

PILOT LADDER SAFETY

“DO IT RIGHT, THE FIRST TIME”



<https://pilotladdersafety.com>

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Table of Contents

Table of Contents 2

Foreword 3

Pilot Ladder Safety 4

Securing The Pilot Ladder..... 8

The Steps 12

The Ropes 16

Combination ladders 18

Safe Approach 24

Access to Deck..... 27

Pilot Ladder Reels..... 29

Checklist 33

Reference..... 34

Record of changes 35

Foreword

During my work as a maritime pilot, many times I encounter badly rigged pilot ladders which do not comply with regulations, guidelines or common-sense seamanship. Looking into this, I discovered there are many things a captain, an officer, or even a bosun, AB or OS has to keep in mind when rigging the ladder. The usability of the documentation in place regarding this matter is not very good. What can be found online are tales of colleagues showing the accidents, the mishaps and the errors they see on a daily basis.

Pilot ladder safety is about a critical operation. For many critical operations onboard there are procedures in place. For the rigging and the use of pilot ladders, often there is nothing in place.

The website pilotladdersafety.com is meant to show the right way to rig and use of the pilot ladder. This document is a hardcopy of the website, and will be updated regularly, as the website changes and improves all the time. Check on the website on a regular basis to check for the latest content. Any changes will be communicated by means of a **newsletter** on a regular basis. If you want to stay up to date all the time, sign up for the newsletter via the website.

If you have feedback or comments about the website or this document, do not hesitate to contact me via info@pilotladdersafety.com

Rotterdam, July 2020

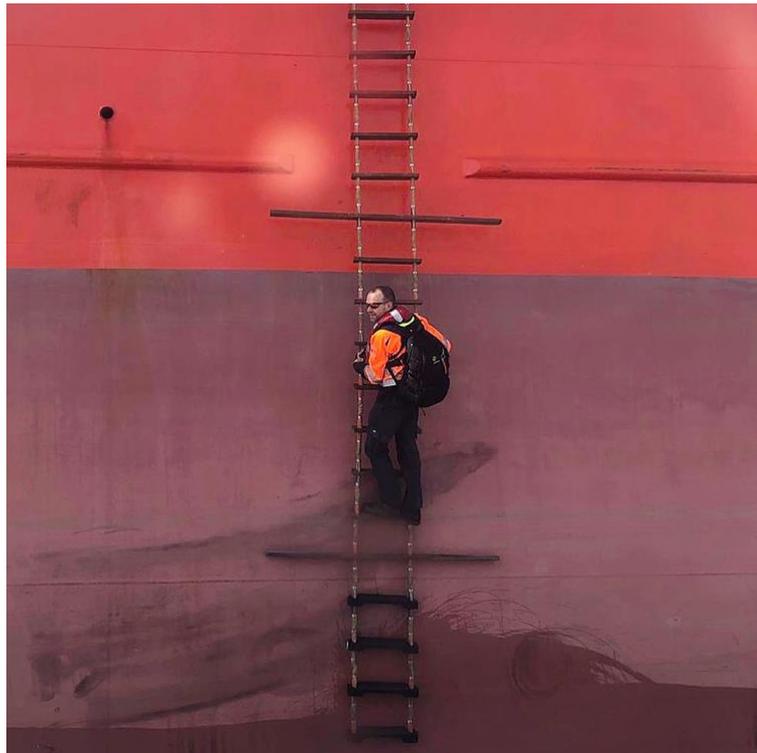
Herman Broers

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Pilot Ladder Safety

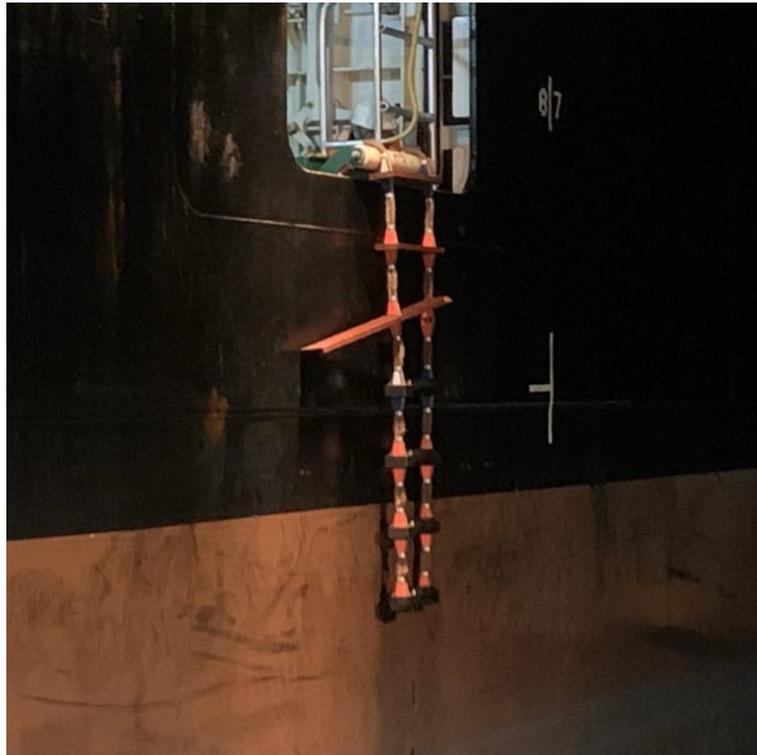
Pilot Ladder Safety – Do It Right The First Time. Every day around the world, maritime pilots board and disembark ships using pilot ladder arrangements. When the pilotladder is not used properly, a routine procedure can turn into a critical hazard . There are some very good reasons for using the pilot ladder in the correct way: The safety of the pilot and the structural integrity of the pilot ladder.



The aim of this website is to increase Pilot Ladder Safety awareness by showing good practice on the rigging and safe use of the pilot ladder. Through this site, by sharing information, news and feedback about good practice, we can raise the standards of Pilot Ladder Safety – Do It Right The First Time.

Do it right the first time!

For every ship there is a different way to rig the ladder properly, due to the nature of its construction. For every ship there is also one way to do it right.



There is a lot that can be improved here

Regulations regarding Pilot Ladder safety

- Solas convention CH V Reg 23 : regulations regarding Pilot Transfer Arrangements.
- IMO resolution 1045(27).
- ISO 799-1 industry standard.

With regards to the applicability of the above regulations, the ISM code states:

1.2.3 The safety-management system should ensure: .1 compliance with mandatory rules and regulations; and .2 that applicable codes, guidelines and standards recommended by the Organization, Administrations, classification societies and maritime industry organizations are taken into account.

For the various pages of this website, the applicable SOLAS requirements are marked in pink.

The applicable IMO 1045(27) resolution recommendations are marked in grey.

Not every ladder that is rigged overboard is a pilot ladder. In ISO 799-1, the main manufacturing and material requirements for a pilot ladder can be found. A ladder conforming to this standard, shall be designated by the code " Pilot Ladder ISO 799-1 " – S (number of steps) – L (length in meters) ". This should be marked on the bottom spreader and the top step. So when it says " Embarkation Ladder " it is NOT a pilot ladder.

The pilot ladder is part of SOLAS equipment onboard. Maintenance and inspection of the ladder should be logged accordingly.

If you are interested in sharing your ideas or feedback, don't hesitate to contact me on info@pilotladdersafety.com

Solas Ch V Reg 23: General regulations

1. Application

1.1. Ships engaged on voyages in the course of which pilots may be employed shall be provided with pilot transfer arrangements.

1.2. Equipment and arrangements for pilot transfer which are installed on or after 1 July 2012 shall comply with the requirements of this regulation, and due regard shall be paid to the standards adopted by the Organization.

1.3. Except as provided otherwise, equipment and arrangements for pilot transfer which are provided on ships before 1 July 2012 shall at least comply with the requirements of regulation 17 or 23, as applicable, of the International Convention for the Safety of Life at Sea, 1974, in force prior to that date, and due regard shall be paid to the standards adopted by the Organization prior to that date.

1.4. Equipment and arrangements installed on or after 1 July 2012, which are a replacement of equipment and arrangements provided on ships before 1 July 2012, shall, in so far as is reasonable and practicable, comply with the requirements of this regulation.

1.5. With respect to ships constructed before 1 January 1994, paragraph 5 shall apply not later than the first survey on or after 1 July 2012.

1.6. Paragraph 6 applies to all ships.

2. General

2.1. All arrangements used for pilot transfer shall efficiently fulfil their purpose of enabling pilots to embark and disembark safely. The appliances shall be kept clean, properly maintained and stowed and shall be regularly inspected to ensure that they are safe to use. They shall be used solely for the embarkation and disembarkation of personnel.

3. Transfer arrangements

3.1. Arrangements shall be provided to enable the pilot to embark and disembark safely on either side of the ship.

3.2. In all ships, where the distance from sea level to the point of access to, or egress from, the ship exceeds 9 m, and when it is intended to embark and disembark pilots by means of the accommodation ladder, or other equally safe and convenient means in conjunction with a pilot ladder, the ship shall carry such equipment on each side, unless the equipment is capable of being transferred for use on either side.

Securing The Pilot Ladder

Pilot ladder safety starts with the ladder being secured correctly. If it is not secured properly, it may lead to accidents and damage to the ladder. And it is not that difficult.



Well done! (SONGA SAPPHIRE 2020)

The Pilot Ladder should be secured to the ship's deck, on designated strong points, by means of the ladder's side ropes.

The weight of the ladder must be transferred from ladder's side ropes to the strong point on deck to the directly. Never use the ladder's steps, spreaders or chocks to carry the weight of the ladder since they are not designed for this and are not strong enough. For this reason, shackles, bars and tongues should never be used to secure the ladder to the deck. They will damage the ladder and put weight on the parts which are not designed to carry the weight.

The easiest way to secure the ladder is the use of two strong (at least 2 x 24 kN) manila ropes directly attached to each side rope of the pilot ladder, by means of a **rolling hitch knot**. This will transfer the weight of the ladder arrangement directly onto the designated strong point and will not damage the ladder in any way.



rolling hitch 1



rolling hitch 2



rolling hitch 3



rolling hitch 4

The Rolling Hitch Knot in 4 steps

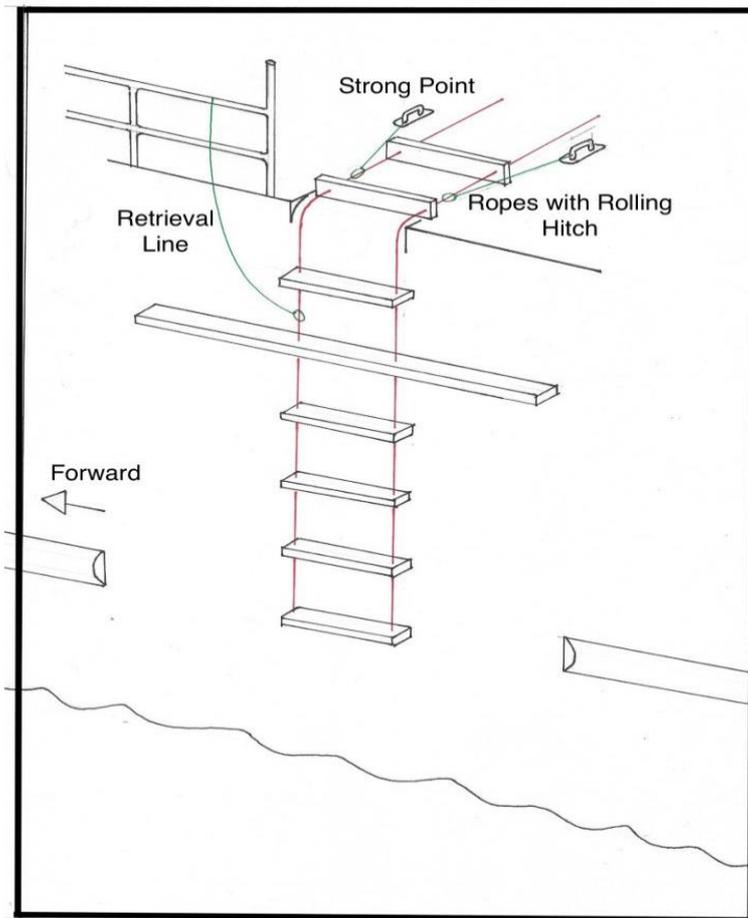
The ladder should be rigged over the deck edge, in an opening in the ship's railing or over a bulwark. In the latter case a bulwark ladder must be used for safe access. Ideally, the deck edge should be rounded to prevent the cutting or damaging of the pilot ladder's side ropes.

In the next picture, the design and the rigging of the pilot ladder has been done by the book. This ensures 1) a correct weight transfer from the ladder onto the deck, and 2) there is no excessive wear caused by sharp edges or incorrect load on the ladder's parts. In this case the strongpoints have been certified to 4 tons SWL. A top job!



The rolling hitch knot used on a well rigged pilot-ladder arrangement. (Ideally the securing ropes should be manila). Observe the marked strong points on deck (SWL 4T) Pic: Cpt. Gary Clay,

Always use a designated strong point to secure the ladder. Never use railings or pipelines since they have no certified strength.

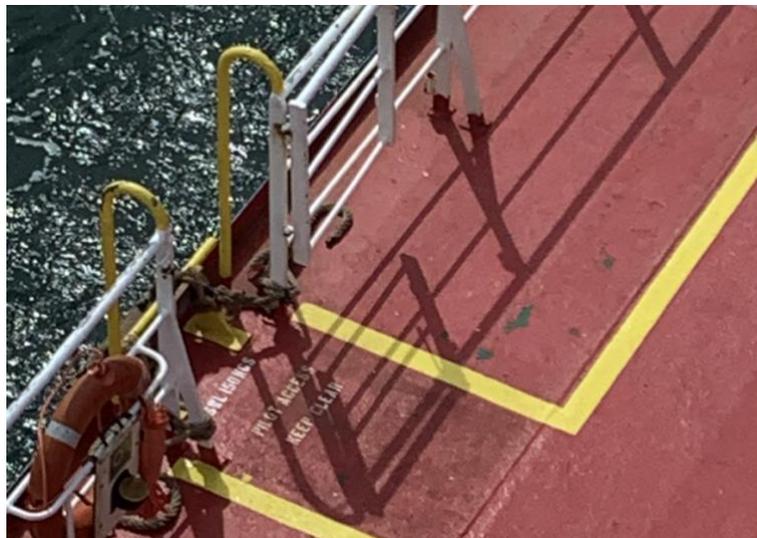


Securing of the Pilot Ladder

From a design point of view there is a lot that can be improved to make the securing of the ladder an easy job

In some cases the design of the Pilot Access Area is so poor that it seems hand railings with sharp edges are the only option to secure the ladder. This will cause damage and wear to the ropes of the ladder.

As an example, in the next picture it is clear that the design of the pilot ladder access point does not allow for the required length of rope to secure the ladder, like in the previous case. There are two eyes, which are only inches away from the rounded edge and therefore useless. In this case, two designated eyes (strong points) should have been welded onto the main deck, preferably at a good distance from the ship's side, well marked and load tested to at least 48 kN each, which is the total MBL (Minimum Breaking Load) of the side ropes.



The Steps

A bad pilot ladder, with worn-out steps and side ropes is not a good welcome sign for a pilot onboard a ship. It is easy to inspect the steps every time the ladder is used. Make sure the steps are in good shape, and clean, ready to use.



In Good Shape. M/T TIGRIS 2020

The retrieval line is sometimes referred to by pilot as “the trip line”. On a rolling ship it can easily get in the way of the pilot boat fendering or crew, or the pilot climbing the ladder. And there is only one way it should be attached: **At or above the bottom spreader, leading forward**. This also implies that when a combination ladder is used, the retrieval line of the pilot ladder should be rigged underneath the accommodation ladder.

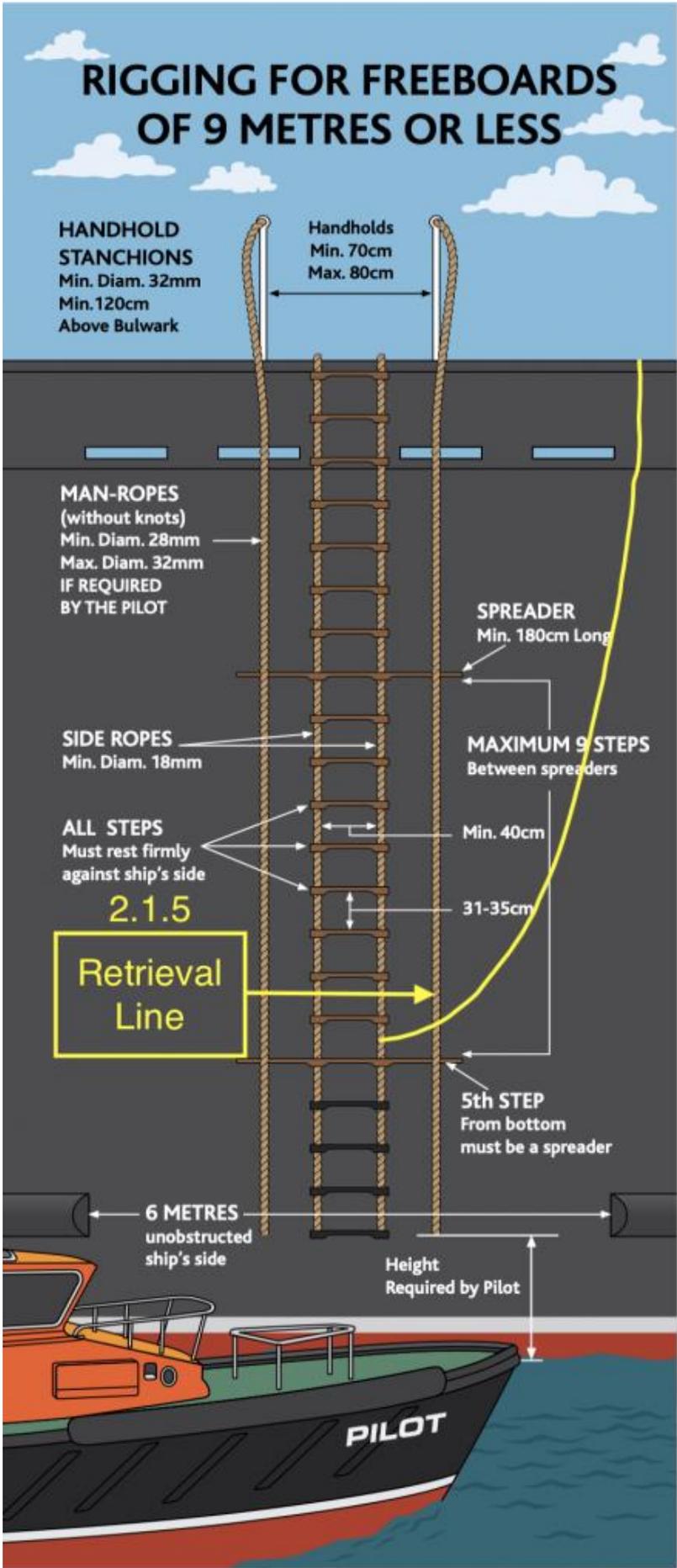
Retrieval line: At or above the spreader, leading forward

When markings are used, they should not be painted on the ladder’s steps, paint and varnish make the ladder slippery and therefore dangerous.

As per ISO 799, the following requirements apply to the steps:

1. Steps to be made from hardwood, resilient plastic or rubber
2. If made of wood, they are free of knots and uncoated
3. Steps have a grooved, patterned , or moulded non-skid surface
4. Anti skid adhesive sheeting may not be used

5. Step thickness should be a minimum of 25 mm (excluding the non skid treatment or grooving)
6. The lower four steps shall be made of rubber
7. The fifth step from the bottom shall be a spreader, and from there every 3 meters a spreader shall be fitted, minimum 1.8 m length.
8. Replacement steps shall be provided by the manufacturer only
9. No more than 2 replacement steps can be used



IMO 1045(27) Pilot Transfer Arrangements

2.1.2 *The steps of the pilot ladders should comply with the following requirements:*

- *if made of hardwood, they should be made in one piece, free of knots;*
- *if made of material other than hardwood, they should be of equivalent strength, stiffness and durability to the satisfaction of the Administration;*
- *the four lowest steps may be of rubber of sufficient strength and stiffness or other material to the satisfaction of the Administration;*
- *they should have an efficient non-slip surface;*
- *they should be not less than 400 mm between the side ropes, 115 mm wide and 25 mm in depth, excluding any non-slip device or grooving;*
- *they should be equally spaced not less than 310 mm or more than 350 mm apart; and*
- *they should be secured in such a manner that each will remain horizontal.*

2.1.3 *No pilot ladder should have more than two replacement steps which are secured in position by a method different from that used in the original construction of the ladder, and any steps so secured should be replaced as soon as reasonably practicable by steps secured in position by the method used in the original construction of the pilot ladder. When any replacement step is secured to the side ropes of the pilot ladder by means of grooves in the sides of the step, such grooves should be in the longer sides of the step.*

2.1.4 *Pilot ladders with more than five steps should have spreader steps not less than 1.8 m long provided at such intervals as will prevent the pilot ladder from twisting. The lowest spreader step should be the fifth step from the bottom of the ladder and the interval between any spreader step and the next should not exceed nine steps.*

2.1.5 *When a retrieval line is considered necessary to ensure the safe rigging of a pilot ladder, the line should be fastened at or above the last spreader step and should lead forward. The retrieval line should not hinder the pilot nor obstruct the safe approach of the pilot boat.*

2.1.6 *A permanent marking should be provided at regular intervals (e.g. 1 m) throughout the length of the ladder consistent with ladder design, use and maintenance in order to facilitate the rigging of the ladder to the required height.*

The Ropes



The ropes are the strongest part of the pilot ladder. Since the rope material is manilla rope, it is very vulnerable and sensitive to salt and water. Special care should therefore be taken when strong the pilot ladder during the sea voyage.

As per ISO 799 the following requirements apply to the side ropes:

1. Manilla rope as per ISO 1181:2004 or similar
2. Rope's breaking strength is 24 kN, with a diameter of 20 mm.
3. Metals used for clamping and fastening shall be corrosion resistant
4. The side ropes are continuous loops with the joint above the top step or below the bottom step only.
5. When the ladder is in use, the ropes cannot come in contact with the ship's hull.

The ropes are the strongest parts of the pilot ladder, rated at 24 kN each.

There are 2 double side ropes on each side of the ladder. That makes the total strength 2 x 48 kN. The ropes should be the only part of the ladder to carry the static and dynamic weight of the ladder. These forces should never be transferred to the ship's deck via wooden parts of the ladder, or uncertified strong points on deck, such as railings and pipes. That's why shackles and tongues on deck should not be used to secure the pilot ladder. Use only designated strong points!

The soft material of which the ropes are made requires soft edges in way of the pilot access point over which the pilot ladder is hanging overboard. Once again, this both to enhance safety as well as the ladder's lifespan.

IMO 1045(27) Pilot Transfer Arrangements:

2.2 Ropes

2.2.1 *The side ropes of the pilot ladder should consist of two uncovered ropes not less than 18 mm in diameter on each side and should be continuous, with no joints and have a breaking strength of at least 24 Kilo Newtons per side rope. The two side ropes should each consist of one continuous length of rope, the midpoint half-length being located on a thimble large enough to accommodate at least two passes of side rope.²*

2.2.2 *Side ropes should be made of manila or other material of equivalent strength, durability, elongation characteristics and grip which has been protected against actinic degradation and is satisfactory to the Administration.*

2.2.3 *Each pair of side ropes should be secured together both above and below each step with a mechanical clamping device properly designed for this purpose, or seizing method with step fixtures (chocks or widgets), which holds each step level when the ladder is hanging freely. The preferred method is seizing.¹*

¹*Refer to the recommendations by the International Organization for Standardization, in particular publication ISO 799:2004, Ships and marine technology — Pilot ladders, part 4.3a and part 3, paragraph 3.2.1.*

Combination ladders

The use of a combination ladder, an accommodation ladder as well as a pilot ladder, is needed when the freeboard of the ship is more than 9 meters. It is important to allow a free space of more than 5 meters under the platform of the accommodation ladder, to let the pilot boat come alongside safely.



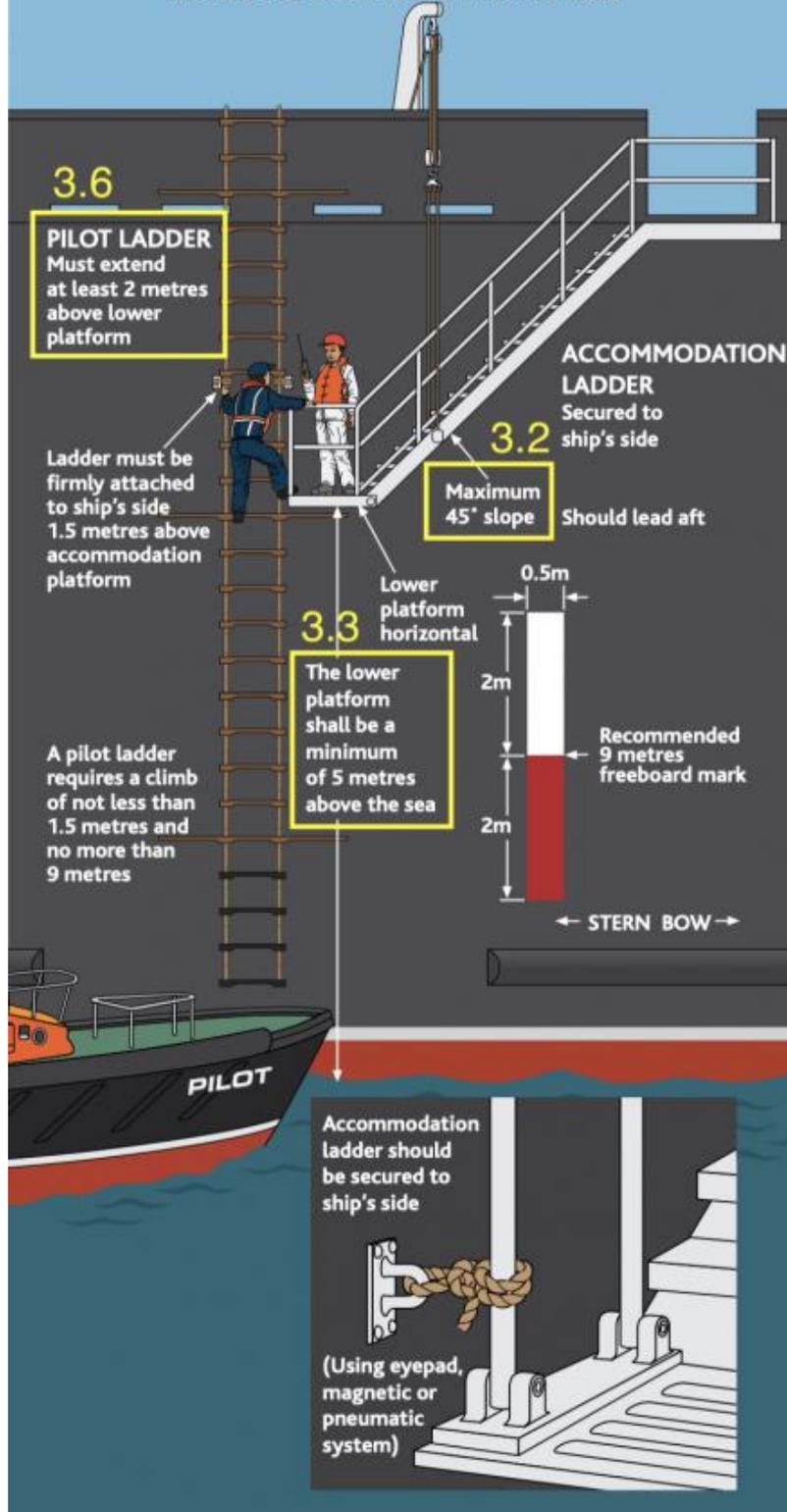
The pilot ladder must extend at least 2 meters above the platform of the accommodation ladder, so that the pilot can safely transfer from the pilot ladder to the platform of the accommodation ladder, vice versa.

The Accommodation ladder and the Pilot ladder must be secured to the ship side independent of each other

Since this type of combination ladder is often used on empty tankers, the rolling of the vessel can be considerable. For this reason, it is very important that the pilot ladder, as well as the accommodation ladder are well secured to the ship's side, independent of each other. Climbing or descending a pilot ladder which is swinging away from the ship's hull is very dangerous. The securing of the pilot ladder to the ship's hull should be placed 1,5 meters above the platform of the accommodation ladder, one lashing on each side rope.

On the IMO's Wheelhouse poster, all important information is given on the correct rigging and dimensions of a combination ladder.

COMBINATION ARRANGEMENT FOR SHIPS WITH A FREEBOARD OF MORE THAN 9 METRES WHEN NO SIDE DOOR AVAILABLE



One very special kind of combination ladder arrangement is the so-called **trapdoor arrangement**, whereby the pilotladder is suspended underneath the accommodation ladder platform. The pilot climbs the ladder and enters the platform and accommodation ladder by means of a trapdoor opening.



Pic: [Marinelog article](#)

Many pilots do not like to use this system, because it requires a lot of acrobatics to embark or disembark the ship. In december 2019 a New York pilot died when boarding a ship with this system, which attracted a lot of attention in the press.

There are several problems with this kind of arrangement:

1. The pilot ladder does not extend 2 m above the platform
2. The pillotladder does not hang firmly against the ship side
3. In many cases the combination itself is not secured to the ship side.

To address the above problems, in 2020 there have been modifications to this system on some ships, which solves the above problems, provided that the system is secured to the ship's hull on the level of the platform. In the below picture that is done by using magnets to hold the platform secured to the hull:



Figure 3 – Example of a compliant combination PBA with trap door.



Figure 4 – Compliant combination PBA with trap door – pilot ladder and man ropes extend up to and are made fast on vessel's deck

Pic: CHIRP MARITIME Feedback bulletin

From the top picture (figure 3) it is very clear why the inboard hand railing on the boarding platform is so important for the pilot when he embarks or leaves the ship. It is the first and the last firm grip he has of the vessel. It should always be in place!

SOLAS V – Reg 23

Transfer Arrangements

3.3: Safe and convenient access to, and egress from, the ship shall be provided by either:

.2. an accommodation ladder in conjunction with the pilot ladder (i.e. a combination arrangement), or other equally safe and convenient means, whenever the distance from the surface of the water to the point of access to the ship is more than 9 m. The accommodation ladder shall be sited leading aft. When in use, means shall be provided to secure the lower platform of the accommodation ladder to the ship's side, so as to ensure that the lower end of the accommodation ladder and the lower platform are held firmly against the ship's side

within the parallel body length of the ship and, as far as is practicable, within the mid-ship half length and clear of all discharges.

.1. when a combination arrangement is used for pilot access, means shall be provided to secure the pilot ladder and manropes to the ship's side at a point of nominally 1.5 m above the bottom platform of the accommodation ladder. In the case of a combination arrangement using an accommodation ladder with a trapdoor in the bottom platform (i.e. embarkation platform), the pilot ladder and man ropes shall be rigged through the trapdoor extending above the platform to the height of the handrail.

IMO 1045(27) Pilot Transfer Arrangements:

3 Accommodation ladders used in conjunction with pilot ladders

3.1 Arrangements which may be more suitable for special types of ships may be accepted, provided that they are equally safe.

3.2 The length of the accommodation ladder should be sufficient to ensure that its angle of slope does not exceed 45°. In ships with large draft ranges, several pilot ladder hanging positions may be provided, resulting in lesser angles of slope. The accommodation ladder should be at least 600 mm in width.

3.3 The lower platform of the accommodation ladder should be in a horizontal position and secured to the ship's side when in use. The lower platform should be a minimum of 5 m above sea level.

3.4 Intermediate platforms, if fitted, should be self-levelling. Treads and steps of the accommodation ladder should be so designed that an adequate and safe foothold is given at the operative angles.

3.5 The ladder and platform should be equipped on both sides with stanchions and rigid handrails, but if handropes are used they should be tight and properly secured. The vertical space between the handrail or handrope and the stringers of the ladder should be securely fenced.

3.6 The pilot ladder should be rigged immediately adjacent to the lower platform of the accommodation ladder and the upper end should extend at least 2 m above the lower platform. The horizontal distance between the pilot ladder and the lower platform should be between 0.1 and 0.2 m.

3.7 If a trapdoor is fitted in the lower platform to allow access from and to the pilot ladder, the aperture should not be less than 750 mm x 750 mm. The trapdoor should open upwards and be secured either flat on the embarkation platform or against the rails at the aft end or outboard side of the platform and should not form part of the handholds. In this case the after part of the lower platform should also be fenced as specified in paragraph 3.5 above,

and the pilot ladder should extend above the lower platform to the height of the handrail and remain in alignment with and against the ship's side.

3.8 Accommodation ladders, together with any suspension arrangements or attachments fitted and intended for use in accordance with this recommendation, should be to the satisfaction of the Administration¹.

¹Refer to SOLAS regulation II-1/3-9 concerning accommodation ladders.

SOLAS II-1/3-9:

Regulation 3-9. Means of embarkation on and disembarkation from ships

1. Ships constructed on or after 1 January 2010 shall be provided with means of embarkation on and disembarkation from ships for use in port and in port related operations, such as gangways and accommodation ladders, in accordance with paragraph 2, unless the Administration deems that compliance with a particular provision is unreasonable or impractical .
2. The means of embarkation and disembarkation required in paragraph 1 shall be constructed and installed based on the guidelines developed by the Organization .
3. For all ships the means of embarkation and disembarkation shall be inspected and maintained in suitable condition for their intended purpose, taking into account any restrictions related to safe loading. All wires used to support the means of embarkation and disembarkation shall be maintained as specified in [regulation III/20.4](#):

Regulation 20.4 Operational readiness, maintenance and inspections: Maintenance of falls

Falls used in launching shall be inspected periodically with special regard for areas passing through sheaves, and renewed when necessary due to deterioration of the falls or at intervals of not more than 5 years, whichever is the earlier.

Safe Approach

The safe approach of the pilot boat depends on many factors. The main ones are dependent on the vessels characteristics and layout, loading condition and the place for embarkation.

The minimum length of 1,5 meters is very important for safe embarkation and disembarkation. It allows the pilot to step on the pilot ladder, while at the same time holding on to a side rope.

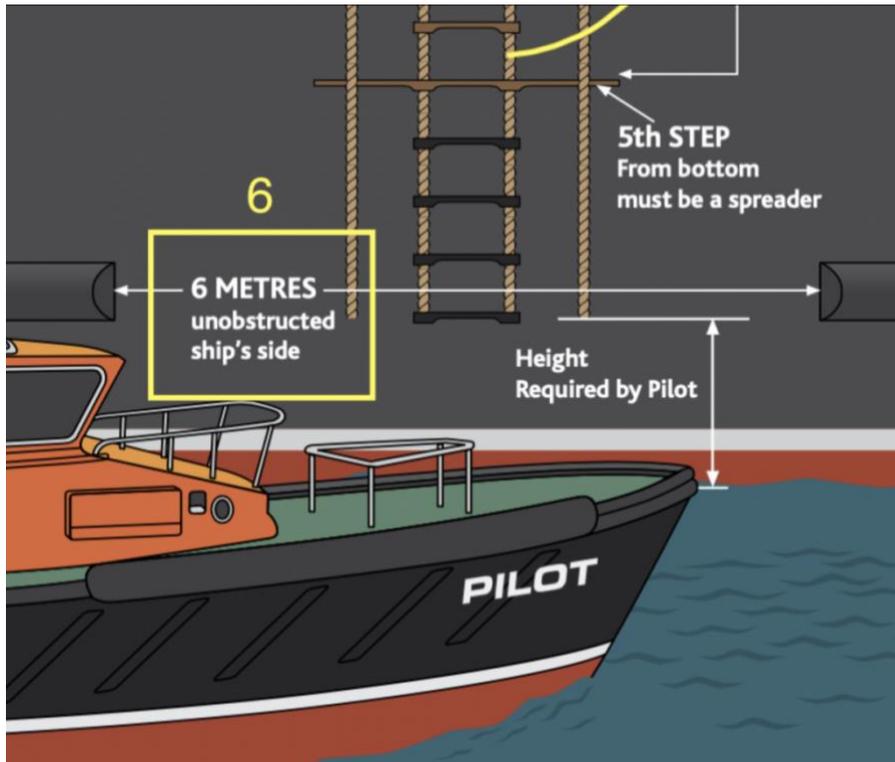
There should be no fendering near the pilotladder arrangement

Dependent of the ship's freeboard and draft, it is possible that there is not a standard solution for placing the ladder. For instance, when the pilot boat requires a height of 2 meters above the waterline, and a minimum pilot ladder length of 1,5 m is required, a minimum freeboard of 3,5 m is required. On some coasters that may not be possible from the main deck.



Fendering is clear in way of the pilotladder

By design, there should be no fendering near the pilot ladder. On ships where fendering gets in the way of the pilot ladder, pilot tender or fast launch craft, dangerous situations can occur. On one occasion a fast launch was overturned by a fender tipping over the launch. Four people ended up in the water as a result.



Safe Approach (Source: Wheelhouse Poster)

On some ships, in particular ferries and roro-vessels, the gate to the pilot ladder is located so far aft, that the tender or launch can end up under the stern of the ship, close to the ship's propeller. The best position of the pilot ladder is close to the midships position, and always within the parallel body length of the ship.



Rotterdam pilot speed tender

Main Items to keep in mind:

1. Embarkation point is well lit
2. No fendering around the pilot ladder
3. No overboard discharge near the pilot ladder

SOLAS V Reg 23:

3.3. Safe and convenient access to, and egress from, the ship shall be provided by either:

.1. a pilot ladder requiring a climb of not less than 1.5 m and not more than 9 m above the surface of the water so positioned and secured that:

.1. it is clear of any possible discharges from the ship;

.2. it is within the parallel body length of the ship and, as far as is practicable, within the mid-ship half length of the ship;

.3. each step rests firmly against the ship's side; where constructional features, such as rubbing bands, would prevent the implementation of this provision, special arrangements shall, to the satisfaction of the Administration, be made to ensure that persons are able to embark and disembark safely;

8. Lighting

Adequate lighting shall be provided to illuminate the transfer arrangements overside and the position on deck where a person embarks or disembarks.

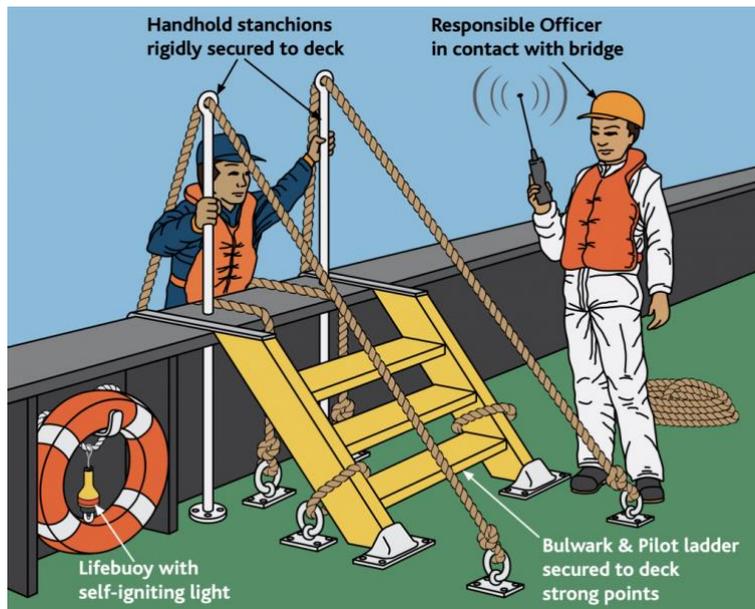
IMO 1045(27) Pilot Transfer Arrangements:

6 Safe approach of the pilot boat

Where rubbing bands or other constructional features might prevent the safe approach of a pilot boat, these should be cut back to provide at least 6 metres of unobstructed ship's side. Specialized offshore ships less than 90 m or other similar ships less than 90 m for which a 6 m gap in the rubbing bands would not be practicable, as determined by the Administration, do not have to comply with this requirement. In this case, other appropriate measures should be taken to ensure that persons are able to embark and disembark safely.

Access to Deck

Think of your own safety! Every year, seafarers are lost overboard at sea when rigging a pilot ladder. The first precaution to take when rigging a ladder is to ensure it is done by at least two men, who wear lifejackets, safety lines and a radio. Also, during the embarkation or disembarkation of the pilot, wearing a lifejacket is advisable, since the embarkation point is usually located near an opening in the ship's railing.



Access to Deck (Wheelhouse poster)

With the present minimum manning levels on ships, there is little time to perform crucial tasks such as rigging the pilot ladder properly. It is the usual last job after departure, or the first job before arrival of the ship into port. However, the critical nature of the operation for which a pilot ladder is used does not allow for any shortcuts.

Wearing a lifejacket is advisable, since the embarkation point is usually located near an opening in the ship's railing

The lifebuoy with self-igniting light is mandatory at the location of the pilot embarkation point, and for a good reason. Whenever a pilot goes into the water by accident, this buoy will mark the spot where he fell in. That is where all rescue operations will be aimed at. Ensure it is working and ready for use.

Solas Ch V Reg 23:

2. General

2.2: "The rigging of the pilot transfer arrangements and the embarkation of a pilot shall be supervised by a responsible officer having means of communication with the navigation bridge and who shall also arrange for the escort of the pilot by a safe route to and from the navigation bridge."

4. Access to the ship's deck

Means shall be provided to ensure safe, convenient and unobstructed passage for any person embarking on, or disembarking from, the ship between the head of the pilot ladder, or of any accommodation ladder or other appliance, and the ship's deck. Where such passage is by means of:

- .1. a gateway in the rails or bulwark, adequate handholds shall be provided;
- .2. a bulwark ladder, two handhold stanchions rigidly secured to the ship's structure at or near their bases and at higher points shall be fitted. The bulwark ladder shall be securely attached to the ship to prevent overturning.

7. Associated Equipment

7.1. The following associated equipment shall be kept at hand ready for immediate use when persons are being transferred:

1. two man-ropes of not less than 28 mm and not more than 32 mm in diameter properly secured to the ship if required by the pilot; man-ropes shall be fixed at the rope end to the ring plate fixed on deck and shall be ready for use when the pilot disembarks, or upon request from a pilot approaching to board (the manropes shall reach the height of the stanchions or bulwarks at the point of access to the deck before terminating at the ring plate on deck);
2. a lifebuoy equipped with a self-igniting light;
3. a heaving line."

7.2. When required by paragraph 4 above, stanchions and bulwark ladders shall be provided.

8. Lightning

Adequate lighting shall be provided to illuminate the transfer arrangements overside and the position on deck where a person embarks or disembarks."

IMO 1045(27) Pilot Transfer Arrangements:

5 Access to deck

Means should be provided to ensure safe, convenient and unobstructed passage for any person embarking on, or disembarking from, the ship between the head of the pilot ladder, or of any accommodation ladder, and the ship's deck; such access should be gained directly by a platform securely guarded by handrails. Where such passage is by means of:

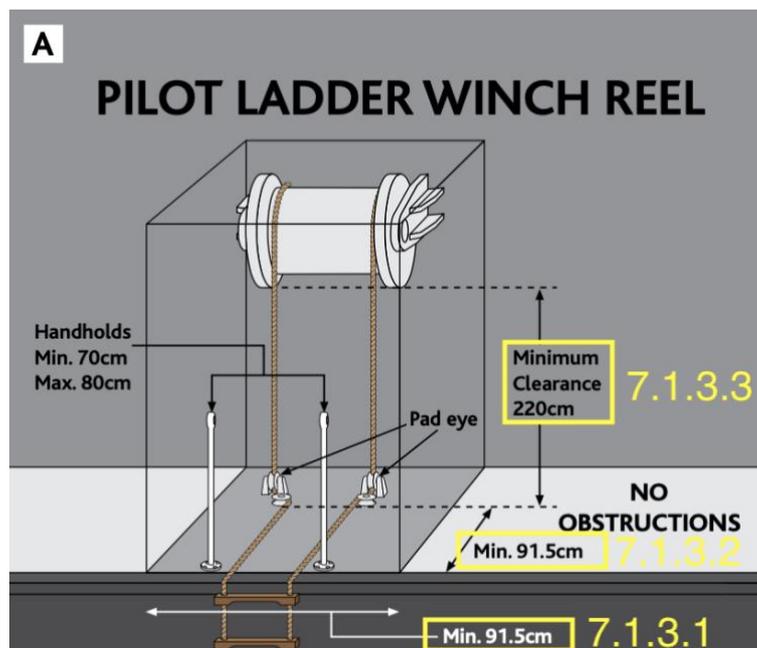
1. *a gateway in the rails or bulwark, adequate handholds should be provided at the point of embarking on or disembarking from the ship on each side which should be not less than 0.7 m or more than 0.8 m apart. Each handhold should be rigidly*

secured to the ship's structure at or near its base and also at a higher point, should be not less than 32 mm in diameter and should extend not less than 1.2 m above the deck to which it is fitted; and

2. a bulwark ladder, two separate handhold stanchions should be fitted at the point of embarking on or disembarking from the ship on each side which should be not less than 0.7 m or more than 0.8 m apart. The bulwark ladder should be securely attached to the ship to prevent overturning. Each stanchion should be rigidly secured to the ship's structure at or near its base and also at a higher point, should be not less than 32 mm in diameter and should extend not less than 1.2 m above the top of the bulwarks. Stanchions or handrails should not be attached to the bulwark ladder.

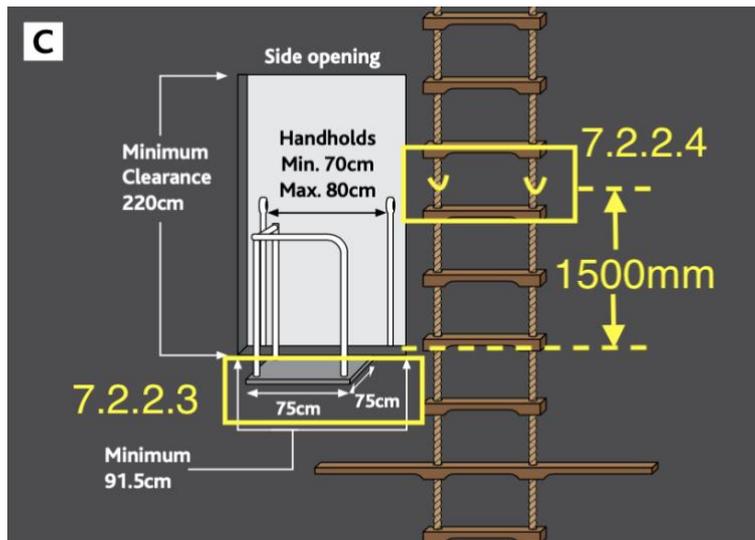
Pilot Ladder Reels

The pilot ladder winch reel is an easy way to store and move the ladder. It is important to understand that after unwinding the winch reel, the pilot ladder should be treated as any other pilot ladder when it comes to securing. Additional mechanical locking devices should be in place on the winch reel. The winch can never be the only securing point for the ladder.



Winch Reel Arrangements; Source: Wheelhouse Poster

The securing of the pilot ladder is no different when using a pilot ladder winch reel: 7.2.3.3 and 7.4 clearly indicate that when a Pilot Ladder Winch reel is used, the ladder still needs to be secured to strong points on deck. That should be done so that the weight of the ladder is transferred from the side ropes to the designated strong points on deck. See page "Securing the pilot ladder". In addition to that, 7.5.6. also stipulates that a mechanical locking device is used to secure the reel itself.



Side Opening (Source: Wheelhouse Poster)

Even when a winch reel is used, the ladder needs to be secured on strong points on deck.

IMO 1045(27) Pilot Transfer Arrangements:

7.1 Point of access

7.1.1 When a pilot ladder winch reel is provided it should be situated at a position which will ensure persons embarking on, or disembarking from, the ship between the pilot ladder and the point of access to the ship, have safe, convenient and unobstructed access to or egress from the ship.

7.1.2 The point of access to or egress from the ship may be by a ship's side opening, an accommodation ladder when a combination arrangement is provided, or a single section of pilot ladder.

7.1.3 The access position and adjacent area should be clear of obstructions, including the pilot ladder winch reel, for distances as follows:

1. a distance of 915 mm in width measured longitudinally;
2. a distance of 915 mm in depth, measured from the ship's side plating inwards; and
3. a distance of 2,200 mm in height, measured vertically from the access deck.

7.2 Physical positioning of pilot ladder winch reels

7.2.1 Pilot ladder winch reels are generally fitted on the ship's upper (main) deck or at a ship's side opening which may include side doors, gangway locations or bunkering points. Winch reels fitted on the upper deck may result in very long pilot ladders.

7.2.2 Pilot ladder winch reels which are fitted on a ship's upper deck for the purpose of providing a pilot ladder which services a ship side opening below the upper deck or, alternatively, an accommodation ladder when a combination arrangement is provided should:

1. be situated at a location on the upper deck from which the pilot ladder is able to be suspended vertically, in a straight line, to a point adjacent to the ship side opening access point or the lower platform of the accommodation ladder;
2. be situated at a location which provides a safe, convenient and unobstructed passage for any person embarking on, or disembarking from, the ship between the pilot ladder and the place of access on the ship;
3. be situated so that safe and convenient access is provided between the pilot ladder and the ship's side opening by means of a platform which should extend outboard from the ship's side for a minimum distance of 750 mm, with a longitudinal length of a minimum of 750 mm. The platform should be securely guarded by handrails;
4. safely secure the pilot ladder and manropes to the ship's side at a point on the ship's side at a distance of 1,500 mm above the platform access point to the ship side opening or the lower platform of the accommodation ladder; and
5. if a combination arrangement is provided, have the accommodation ladder secured to the ship's side at or close to the lower platform so as to ensure that the accommodation ladder rests firmly against the ship's side.

7.2.3 Pilot ladder winch reels fitted inside a ship's side opening should:

1. be situated at a position which provides a safe, convenient and unobstructed passage for any person embarking on, or disembarking from, the ship between the pilot ladder and the place of access on the ship;
2. be situated at a position which provides an unobstructed clear area with a minimum length of 915 mm and minimum width of 915 mm and minimum vertical height of 2,200 mm; and
3. if situated at a position which necessitates a section of the pilot ladder to be partially secured in a horizontal position on the deck so as to provide a clear access as described above, then allowance should be made so that this section of the pilot ladder may be covered with a rigid platform for a minimum distance of 915 mm measured horizontally from the ship's side inwards.

7.3 Handrails and handgrips

Handrails and handgrips should be provided in accordance with section 5 to assist the pilot to safely transfer between the pilot ladder and the ship, except as noted in paragraph 7.2.2.3 for arrangements with platforms extending outboard. The horizontal distance between the handrails and/or the handgrips should be not less than 0.7 m or more than 0.8 m apart.

7.4 Securing of the pilot ladder

Where the pilot ladder is stowed on a pilot ladder winch reel which is located either within the ship's side opening or on the upper deck:

- 1. the pilot ladder winch reel should not be relied upon to support the pilot ladder when the pilot ladder is in use;*
- 2. the pilot ladder should be secured to a strong point, independent of the pilot ladder winch reel; and*
- 3. the pilot ladder should be secured at deck level inside the ship side opening or, when located on the ship's upper deck, at a distance of not less than 915 mm measured horizontally from the ship's side inwards.*

7.5 Mechanical securing of pilot ladder winch reel

7.5.1 *All pilot ladder winch reels should have means of preventing the winch reel from being accidentally operated as a result of mechanical failure or human error.*

7.5.2 *Pilot ladder winch reels may be manually operated or, alternatively, powered by either electrical, hydraulic or pneumatic means.*

7.5.3 *Manually operated pilot ladder winch reels should be provided with a brake or other suitable arrangements to control the lowering of the pilot ladder and to lock the winch reel in position once the pilot ladder is lowered into position.*

7.5.4 *Electrical, hydraulic or pneumatically driven pilot ladder winch reels should be fitted with safety devices which are capable of cutting off the power supply to the winch reel and thus locking the winch reel in position.*

7.5.5 *Powered winch reels should have clearly marked control levers or handles which may be locked in a neutral position.*

7.5.6 *A mechanical device or locking pin should also be utilized to lock powered winch reels.*

Checklist

Use this checklist every time the pilot ladder is rigged

The Pilotladder

- Is the pilot ladder in good shape?
 - Check for wear and tear
 - Check for broken steps or spreaders
- Are all steps and ropes clean?
- Is all extra equipment present and ready for use?
 - Lifebuoy and light
 - Manropes if required
 - Heaving line
 - Lifejacket
 - Officer with communication to bridge.
- Is the pilot ladder rigged to the correct height?
- Has the retrieval wire been rigged correctly? (above the spreader, leading forward)
- Has the pilot ladder been secured to the deck in a correct way?
- Haven stanchions and bulwark ladder been fitted and secured to the deck?
- Is there adequate lighting at the point of embarkation / disembarkation?

The Combination Ladder

- Is the accommodation ladder in good shape?
- Check for wear and tear
- Check if it is clean and the siderails free of grease
- Is the retrieval line rigged correctly?
- Is the accommodation ladder secured to the ships side, independent of the ladder?
- Is there at least 5 meters of space under the platform?
- Are the hand railings / hand ropes rigged correctly, both inboard and outboard?
- Does the pilot ladder extend 2 meters above the platform?
- Have both pilot ladder ropes been secured to the ship, at 1.5 meters above the platform?

Reference

IMO resolution A.1045 (27)

Solas Chapter V, regulation 23 (Safety of navigation)

IMO/IMPA Bridge Poster " Required Boarding Arrangement for Pilot"

ISO Standard 799 – Pilot Ladders

Book: "Pilot Ladder Manual- Advanced edition" by Kevin Vallance

CHIRP Maritime – Pilot Ladders – Error Enforcing Conditions and Deficiencies

Sullom Voe Harbour Authority Pilot Ladder Booklet

"1000 Ways to Secure a Pilot Ladder" , "1000 Ladders Around " , "1000 Combinations Around " by Arie Palmers (2020)

Record of changes

Version 2 and 3

- 1) Page 6: Typo error in the strength of the ropes (24 kN)
- 2) Page 4: Regulations regarding Pilot Ladder Safety.
- 3) Foreword