheels for the intended vehicle.

Chapter 17. Engine-room arrangement etc,

Engine-room arrangement

Section 1 Around machines and engines as well as other auxiliary equipment there shall be space so that maintenance and repairs can be carried out without hindrance and without risk of injury.

Ergonomics shall be considered with the planning of new ships.

Section 2 Floor plate shall be fixed. It shall be extended right in to all equipment so that the risk of stepping down between the plate edge and the

equipment is avoided. If it is not laid tightly, a toe guard may be inserted instead. Railings shall be fitted, if necessary.

Section 3 Floor plate shall be made of steel plate in access and evacuation ways.

Section 4 Stores for consumption materials and tools as well as the positioning of spares for engine equipment shall be adjacent to the engine-room or the equipment to which the spares relate, unless the transport ways are well prepared.

Section 5 Transport ways for heavy machine parts shall be as short as possible and so prepared that heavy lifts are avoided and so that the lifting and moving of heavy goods by means of fixed or mobile lifting devices, hand truck or material handling trolley, can be undertaken safely even in the event of a list and other ship movements.

Section 6 Detail drawings of the engine spaces shall show transport ways for heavy machine parts or other machine necessities to and from the engine-room to places where the materials can be transported to or from the shore.

Section 7 Valves shall be fitted with position indicators so that it is easy to see whether the valve is open or shut.

General advice

The indicator should be connected to a valve spindle or axle, not to any remotely operated control device.

Funnel

Section 8 Ships with installations in the funnel that can require supervision, service or inspection shall have a connection link directly from the funnel to the open deck so that it is possible to move to and from the funnel in a secure manner.

Engine control-room

Section 9 The engine control-room shall be satisfactorily insulated against noise and ventilated by means of temperature-controlled outside air.

If the control-room is positioned in the engine-room it shall be placed as close to the entrance as possible.

Section 10 Ships without a control-room shall have an easily accessible room in close proximity to the engine-room for hearing rest, breaks and spoken communication. The room shall be satisfactorily insulated against noise and shall have a normal indoor climate.

Ships where the bridge constitutes the engine control-room and where there are never personnel in the engine-room during operation, do not have to have a room in accordance with the first paragraph.

Marking

Section 11 Engine equipment shall be clearly marked for secure identification.

Pipes shall be marked so that their contents and direction of flow can be identified along their entire length. For marking the standard ISO 14726-1 shall be followed.

Section 12 Electric cables shall be indelibly marked and have codes at all connection points. The marking shall agree with the ship drawings. When any marking is altered or is added, the drawings shall be revised.

All fuses, switches and control devices shall be marked for easy identification.

Section 13 Where there is a particular risk of stumbling or encountering fixed objects that protrude outwards, upwards or downwards, easily noticeable warning signs shall be set up.

Chapter 18. Special requirements for fishing vessels

Work-deck within a closed superstructure

Section 1 Enclosed deck for the handling and processing of catches shall be equipped with an efficient drainage system with suitable capacity for discharging rinse water and fish cleaning.

Section 2 The surface layer of floor, bulkhead and ceiling shall be able to be renewed and be able to be cleaned without difficulty to the extent and in the manner that the activity requires.

Safety regarding fishing and fish handling

Work-deck for the fish

Section 3 The work area shall be sufficiently spacious for carrying out the work, both with regard to height and area, and shall be kept free of obstacles to the greatest possible extent.

Section 4 As far as possible contact with hawsers, warping lines and moveable parts shall be prevented through safety arrangements.

Section 5 Work areas shall, as far as possible, lie protected from the sea and afford the workers adequate protection against falling on the ship or falling overboard.

Section 6 There shall always be a lookout and the crew shall be warned in the event of imminent danger of heavy seas during fishing operations or when other work is being carried out on deck.

Section 7 It shall be possible to communicate securely between the bridge and the work-deck.

Section 8 A control system for stabilising catches hauled in shall be present, and on trawlers the following in particular:
- arrangement for fixing the trawl board.
- arrangement for controlling the swinging of the trawl net.

Section 9 There shall, as required, be a lifeline system that is constructed so that it is effective for all needs and includes the necessary wires, lines, shackles, ring-bolts and line-locks.

Stern trawlers with ramps

Section 10 In order for the work area in connection with the ramp to be as safe as possible, the requirements in Sections 11–13 shall be complied with.

Section 11 The upper part of the ramp shall be equipped with a gate or other safety device with the same height as the bulwarks or other adjacent arrangements in order to protect persons from falling down on to the ramp.

This gate or arrangement shall be easy to open and close, preferably by remote control from a safe location with uninterrupted view over the ramp's working area. The gate or equivalent may only be open when the fishing equipment is set out or taken in.

Section 12 The control arrangement for the hauling equipment shall be installed in an area that is sufficiently large so that whoever operates the equipment shall be able to work without hindrance.

The hauling equipment shall also have suitable safety arrangements for emergency situations, including emergency stop.

Section 13 Whoever operates the hauling equipment must have an adequate overview of the equipment and those who work with it.

If the hauling equipment is controlled from the bridge, the person operating the equipment shall equally have a good overview of those who work with it, directly or by means of a suitable aid.

Trawl winch

Section 14 On trawlers it shall be possible at all operating places as well as on gangways on the starboard and port side, to immediately release the power of the trawl winch in an emergency situation. This shall be done through releasing the winch or by a device that cuts the wire in order to minimise the risks to the ship's crew. Such an arrangement shall be fitted so

that the whipping end of the wire towards the ship is as short as possible. The wire end may not reach any release point for the arrangement.

Personal protective equipment

Section 15 Personal protective equipment that is worn in the form of clothing or over clothing, shall be brightly coloured in contrast to the marine surroundings and be clearly visible.

Evacuation routes and emergency exits

Section 16 For evacuation of workplaces or living quarters, ways and exits that can be used as evacuation routes and emergency exits shall be clear of obstacles and also be easily accessible at all times and lead out as directly as possible to an open deck or a safe area and from there to the survival craft.

Section 17 Exits that can be used as emergency exits and that are closed shall, in an emergency situation, be able to be easily and immediately opened by any worker or member of the rescue team.

Section 18 The number of evacuation routes and emergency exits and their distribution and measurements shall be suited to the workplaces and living quarters' use, equipment and size and to the largest number of people who may be present there at the same time.

Section 19 Evacuation routes and emergency exits shall be marked with signs in accordance with the National Board of Occupational Safety and Health's regulations (AFS 1997:11) on warning marking and warning signals.

Section 20 Evacuation routes and emergency exits as well as evacuation aids that require lighting, shall have emergency lighting with adequate illumination in the event of a fault with the normal lighting.

Coming into force and interim provisions

1. This statute comes into effect on 1 January 2006.

2. By means of the statute the Swedish Maritime Administration's announcement (1974:A9) on safety arrangements and safety measures on ships[3], is revoked.

3. Ships that, before these regulations come into effect, are approved in accordance with the Swedish Maritime Administration's announcement (1974:A9) on safety arrangements and safety measures on ships, annex 1, rule 2.2.2.1, 3.1.8, 5.3.1.1–5.3.1.3, 5.4.1.1, 6.8.1.2, 9.3.2.4.1.3 or 10.2.1 (see *annex*) do not need to satisfy corresponding requirements in Chapter 3 Section 7, Chapter 5 Section 13 1 and 3 as well as Sections 14–16,

Chapter 6 Section 39 , Chapter 10 Section 23 or Chapter 11 Section 12. Ships shall, however, also continue to fulfil the stated older provisions. If ships in these parts undergo a comprehensive reconstruction, the new requirements shall apply instead.

4. Ships built before the day on which these regulations come into force, do not need, if they do not already observe these provisions, to satisfy the requirements in Chapter 4 Section 14, Chapter 5 Section 2 and Section 3 second paragraph, Chapter 10 1Section 14 and Section 34 first paragraph as well as Chapter 17, Sections 1 and 4–8.

On behalf of the Swedish Maritime Administration

JOHAN FRANSON

Ronny Fast
(Swedish Maritime Safety Inspectorate)

[3] 1974:A9, 1988:11, 1993:25 and 1999:3 to be deleted from the statute book

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Annex

The following provisions in annex 1 in the Swedish Maritime Administration's announcement (1974:A9) remains in force for certain ships in accordance with the interim provisions (3–4) in these regulations.

Rule 2.2.2.1 Stair breadth is measured at right angles to the walking line.

Rule 3.1.8 Doors for passages should have a frame height of 1.95 metres. The frame height clearance should not be less than 1.85 metres if this must not be the case with regard to current regulations relating to threshold heights in the freeboard provisions. In the latter case, however, the frame height shall not be less than 1.65 metres if possible. Doors for passages may not have a frame clearance that is less than 600 mm, however.

Rule 5.3.1.1 The breadth of straight stairs within provisions premises and living quarters should be at least 1 000 mm.

Rule 5.3.1.2 Stairs on open deck frequently used be persons shall have a step length of at least 650 mm.

Rule 5.3.1.3 Stairs to engine-rooms should have a stair breadth of 850 mm.

Rule 5.4.1.1. The step breadth (B) in straight stairs shall, if possible, be at least 250 mm. The step breadth in the outer walking line in curved stairs should, however, amount to at least 270 mm. The inner walking line in curved stairs may be adjusted to generally accepted practice.

Rule 6.8.1.2 Railing in accordance with 6.8.1.1* shall be at least 900 mm high, measured vertically from the step leading edge. It shall be fitted on both sides along the ladder's entire length.

Rule 9.3.2.4.1.3 On footbridges or walkways on open deck with a length that exceeds 80 metres there shall be effective protection against breaking seas, which shall be positioned at intervals of maximum 50 metres, if the Swedish Maritime Administration does not decree otherwise.

Rule 10.2.1 On the deck of passenger ships the height of the bulwark and fixed railing around the open deck shall amount to at least 1.1 metres above the deck. On passenger ships operating in sheltered waters, the stated height may be reduced to 1.0 metres.

* Corresponds to Chapter 6, section 38 in these regulations.