



Maritime and Coastguard Agency

Lifeboats: Fitting of 'Fall Preventer Devices' to reduce the danger of accidental on-load hook release

Notice to all Shipowners; Masters; Deck Officers; Manufacturers of lifeboats and launching appliances and Training establishments

This notice should be read in conjunction with MSNs 1492, 1523, 1655, 1734, 1735, 1803.

PLEASE NOTE: -

Where this document provides guidance on the law it should not be regarded as definitive. The way the law applies to any particular case can vary according to circumstances - for example, from vessel to vessel and you should consider seeking independent legal advice if you are unsure of your own legal position.

Summary

- The International Maritime Organization (IMO) is currently considering the design criteria for on-load hooks and the use of 'Fall Preventer Devices' for existing equipment. As negotiations at the IMO have only recently started, it will be some time before any new measures are agreed.
- Although on load release systems fitted to lifeboats are safe if operated and maintained properly, there have been a number of accidents during drills and servicing.
- This notice provides interim guidance on the design considerations, shipboard operation, testing and potential problems associated with 'Fall Preventer Devices'.
- 'Fall Preventer Devices' can be either pins or strops fitted to on-load release hooks to prevent the lifeboat from falling to the water in the event of an equipment failure.
- The use of 'Fall Preventer Devices' should be considered as an interim measure to allow time for a new hook design criteria to be agreed at IMO.
- This notice is only applicable to davit-launched lifeboats fitted with on-load release hooks.

1. Background

1.1 In 1986, on-load release hooks for lifeboats and rescue boats were made mandatory by SOLAS, in response to Norway's worst offshore accident in March 1980. The Alexander Kielland platform in the North Sea Ekofisk field capsized killing, 123 of the 212 persons on board. These new SOLAS requirements were considered an important step forward in lifeboat design.

1.2 Some deaths in this accident were attributed to the fact that the lifeboat had no means of release when the weight of the lifeboat was on the hooks and falls. Therefore, on-load release systems were seen to offer benefits.

1.3 Since 1986 when the IMO requirements for all new ships to be fitted with on-load release systems came into place there have been a number of serious accidents during drills and servicing.

1.4 Many of these accidents were attributed to lack of maintenance, poor design or inadequate training. Failures of equipment can result in the premature opening of the on-load hook mechanism, causing the lifeboat to fall from the davits unexpectedly even with three safety interlocks provided for in the design arrangements.

1.5 A number of current designs of on-load release hooks can be described as unstable, in that they are designed to open under the effect of the lifeboat's own weight and often need to be held closed by the operating mechanism. This means that any defects or faults in the operating mechanism, errors by the crew or incorrect resetting of the hook after being previously operated can result in premature release.

1.6 A 'Fall Preventer Device' (FPD) can be used to minimise risk of injury or death in the event of the failure of the on-load hook or its release mechanism, or by accidental release of the on-load hook.

1.7 The use of 'FPDs' should be considered as an interim measure to allow time for new hook design criteria to be agreed at IMO.

2. Type Approval, Modification, Replacement, Testing, Installation, and Survey

2.1 Type approval

2.1.1 No modification of a lifting appliance or lifeboat that is to be fitted to a ship must be made, unless the Notified Body authorised to carry out the approval under the United Kingdom's Marine Equipment Directive (MED) Regulations has agreed the change. Any unauthorised modifications to either the lifting appliance or lifeboat by the manufacturer may invalidate the approval and require the equipment to be re-tested.

2.1.2 Where changes involve modifications to individual type approved components of the system such as the davit, winch, on-load release hook or the lifeboat, the manufacturer should contact the Notified Body that approved the equipment, to verify that the changes are acceptable, and if any additional tests are required for the equipment. Where changes are made that have been agreed by the Notified Body, they must be fully documented in the technical file.

2.1.3 For information on the approval of marine equipment and Notified Bodies appointed by the United Kingdom, Merchant Shipping Notice (MSN) 1734 should be consulted. For pre-

MED equipment approved by a Nominated Body or the MSA as detailed in MSN 1735, the MCA should be contacted for advice.

2.2 Installation and survey

2.2.1 The system, including FPD should be verified at the initial survey for a new ship or an equivalent survey for an existing ship if equipment is changed or modified. This is to ensure that the installed system with the FPD fitted functions correctly.

2.2.2 The operation and design of 'FPDs' fitted to a ship must be accepted by the MCA or a Recognised Organisation appointed by them taking into account the guidance provided in this document.

2.3 Modification of existing type approved on-load hooks already fitted to a ship to incorporate a FPD

2.3.1 The MCA should be contacted for advice/agreement before any modification is made to the hook, lifeboat or davit. Any re-testing of any equipment must be agreed and witnessed by the MCA or a Recognised Organisation appointed by them.

2.3.2 The re-testing of an on-load release hook, where modified to incorporate a pin, should include a static proof load test of at least 2.2 times the maximum working load to the satisfaction of the MCA or Recognised Organisation appointed by it. It should be noted that this test cannot be conducted using the lifeboat and davit as the winch is only designed for a test load of 1.5 times the SWL for the winch capacity. This test must therefore be conducted with the lifeboat hooks removed from the lifeboat.

2.3.3 Any fixed structural connections must be designed with a calculated factor of safety of 6 based on the ultimate strength of the materials used, assuming that the mass of the lifeboat is equally distributed between the falls.

2.3.4 If modifications are made to any type approved component, the system should be tested by conducting the five yearly lifeboat test contained in SOLAS chapter III Regulation 20.11.

2.4 Replacement of an existing on-load release system with an alternative approved system that incorporates a FPD

2.4.1 If a ship intends to replace its existing lifeboat release gear with a new system that incorporates a FPD to provide an enhanced level of safety and that system was not fitted as original equipment to the lifeboat, the MCA must be contacted for advice/agreement before any changes are made to the system. The original prototype approval testing of the lifeboat and the attachment of fitting, such as the on-load hook, are tested as a single unit and changes to one part may influence the structural integrity or operation of another.

2.4.2 The original lifeboat prototype approval certificate will detail the type of on-load hook that is fitted. This should not prevent the hook being changed for an on-load hook that has fall prevention or 'fail safe' capability provided it can be demonstrated to the MCA or Recognised Organisation that the arrangements are equivalent.

2.4.3 Where the on-load hook system is replaced it must be verified to the satisfaction of the MCA or a Recognised Organisation appointed by it that the structural attachment points to the lifeboat are of an equivalent strength and the system functions correctly. The type and level of verification will depend on the replacement hook, its associated control mechanism and the number and type of modifications made to the lifeboat.

2.4.4 If a type approved component is changed the system should be tested by conducting the five yearly lifeboat test contained in SOLAS chapter III Regulation 20.11.

2.4.5 It should be noted that under both SOLAS and the MED, the lifeboat, release gear and davit are type approved separately and each part of the system will have its own type approval certificate before it is installed in the lifeboat. Replacement equipment must be MED/SOLAS approved.

2.4.6 Designs of on-load release mechanisms fitted with pins acting as a 'FPDs' that are already type approved under the MED do not require re-testing. However, any operational procedures should be agreed by the MCA, or a Recognised Organisation appointed by them, and included in the ship's ISM documentation.

3. Design and operation of FPDs

3.1 FPDs (Locking pins)

The following points should be considered when utilising locking pins as 'FPDs';

- .1 Existing on-load release hooks fitted to ships must not be modified by drilling to provide a locking pin insertion point as this may significantly reduce the strength of the hook. Any modifications must be agreed as detailed in section 2 above,
- .2 locking pins should have clear operational instructions located nearby the insertion point of the locking pin and be colour coded so that it is clear where the pins are to be inserted,
- .3 locking pins should be designed so that they cannot be inadvertently inserted in the wrong place,
- .4 a strict procedure for removal of the locking pin must be in place to prevent the locking pin being left in the hook before the boat is released in an on-load condition. If the hooks are operated in an on-load condition, with the pins still in, it will not be possible to release the boat until there is no weight on the falls thereby losing on-load release capability,
- .5 the removal of the pin should be achievable quickly and easily without posing any risk to the seafarer designated to carry out the task once the lifeboat has reached the water,
- .6 if the removal of the pins requires opening of the lifeboat hatch it should be readily achievable by a person at each device from within the craft,

3.2 FPDs (Strops or slings)

The following points should be considered when synthetic strops or slings are used as 'FPDs';

- .1 Where 'FPDs' are synthetic strops or slings and no modifications are required to the lifeboat, the on-load release hook or launching equipment, a functional test should be carried out. The functional test should demonstrate to the MCA or the Recognised Organisation appointed by it that the equipment performs without interfering in the operation of the lifeboat or launching equipment. Once the functional test has been conducted to verify that the system works and a snatch load has been applied to the strops, they should be replaced with new strops or slings. Strops or slings should be resilient fibre in construction. Wires or chains are unacceptable, as they do not absorb shock loads.

- .2 The strops or slings should be issued with an appropriate certificate by a recognised testing establishment. The test certificate should document a SWL, which provides for a factor of safety of a least six. The strops or slings should be inspected in accordance with the Merchant Shipping Lifting Operations and Lifting Equipment Regulations (LOLER Regulations) and replaced every 5 years. The material of the strop or sling must be rot proof, corrosion-resistant, not be unduly affected by seawater, oil or fungal attack and UV resistant.
- .3 It should be verified that any attachment point is sufficiently rated to withstand the dynamic shock that may be imparted during a premature or unintentional release. The attachment point of the strop or sling to the on-load release hook and the davit falls block must be clearly marked and designed so that any connection device such as shackles cannot be connected to either the wrong part of the block or the wrong part of the on-load release hook.
- .4 The release of the strops or slings should be achievable quickly and easily without posing any risk to the seaman designated to carry out the task once the lifeboat has reached the water. If the release of the strops or slings requires opening of the lifeboat hatch it should be readily achievable by a person at each device from within the craft. Once detached the strops or slings must not interfere with the operation of the on-load release gear or the propeller.
- .5 Once the recovery stage of the operation is underway and the on-load release hooks are connected to the lifeboat, the strops or slings must be reattached to the lifeboat before the boat is hoisted clear of the water. The strops or slings must be designed so that they do not interfere with either the lifting or re-stowing of the lifeboat into the davits.
- .6 A strop or sling used as a 'FPD' should be arranged to allow the transfer of load from the hook mechanism to the strop with minimal movement (drop) of the boat in the event of a release mechanism failure. Should a fall preventer strop or sling be subject to an unintentional dynamic shock loading then the strop or sling should be replaced and the associated attachment points inspected. In such cases, the MCA must be informed as soon as possible and the Master should provide a full report of the circumstances of the incident.
- .7 Fall preventer strops or sling must not be used for any other purpose and should be fitted to the lifeboat at all times or stowed so that they are readily accessible.

3.3 Lifeboat and hook design to incorporate FPD

Lifeboat and release gear manufacturers and designers are encouraged to consider the design of both the lifeboat and hook so that 'FPDs' can be released from inside the boat. The possibility of modifying existing boats and hooks so that 'FPDs' can be released from within the boat should be considered. This is particularly relevant to 'FPDs' fitted to oil, gas and chemical tankers. A pragmatic approach should be taken by all stakeholders to allow equipment to be upgraded so that 'FPDs' can be fitted to existing equipment.

4. Drills, testing, inspections, and maintenance of lifeboats and launching appliances.

- 4.1 The ship's Master or the officer in charge of any lifeboat lowering or lifting operation should ensure that the lifeboat 'FPD' are fitted before commencing any drill, testing, inspection or maintenance where persons are in the lifeboat, unless the lifeboat has either an off-load hook system or has been approved to be used without a 'FPD'.

- 4.2 The ship's crew must be fully trained in the operation of the 'FPD' fitted to the lifeboat on their ship. The procedure to be followed should be contained in ISM documentation and ship's training manual.
- 4.3 It should be taken into account that with certain types of ship such as oil, gas or chemical tankers it may not be possible to use a 'FPD' in an abandon ship situation where the release mechanism of the device is not inside the lifeboat. Those conducting training drills and drafting ISM procedures must consider this. Where a different procedure is followed during routine drills compared with an abandon ship situation this should be clearly described in the ISM documentation and training manual.
- 4.4 SOLAS Chapter III Regulation 20.6.3 requires that at sea, "lifeboats, except freefall lifeboats, on cargo ships shall be moved from their stowed position, without any persons on-board, to the extent necessary to demonstrate satisfactory operation of the launching appliances, if weather and sea conditions allow".
- 4.5 The use of a 'FPD' is currently not mandatory in SOLAS, however this document must be taken into account before a lifeboat is used for training, maintenance or servicing. Reference should also be made to SOLAS Chapter III regulation 19 and MSC.1/Circ. 1206 Annex 2.
- 4.6 If any on-load release hook is subject to a premature or unintentional release, the MCA must be informed as soon as possible and the Master should provide a full report of the circumstances of the incident.
- 4.7 The following points should be considered when conducting drills, testing, inspections, or maintenance of lifeboats and launching appliances:
- .1 the officer in charge of the lowering operations should verify the correct fitting of the 'FPDs' before the lifeboat is boarded and any davit harbour pins or gripes are removed. Where possible the 'FPDs' should be readily visible by the officer in charge, persons inside the lifeboat and the person at the winch controls;
 - .2 it is acceptable to allow lifeboats to be lowered or recovered without the operating crew inside to reduce the risk of accidents during launching and recovery;
 - .3 before removing any securing devices the on-load release systems should be inspected to ensure that the hooks are properly locked;
 - .4 there should be clear visual indication to the coxswain of the lifeboat that the FPD is fitted, this may be achieved by the use of placards at the coxswains position and/or hook;
 - .5 in order to simulate emergency use, the 'FPD' should be disconnected (strops or slings) or removed (pins) when the lifeboat is just touching the water but with weight still on the falls. The lifeboat should then be lowered until it is fully waterborne and the drill continue by activating the on-load release mechanism in the normal manner;
 - .6 on recovery, the lifeboat should be re-connected to the falls and the 'FPD' re-connected. The lifeboat should then be lifted just clear of the water and the on-load release mechanism checked paying particular attention to ensure that the interlock has reset and the hooks are properly locked. Once confirmed, recovery to embarkation deck or stowage position can be continued. When the lifeboat is recovered it should be stowed and checked that all is ready for emergency operation.

5. On-load release gear not fitted with 'FPDs'

5.1 The following should be considered when it is impracticable to fit 'FPDs':

- .1 where the lifeboat is lowered to the water without persons onboard for drills, testing inspections or maintenance the lifeboat should not be boarded by the shipside embarkation ladder. In exceptional circumstances where this cannot be avoided, adequate measures must be taken to ensure that persons boarding the lifeboat cannot fall from the ladder;
- .2 if there is any doubt as to the safety of boarding by a ship-side ladder and the lifeboat can not be boarded as described below, then the drill or inspection should continue as far as practicable so that the davit sheaves, winches and brakes can be examined to verify that the equipment is operating correctly. If the drill cannot be completed the ship's Master should make an appropriate entry in the official logbook;
- .3 where a 'FPD' is not fitted consideration should be given to the use of shore-side facilities such as a hired boat to board the lifeboat safely once it is afloat;
- .4 consideration should be given to modification, to include the fitting of attachment points such that the boat can be used with FPD. Any such modification shall be in accordance with the approvals mentioned in section 2 of this MGN.

6. Shore based lifeboat training

6.1 Shore-based training that includes a practical abandon ship exercise and the participation of students to demonstrate the use and operation of on-load release systems should use 'FPDs' for such training exercises. In comparison with the industry, shore based training establishments have a good record of minimal accident statistics when launching and recovering survival craft, due to enhanced training, maintenance and procedural control. As there is now a clear recognition that 'FPDs' are routinely used at sea, then it is important that they are included during shore-based survival craft training.

6.2 Shore based practical training should, as is currently the case, simulate an abandon ship scenario as closely as possible. Historically, training establishments have delivered training that followed equipment manufacturer's guidelines. This training has replicated the simple procedure required to effectively and safely abandon ship using on-load survival craft release mechanisms. In reflection of the growing accident statistics, it is now recognised that there are inherent issues with some on-load release systems. In the interest of best practice, and to accommodate a higher level of safety, it is considered beneficial that 'FPDs' are included in the training and assessment process for all lifeboats. Therefore, training establishments should provide training in the principles of 'FPDs' detailed in this guidance.

6.3 As survival craft on-load release systems used in training establishments will be operated frequently, the maintenance and testing regime of the training establishment for this equipment should be designed to take account of frequent use to ensure an enhanced level of safety.

More Information

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