VIKING NORSAFE
Boats and davits

Enterprise No.: NO940411696
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Operation & Maintenance Manual

Totally enclosed lifeboat type: JYN-57 Tanker & dry cargo versions with MK2 & MK2-S 3.36T,Training centre

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VIKING Doc. No.: **MAN-2345**	**JYN-57 Totally Enclosed Lifeboat, Tanker and Dry cargo version with Tor on load MK2 & MK2-S 3.36T, Operation & maintenance manual, training centre**

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IMPORTANT:

Identification symbols for levels of risk used in this manual:

A WARNING! - Highest level of risk.

Is an operation procedure, statement or practice which, if not strictly followed, could result in death or serious injuries, not only to the operator, but also to all on-board.

A CAUTION! - Second highest level of risk.

Is an operation procedure, statement or practice which, if not strictly followed, could result in death or serious injury.

Less critical mandatory instructions.

A NOTE!

Is an important note must be emphasized.

A NEVER!

Is a prohibited action.

Incorrect action may result in the death of occupants.

Direct all inquiries regarding spare parts and service to your local Viking servicing stations on:

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Please quote the VIKING boat build number when contacting VIKING.
The numbers are given on enclosed certificates, and are also shown on the name plate on the lifeboat.

During the warranty period, all necessary spare parts must be supplied by VIKING Norsafe AS.
The use of spare parts supplied by other suppliers violates and forfeits the warranty.

VIKING Norsafe AS are released from all responsibility regarding malfunction or failure of the equipment if maintenance is not completed according to VIKING Norsafe maintenance manuals/ instructions, or if maintenance requiring VIKING Norsafe trained and certified personnel are performed by non-certified personnel. Ref MSC.402(96),ITEM 4.

This manual has been established with consideration of:

- SOLAS 74, chapter III
- IMO Resolution MSC.152(78)
- IMO MSC.1206 Measures to prevent accidents with lifeboats.
- IMO MSC.1205 Guideline for developing manuals for lifeboat systems.
- IMO MSC.402(96) Requirements for maintenance, through examination, operational testing, overhaul and repair of lifeboats and rescue boats, launching appliances and release gear.

1 TABLE OF CONTENTS

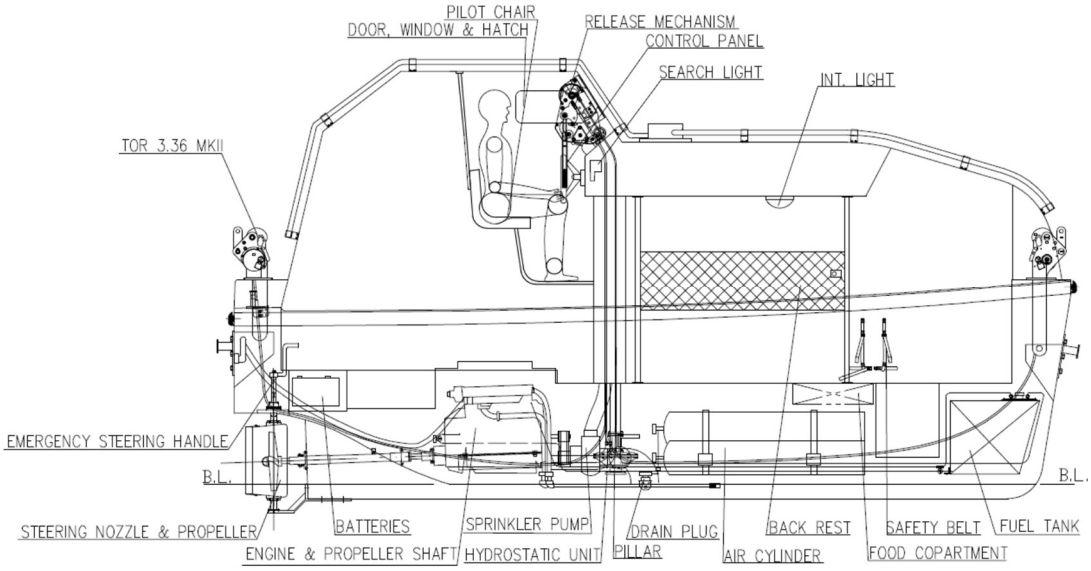
2 INTRODUCTION

The lifeboats are stored on the boat davits on both sides of the ship. In case of emergency, the crew can board the lifeboat and escaped with the lifeboat directly from its stowage position.
The launching appliance consists of a boat davit (davit arm, frame, platform, falls, suspension block, and gripes/lashing device) and a boat winch (reduction gears, hand brake and centrifugal brake). Swinging out and lowering of the lifeboat can be controlled both from the inside of the lifeboat and at the ship's deck. The lowering speed of the lifeboat can be controlled by operating the remote control wire inside the lifeboat or by operating the remote control lever on the ship's deck. Moreover, it is possible to suspend the lowering operation of the lifeboat at any height. Recovery of the lifeboat is performed by operating the boat winch with the push-button switch box. When the davit arm reaches a prescribed position, the boat winch is automatically stopped by the limit switch. After the activation of the limit switch, the boat winch is operated manually to wind up the lifeboat to its stowage position. The boat winch is provided with a safety device to prevent the reverse operation of the manual handle.
The lifeboat is equipped with on-load/off-load release gear which complies with the requirements of the IMO Life-Saving Appliance (LSA) Code. The release gear system is equipped with a hydrostatic interlock system so that it will normally not release the hooks until the boat is waterborne. To avoid possible injury or death, read this manual carefully before using the boat davit, the boat winch, and the on-load/off-load release gear.

2.1 Technical description

General Technical Specifications for JYN-57	
Principal dimensions/data:	JYN-57
Length over all	5.70m
Breadth overall	2.20m
Height overall	3.10m
Construction	Fire-retardant Glassfibre Reinforced Polyester (GRP)
Colour	Orange (RAL 2004)
Speed (minimum)	6 knots

Weight and davit load for JYN-57	
Capacity	26 persons or less
Weight boat with equipment	2705 kg
Davit load (82.5kg/person)	4850 kg



Equipment arrangement

2.2 General description

The lifeboat is laminated from fire-retardant polyester resin. The space between the seat and the hull, and the canopy liner and canopy is filled with polyurethane buoyancy foam, which provides the craft with enough buoyancy to remain afloat and upright even if holed below the waterline.

The lifeboat is totally self-righting even fully loaded with persons and flooded. Therefore it is important that all passengers fasten their seat belt and remain in their seats at all times.

The lifeboat is fitted with two lifting hooks, one forward, the other one aft. These lifting hooks are designed to be released simultaneously from inside the craft when it is fully waterborne. It is possible to release the lifting hooks when the boat is out of the water but this procedure is **EXTREMELY DANGEROUS** and must only be considered under very special circumstances. Therefore the crew of the craft should familiarise themselves with all the operations of the lifting hooks and the other functions of the boat before attempting to operate it.

The boats main entrance door is situated side of canopy. Additional hatches are provided at the helmsman's position, at the forward end and aft.

The steering position has a steering console containing the normal steering, engine instrument panel, and engine control lever, sprinkler control lever (tank version and for USCG boat only) and emergency air supply controls(tank version only).

An external water spray system is installed on the canopy of the boat which will provide the outside of the boat with a protective layer of water should the lifeboat encounter a fire on the water surface (tanker version only).

Internal air cylinders will, when operated, provide the passengers and engine at full speed with air at a controlled rate for at least 10 minutes (tanker version only).

Emergency steering tiller can be operated from within the lifeboat.

The centre tank section contains water & provisions tanks, fuel tank and equipment tanks. There is also an access to the air cylinders (tanker version only) and drain plug. A fuel shut-off valve is located on the top of fuel tank.

The engine compartment has a removable top cover for access to engine, shaft and sprinkler pump for tank version if that's not remotely controlled from the helmsman position.

The main engine starting battery and emergency starting battery are contained in the watertight box in the inner liner at the aft of the engine compartment.

A manual bilge pump is mounted on the right side of the pillar.

Natural ventilation is achieved via one automatic valve located on the aft of the boat. This valve also prevents the cabin from becoming dangerously under pressure while the engine is running.

An over pressure relief valve is mounted on the aft of the boat. This valve prevents the cabin from becoming dangerously over pressure when the emergency air system is in operation (tanker version only).

The lifeboat may be rowed using provided oars through the side hatches.

The lifeboat is fitted with shock absorbing skates/fenders to provide protection to the inboard side of the lifeboat during launching.

The diesel engine is approved type, with water-cooling system. Full detailed specifications of the engine are contained in the engine manufacturer's manual.

Main engine starting is by 12V battery with electric starter. Emergency engine starting is by a totally independent 12 V battery system. Battery switches are mounted on aft side of the pillar.

A battery charger is installed inside the canopy on the pillar (42V AC / 12V DC). The charger is totally enclosed in a cabinet, with two channels capable of operating two circuits simultaneously and separately. The charger is connected to the ship's power supply 42V AC via a plug on the side of the lifeboat near the hatches

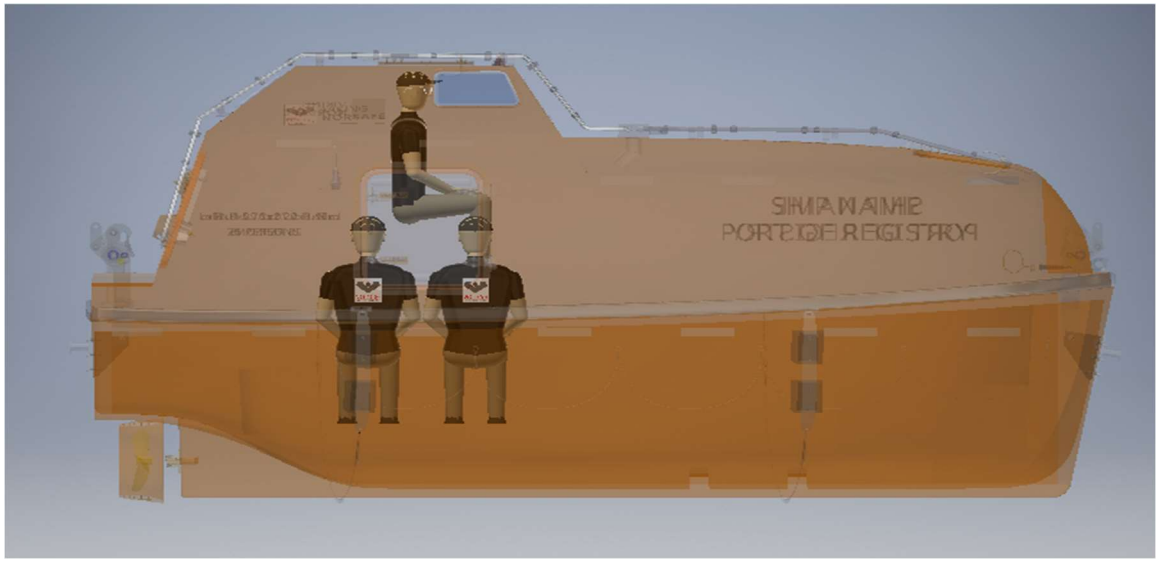
A fuel tank with a capacity sufficient for 24 hours running for the fully loaded lifeboat at 6 knots is mounted in the centre tank section.

3 Special precautions when the lifeboat is used as a training center boat

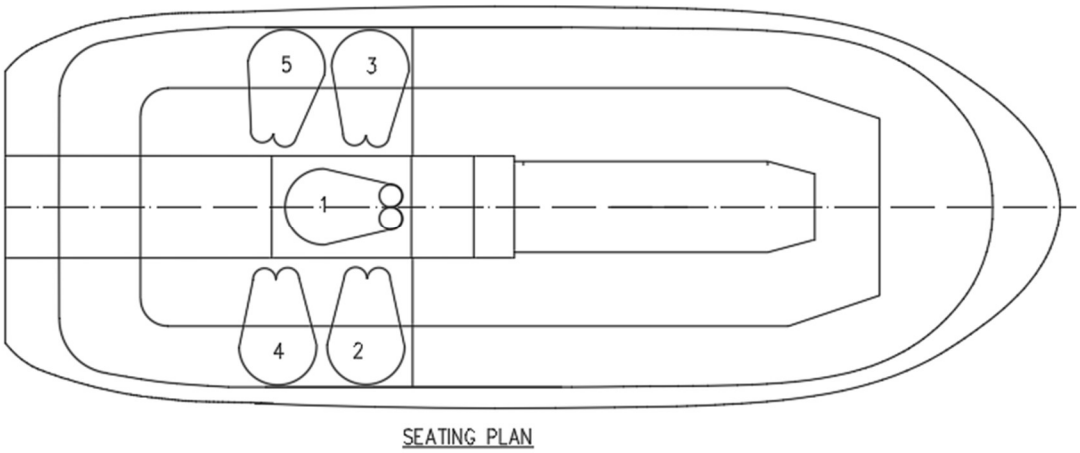
When the boat is used as a training centre boat, less people will normally be in the boat during operation, as well the food/water and some other equipment requested in the LSA code may not be installed in normal location. Experience indicate that people will also stand up/move more frequently and people forget closing hatches when at sea. All this, are not according to the operation manual. By people standing and not wearing seatbelts, COG in the boat will rise over it design limitations and the boat may become less stable or in worst case have the risk of water filling through an open hatch.

Viking Norsafe recommend do some actions as below to reduce the risks of wrong operations and highlight some of the most critical operations/manouvers:

3.1 During boarding of the boat, the trained persons should enter the boat firstly and guide others on board and have them sit symmetrically to keep a good list/trim on the boat. Please refer to following step/set numbering 1-2-3-4-5 in picture 1/2 or Similar seating



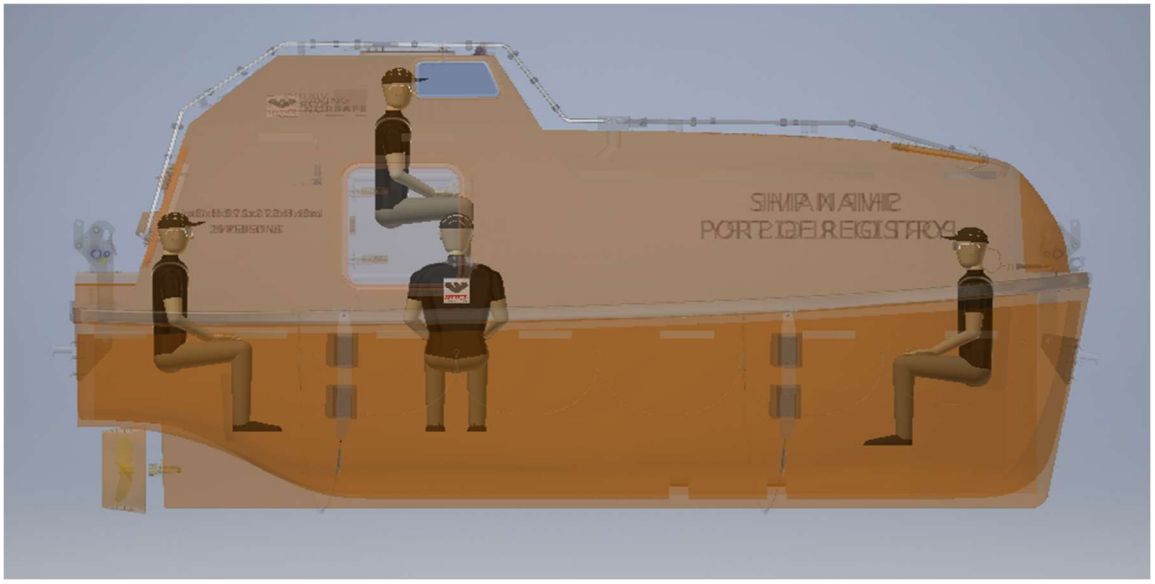
PIC.1



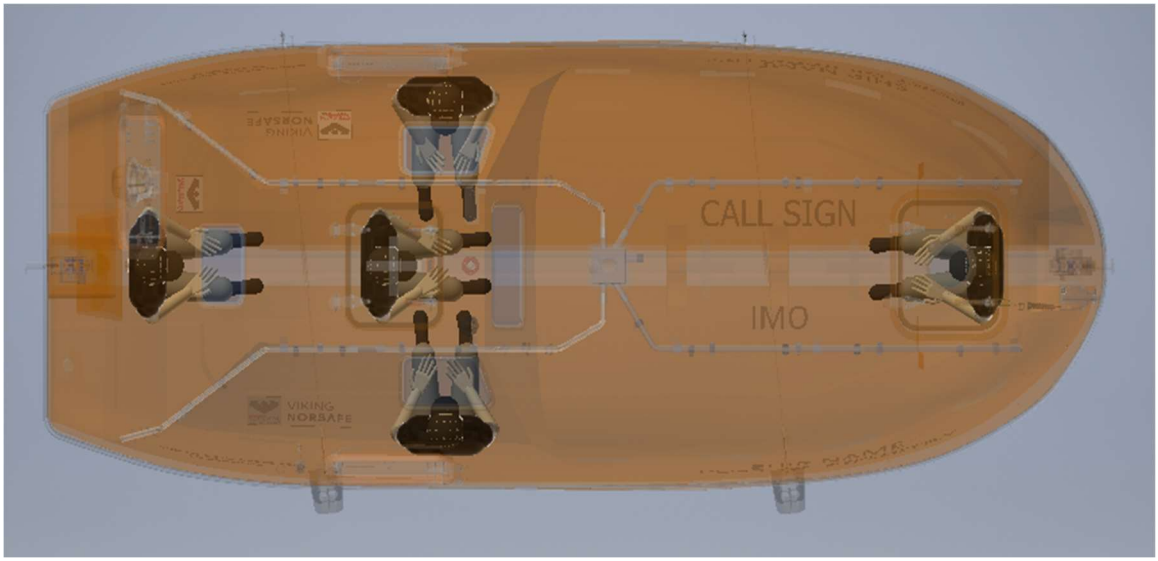
PIC.2

3.2 After boarding, keep the hatches closed at all time, except when training on recovery the helpless person from sea. It is also not recommended to make sharp turns at high speed, to avoid large heel on the boat, which could be uncomfortable for the people inside.

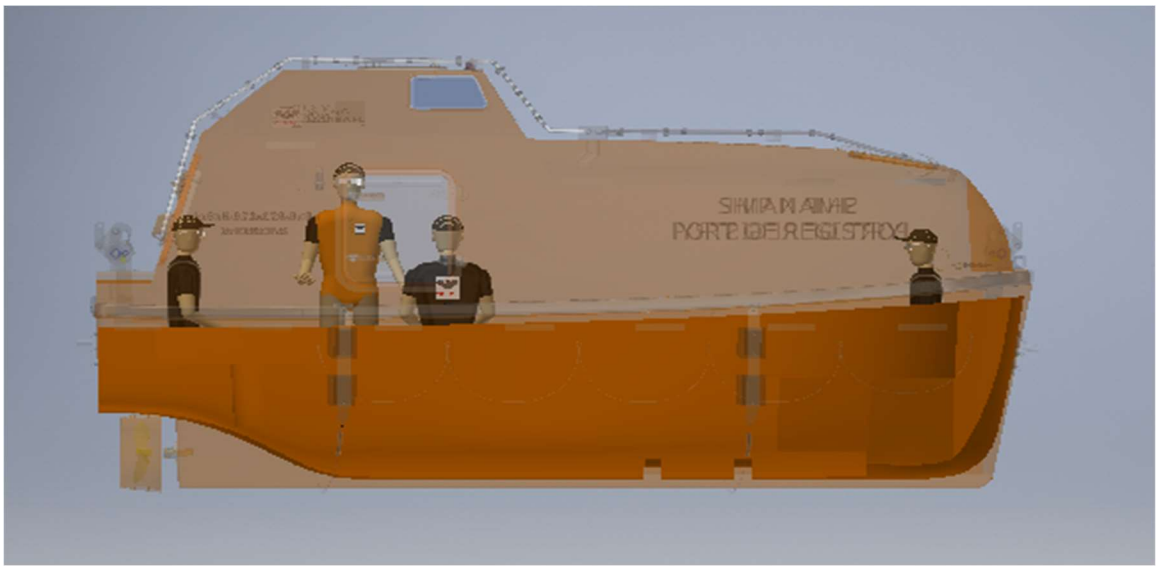
3.3 Helmsman sit on his own seat with safety harness, as well all other people should sit inside of boat symmetrically. If need to change the helmsman for training purpose, let 1st helmsman down to seat from drive location firstly then the second helmsman just start move/climb(refer to picture 3/4/5/6); and try to avoid many people stand up at the same time.



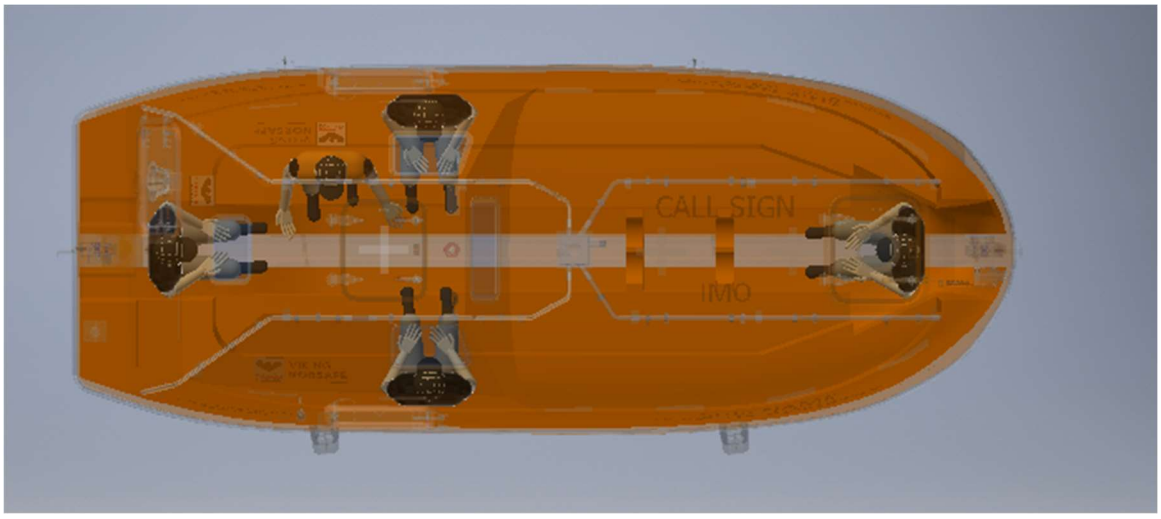
PIC.3



PIC.4

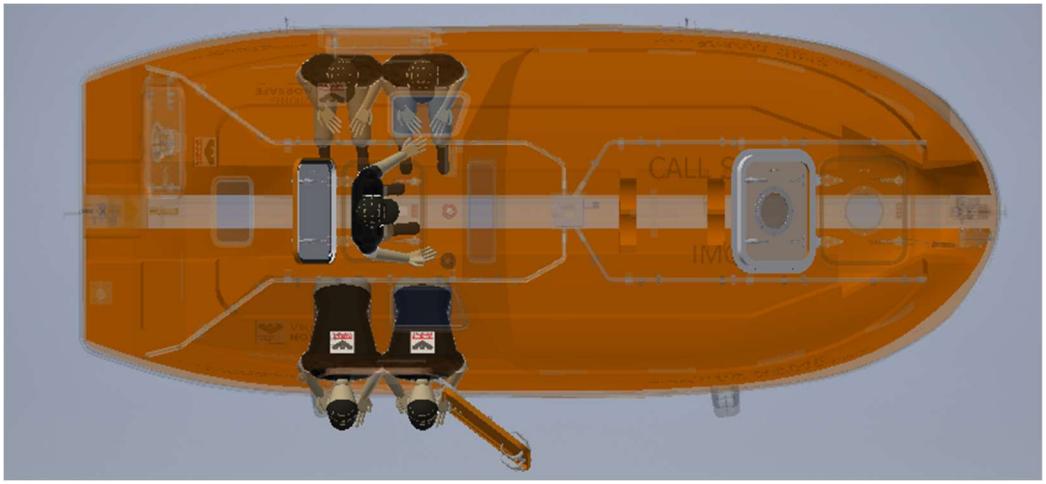


PIC.5



PIC.6

3.4 When recovery of a helpless person from the sea, this can be done by two crews through one of the side openings/door in the boat. Important that the other peoples in the boat are then well seated in their seat on the opposite side of the boat. Please refer to picture 7/8.

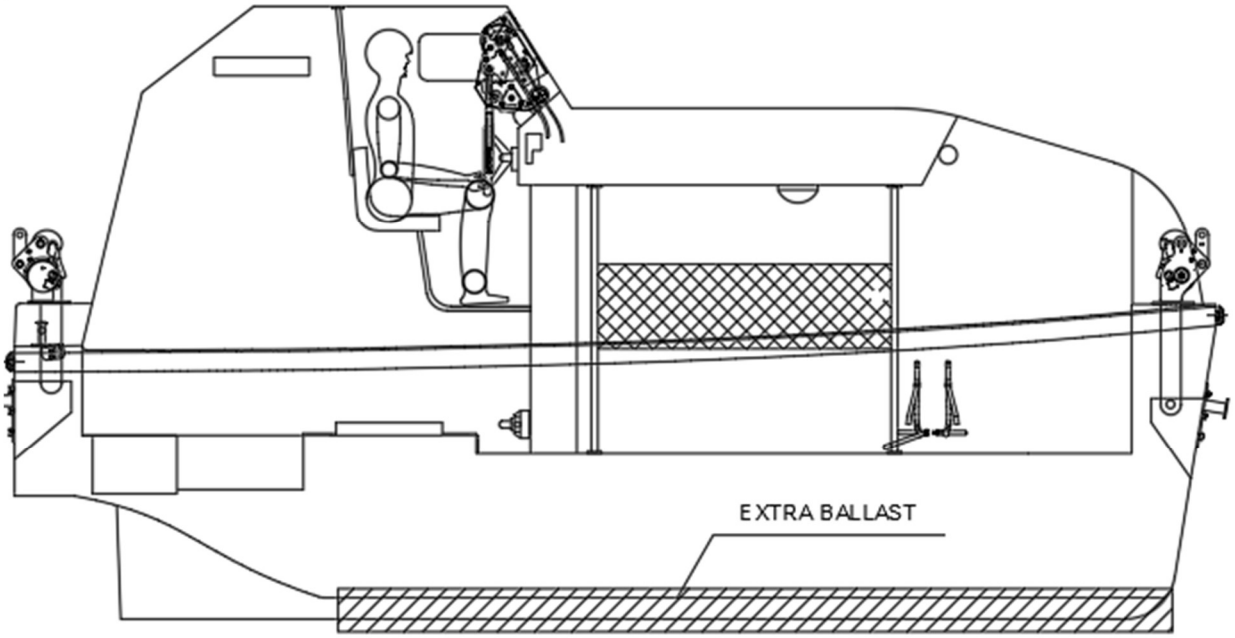


PIC.7

PIC.8

3.5 Extra ballast should be added in keel and bottom area of lifeboat (PIC.9) to improve the stability and lower the COG of the boat. Refer to the below table;

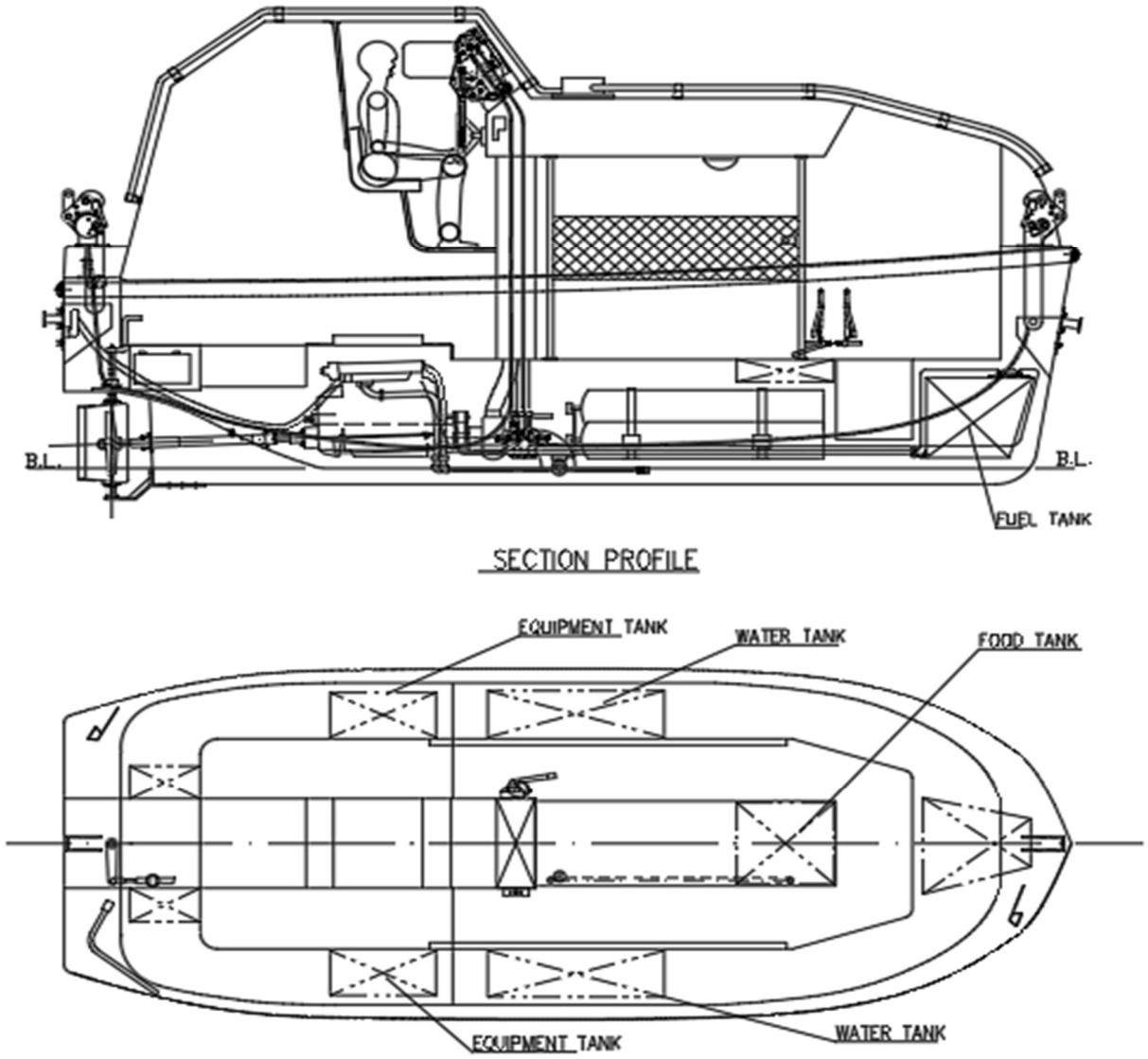
Boat type	Max capacity SOLAS [pers]	**Max recommended capacity for training centre lifeboat [pers]**	Weight of food, water, loose equipment [kg]	Fuel tank capacity [liters]	**Additional ballast to be installed for training centre boats [kg]**
JYN-57	26	**16**	26x3,5kg + 50kg	170 liters	**Min 300 kg, max 825 kg**



PIC.9

3.6 Other recommends:

Emergency ration/drinking water/fuel and other lifesaving equipment such as painter line and rescue line better be placed in assigned areas. Alternatively, goods with similar weight can be put as following pictures (PIC.10) if above equipment are not provided:



PIC.10

4 Method of checking proper closure of release hooks

Safe use and operation of lifeboats during drills and inspection and maintenance is dependent on knowing that the release gear is properly reset.

Never enter the lifeboat if the padlock symbol is out of locked position. If the padlock symbol is out of locked position, the lifeboat shall be suspended in both maintenance lugs and the irregular situation to be investigated and repaired.

Purpose of on-load release. The IMO LSA Code requires, among other things, that the Life boat shall be fitted with "***on-load release capability which will release the lifeboat with a load on the hooks. The release mechanism shall be so designed that crew members in the lifeboat can clearly observe when the release mechanism is properly and completely reset and ready for lifting.***

On-load release is needed for launching when there is a current, when the ship is making way, or potentially if there are waves which cause the hydrostatic interlock to only release intermittently. On-load release also allows an empty or fully loaded boat to drop from any height, which can kill or seriously injure the occupants. Therefore it is critical to know that the release gear is properly reset and the release handle secured.

Ensure the release hook closure. The first thing to check whenever entering the lifeboat when it is (or will be) supported by the falls, is properly reset as follows:

No	Operation guide	Schematic diagram/picture
1	BEFORE ENTERING THE BOAT. Observe from the ship deck that the pad lock symbol on the hook sides are in locked position, both on fore and aft hook.	
2	WHEN INSIDE THE BOAT. Check that the release handle is in the locked position (pad lock symbol locked) and the safety pin is installed If incomplete closure of hooks or release handle. Hang off the life boat in hook maintenance pendant lugs. Inspect and repair the release system.	

5 LAUNCHING OPERATION PROCEDURES

All crew and personnel using this lifeboat should learn all operating procedures contained in this and reference manuals. Failure to follow any of these procedures correctly or in their intended mode can result in serious injuries or even death, not only to the operator, but also to all on-board.

The following procedures are to be rigidly adhered to for

- Emergency embarkation
- Lowering
- Operation through fire and toxic gases (tanker version only)
- Release of Hooks

These procedures should be adopted as part of the normal lifeboat drill. It cannot be emphasised too strongly that frequent and conscientious practice for lifeboat drills should be maintained.

This applies to boat only, see davit manufacturer's instruction manual for details about davit.

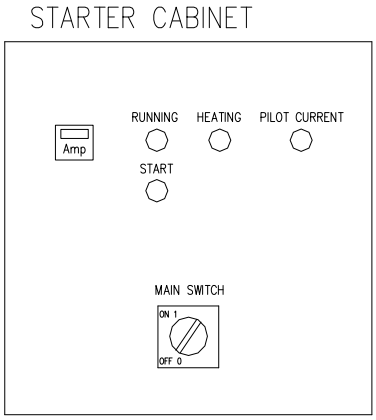
After being assigned a lifeboat, passengers await instructions from the lifeboat crew.

Prepare boat for launching by releasing the lashing arrangement and bringing the boat into boarding position. See davit manufacturer instruction manual.

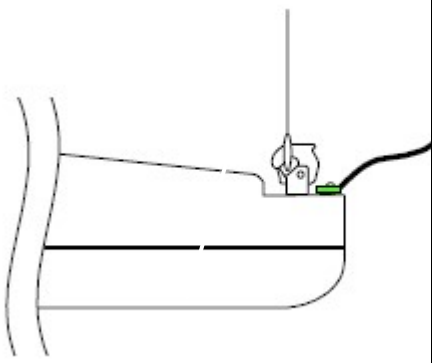
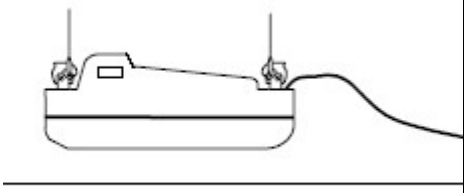
Helmsman and crew enter lifeboat after hooks are checked for proper closure as described in chapter 3 and then further check.

5.1 Preparation before launching

No.	Operation Guide	Schematic Diagram / Picture
1	BEFORE ENTERING THE BOAT. Observe from the ship deck that the pad lock symbol on the hook sides are in locked position, both on fore and aft hook.	
2	Check release handle is in locked position and safety pin is installed. If incomplete closure of hooks or release handle. Hang off the life boat in hook maintenance pendant lugs. Inspect and repair the release system.	
3	Prepare transceivers, and confirm the communication condition.	

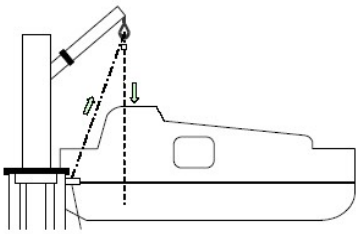
No.	Operation Guide	Schematic Diagram / Picture
4	Turn on the power switch of starter panel.	
5	Detach the cable for the storage battery charge.	
6	Put on life jackets.	

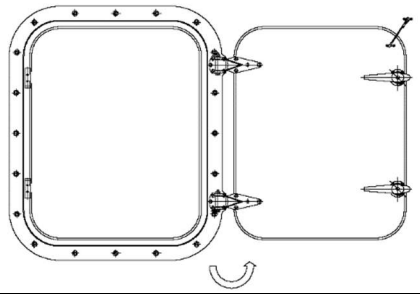
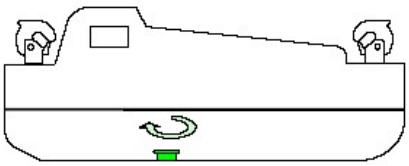
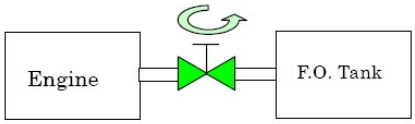
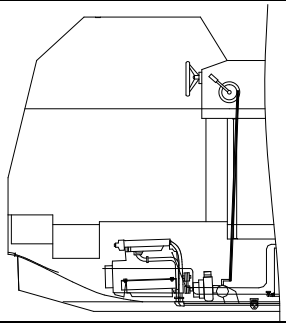
5.2 Setting of painter if a painter is to be used

No	Operation guide	Schematic diagram / picture
1	Confirm the connection of the painter on the painter release device of the lifeboat.	
2	Confirm the connection of the painter as far forward as practicable inboard of the falls but outboard of everything else.	

Ensure the painter is lead as far forward as practicable in board of the lifeboat falls but outboard of everything else. Failure to do so will result in severe difficulties clearing the vessel during abandonment.

5.3 Boarding the life boat

No	Operation guide	Schematic diagram / picture
1	Confirm that the remote control wire is drawn into the lifeboat.	

No	Operation guide	Schematic diagram / picture
2	Open the boarding door and secure the door in open position	
3	Helmsman ensure the bottom plug is fitted and tight.	
4	Turn on the main battery switch.	
5	Open the fuel oil valve.	
6	**<u>Tanker version only</u>** In case of burning liquid on sea surface, it is now the time to prepare the emergency air system. Open the manual shut-off valve on each air bottle. Please see **section 7.6** for additional detail.	
10	**<u>Only valid for tanker lifeboats</u>** In case of burning liquid on the sea, open the sprinkler valve.	

Never enter lifeboat without ensuring complete closure of release hooks. Incomplete resetting of the release hooks can cause the lifeboat to drop and may result in death or serious injury.

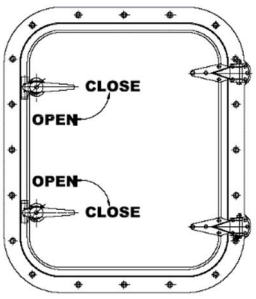
5.4 Launching procedure

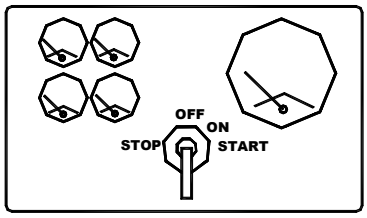
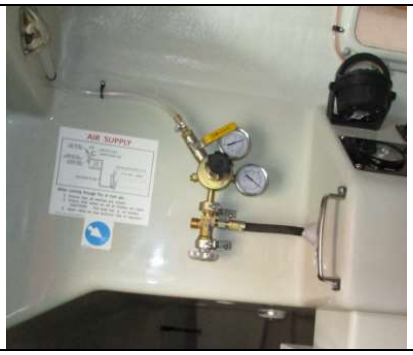
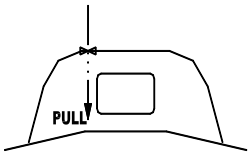
When told to board, passengers should enter the lifeboat quickly and orderly wearing their life jackets.
All passengers board lifeboat occupying the seats furthermost from the entrance first.

Seating positions of persons should be carefully selected to maintain a good trim of the lifeboat.

If the seat belt is not fastened, serious injury or death may occur.

- **Ensure that no gripe or lashing is tangled around the fore and aft hooks.**
- **Pull down the remote control wire gently and slowly during swinging out the lifeboat.**
- **Only pull down the remote control wire fully to lower the boat after swing out is complete.**
- **The helmsman must tell the crew to standby for splashdown when the lifeboat reaches the vicinity of the water surface.**

No.	Operation Guide	Schematic Diagram / Picture
1	Confirm that all passengers in the lifeboat are seated and their seat belts are fastened.	
2	Close all the doors and hatches	

3	Helmsman to start the engine. Please see **section 7.1** for additional details.	
4	**[Tanker version only]** In case of burning liquid on sea surface also need activate the air supply system. Please see **section 7.6** for additional details.	
5	Helmsman pulls and maintains steady pull on the winch brake release wire until the boat is completely waterborne and no tension exists in the fall wires	

Warning

- **When using remote control gear from within the boat never wind the cord or wire around fingers, band or wrist as this may result in the cutting off of fingers/ hand.**
- **Do not stop the swinging out operation at deck position. Stopping shakes the lifeboat and may cause casualties.**
- **A rapid swing out may cause dangerous impact on the boat when the davit arm reaches the deck position.**
- **Inching operation shakes the lifeboat and is dangerous.**

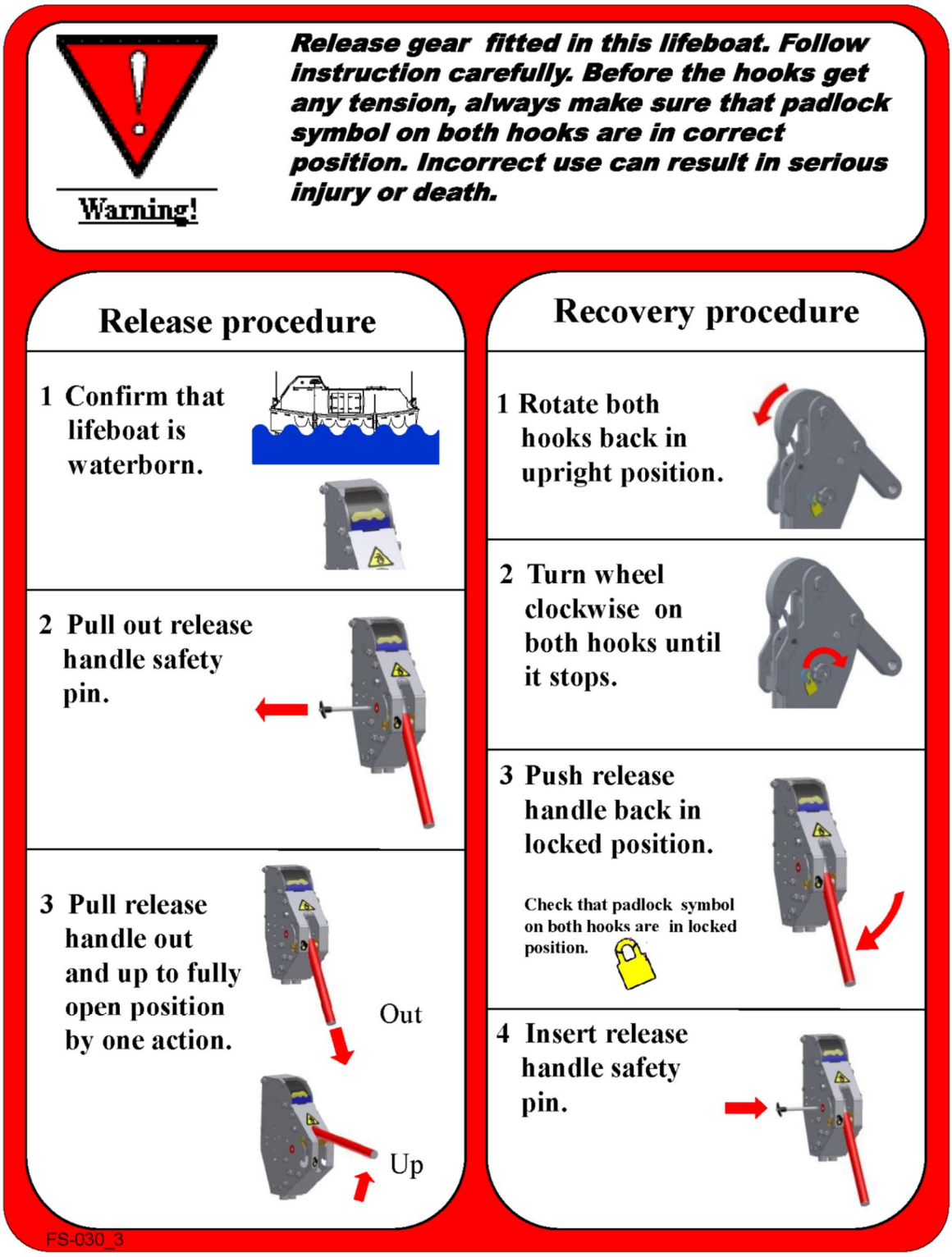
Note

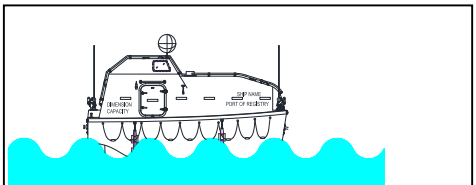
During lifeboat drills, the above mentioned procedure may not be applicable because the lowering operation maybe controlled from the ship's deck using the deck operation device.

5.5 Release gear operation

5.5.1 Releasing procedure

Please release / recovery the hook according to the below instruction label which is fixed in front of helmsman's seat when in ***Normal release condition***





5.5.2 Off-load release

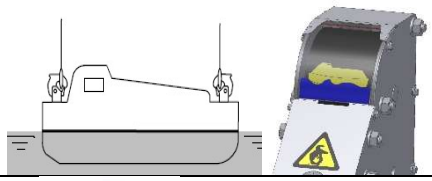
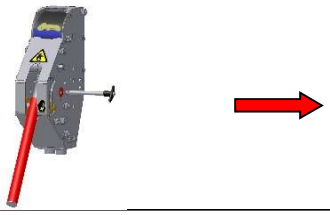
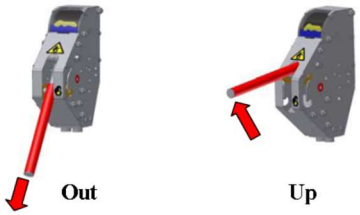
This operation is the only safe method and the normal method of launch and release the lifeboat, and it is conducted when the lifeboat *is* ***fully waterborne*****.**

Confirm the following before the operation:

The lifeboat is fully waterborne;

The engine is started;

All crew are in their seats with seatbelts fastened.

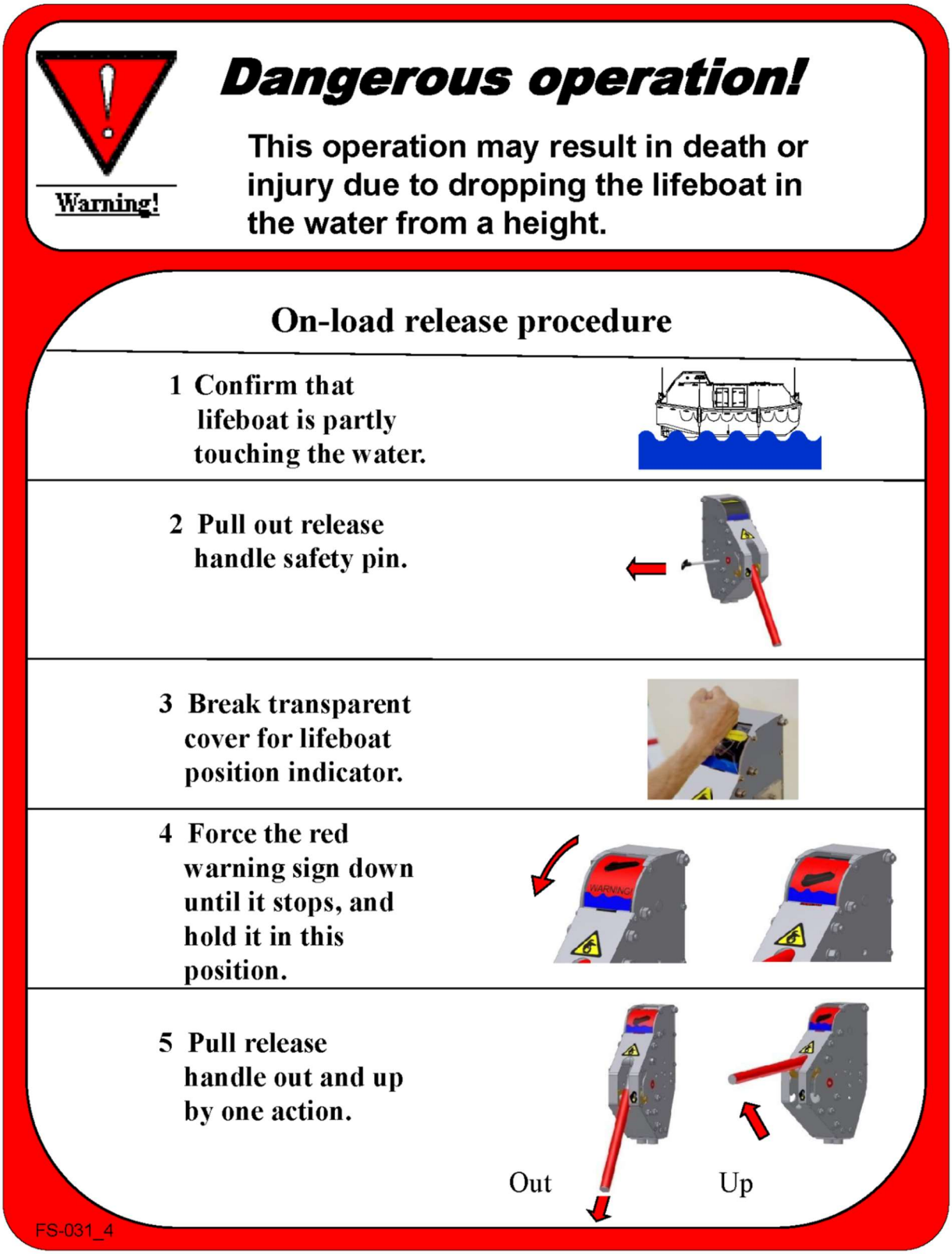
No.	Operation Guide	Schematic Diagram / Picture
1	Confirm the lifeboat is waterborne. Waterborne by checking the position indicator on the release unit.	
2	Pull out the release handle safety pin.	
3	Pull the release handle out and up to the fully open position by one action. Do not use excessive force to move the release handle. The release handle shall not be moved back in locked position before during item **2 Recovery operation.**	

The safety pin should never be removed until the boat is completely waterborne. Failure to comply with any of the hook procedures may result in death or serious injury.

In case where the hook is not released by above operations, confirm condition of each hook and weather the boat is waterborne or not. Even though the hooks cannot be released by the off-load release operation described above, on-load release procedure, described in the below section is possible.

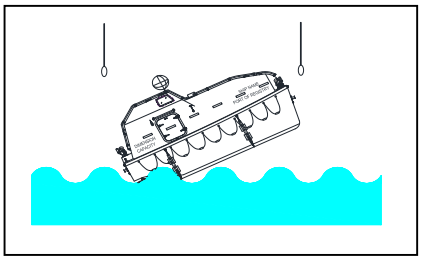
5.5.3 On-load release procedure

Please release the hook according to the below instruction label which is fixed in front of the helmsman's seat when in ***On load condition***.
This operation can be conducted when the lifeboat is not fully waterborne.



5.5.4 On-load release

This operation is conducted when the lifeboat ***is not fully waterborne*** or the hydrostatic interlock fails to work, the following procedure should be followed exactly:



Warning

Pay due precautions and conduct the on-load release in accordance with orders of the officer in charge.

The boat should not be dropped from a height.

Operation of the release handle upon insufficient confirmation of safety may result in death or serious injury due to dropping the lifeboat in water from a height.

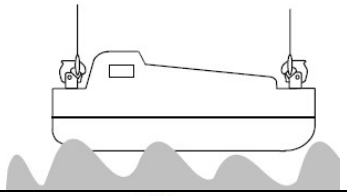
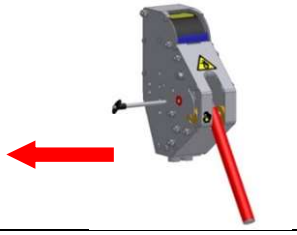
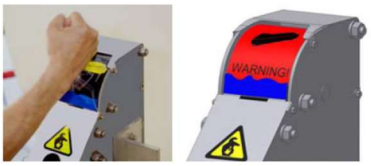
Caution

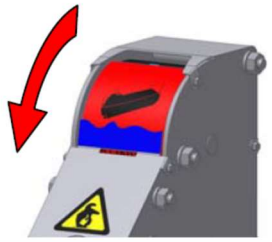
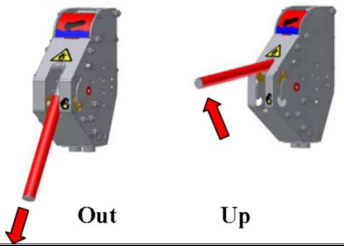
Confirm the following before the operation:

The lifeboat is as close as possible to the water surface;

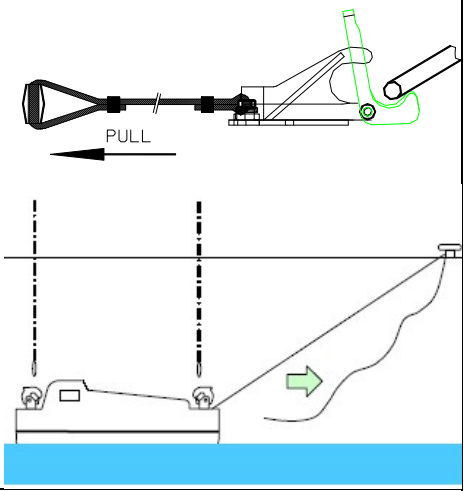
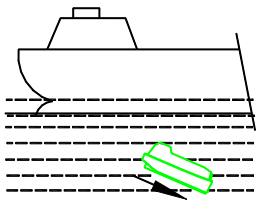
The engine is started

All crew are in their seats with seatbelts fastened.

No.	Operation Guide	Schematic Diagram / Picture
1	Confirm the lifeboat is as close as possible to the water surface (Partly touching the water), but the hydrostatic interlock is not triggered.	
2	Pull out the release handle safety pin.	
3	Break the hydrostatic interlock cover. (*A warning sign will show up, illustrating that the boat can be released above the water surface.)*	

No.	Operation Guide	Schematic Diagram / Picture
4	Force the red warning sign down until it stops.	
5	Pull the release handle out and up to the fully open position by one action while holding down the symbol.	

5.6 Painter release and lifeboat operation (If painter is to be used)

No.	Operation Guide	Schematic Diagram / Picture
1	Helmsman now engages engine gear and instructs forward crewmember to pull the painter release handle (if painter has been used)	
2	Helmsman push throttle control lever and steer away from danger on designated compass course.	
3	**[Tanker version only]**. After moving away the dangerous area, turning off the sprinkler/air system if used and the fresh air will be automatically supplied.	
4	**Lifeboat operation** Ahead, astern turning, spray, lighting of interior light and canopy light and other survival performance	

- **Do not operate the steering gear to turn the lifeboat while the painter is connected.**
- **The lifeboat should get clear of the ship promptly when the painter has been released.**

Crew member removes radar reflector from storage compartment and installs on top of the steering tower and at the same time fixes mast in the upright position.

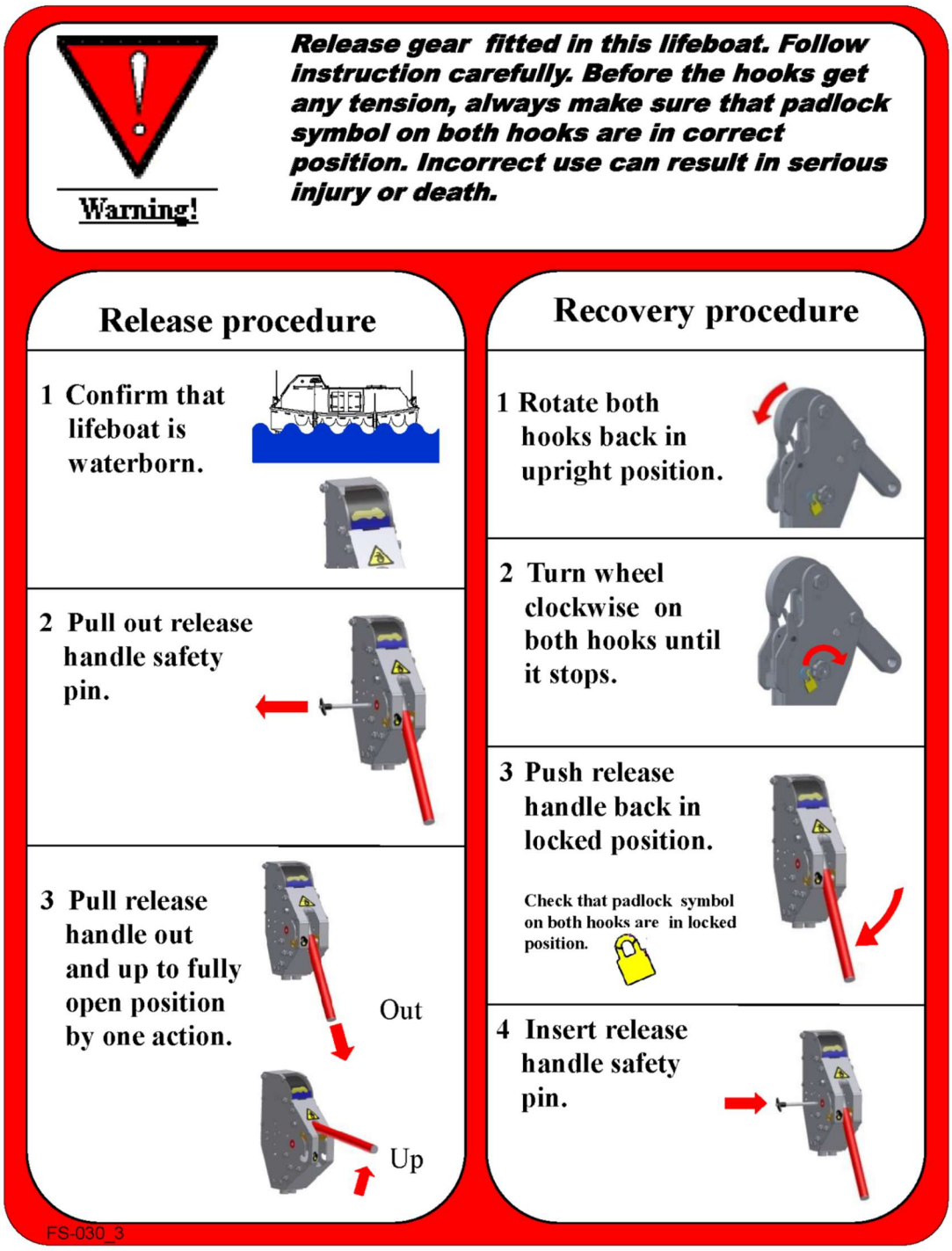
For information how occupants in the lifeboat should organise themselves see Survival Manual which is provided as the loose equipment.

6 Recovery operation

6.1 Recovery procedure of release hooks

Warning

- **Incomplete resetting may result in death or serious injury due to dropping of the lifeboat in the water from a height.**



6.1.1 Recovery operation procedure (Re-setting of hooks) after boat drill

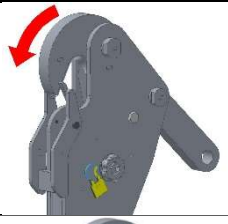
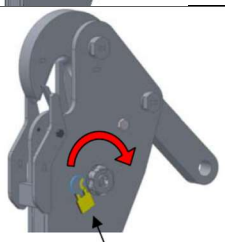
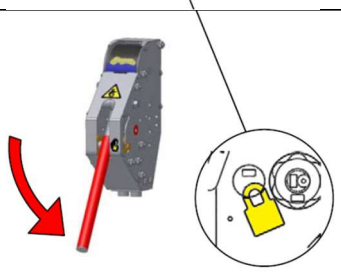
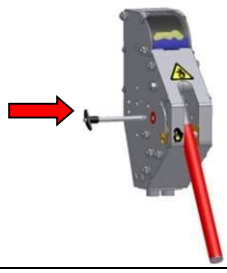
After disengaging and before bringing the boat back alongside for recovery, the lifeboat crew must ensure that the hooks are closed and the release lever is in the locked position with the safety pin inserted.

The recovery procedure is to be in accordance with the following steps only after completing the release gear resetting.

Great care must be exercised in reconnecting the hooks that hands and fingers are kept clear.

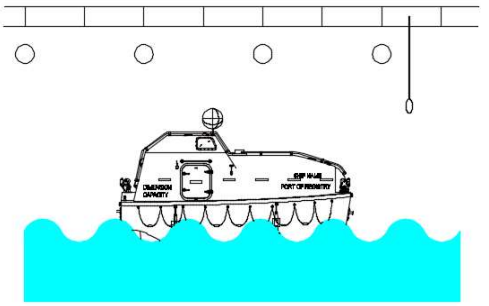
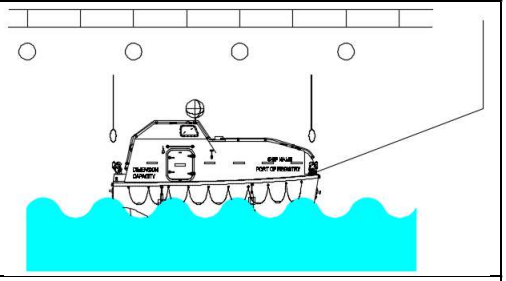
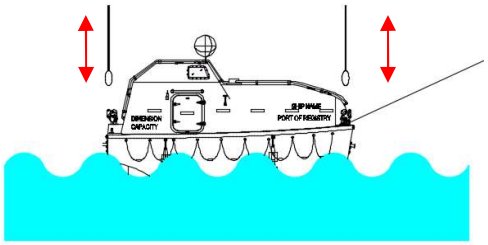
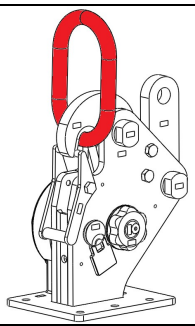
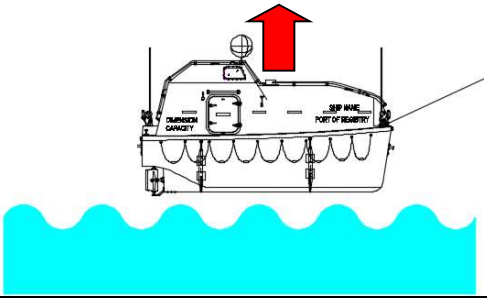
Failure to confirm proper resetting or to following all steps below may result in death or serious injury due to dropping the lifeboat in water from a height.

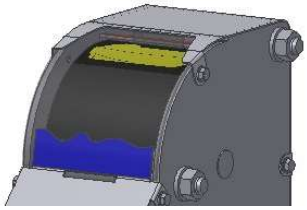
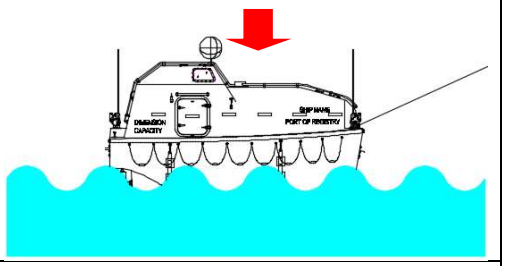
This procedure is to be completed BEFORE the lifeboat is brought back under the davit falls.

No.	Operation Guide	Schematic Diagram / Picture
1	Rotate both hooks back in upright position. *During this operation, the release handle shall be in released position.*	
2	Turn the wheel clockwise on both hooks until it stops.	
3	Push release handle back in locked position. The padlock symbol on both hooks shall then go into locked position. *Do not use excessive force.* *The release handle cannot be moved into locked position before operation 2 above is conducted on both hooks.*	
4	Insert release handle safety pin.	

6.2 Recovery procedure of the lifeboat

The recovery procedure is to be in accordance with the following steps only after completing the release gear resetting.

No.	Operation Guide	Schematic Diagram
1	Maneuver the lifeboat toward the loose painter end hanging from the vessel.	
2	Attach the painter to the painter release hook	
3	Let the boat drift slowly until the painter is taut. The lifeboat should now be located under the davit or lifting crane.	
4	Adjust the heights of the suspension links by hoisting or lowering the boat falls under good communication.	
5	Connect the suspension links of the boat falls simultaneously to both fore and aft hook. If not possible, start with the front hook.	
6	Hoist the lifeboat just clear of the water and stop hoisting. Confirm that the fore and aft hooks are properly connected and the padlock symbol on both hooks are in locked position.	

7	Confirm that the lifeboat symbol has moved above the water surface symbol. Position for the lifeboat not being waterborne.	
8	If the resetting is incomplete, lower the lifeboat down to the water surface. Check proper recovery of the release hook system chapter 5.1 Repeat operation procedure 5.1.1 until resetting is correct.	
9	Hoist the lifeboat to stowed position.	

Warning

Both forward and aft hooks should be connected simultaneously to prevent damage due excessive load on one hook.
If only one hook is connected, the lifeboat may be suspended by only that hook and that may result in death or injury.

Never

Do not conduct recovery operation of the lifeboat unless the above procedures are fully completed and the padlock symbol is in locked position.

Caution

Do not connect the suspension link of the davit to the hooks until reset of the hooks has been fully completed.

It is dangerous to connect the suspension link during the resetting operation of the hooks. It may result in an incomplete reset.

In case of using recovery strops, it is required to connect the bottom link of the strops instead of suspension link to the hooks.

6.2.1 Hoisting the lifeboat and storage

The boat winch stops automatically when the davit arm strikes the limit switch.

Where the limit switch of boat winch does not work correctly, the winch operator should manually stop the hoisting operation immediately.

No	Operation guide	Schematic diagram / picture
1	Hoist the lifeboat by operating the winch using the push-button switch following the instruction by the officer in charge.	
2	Hoist the lifeboat until the winch is stopped by the limit switch.	
3	Disembark from the lifeboat.	

6.3 Stowage procedure

Position two persons on the davit platform to watch for proper stowage.

No	Operation guide	Schematic diagram / picture
1	Secure the boat according to davit manual instructions.	

7 Tor MK2 and Tor-MK2-S Release Gear System

7.1 General

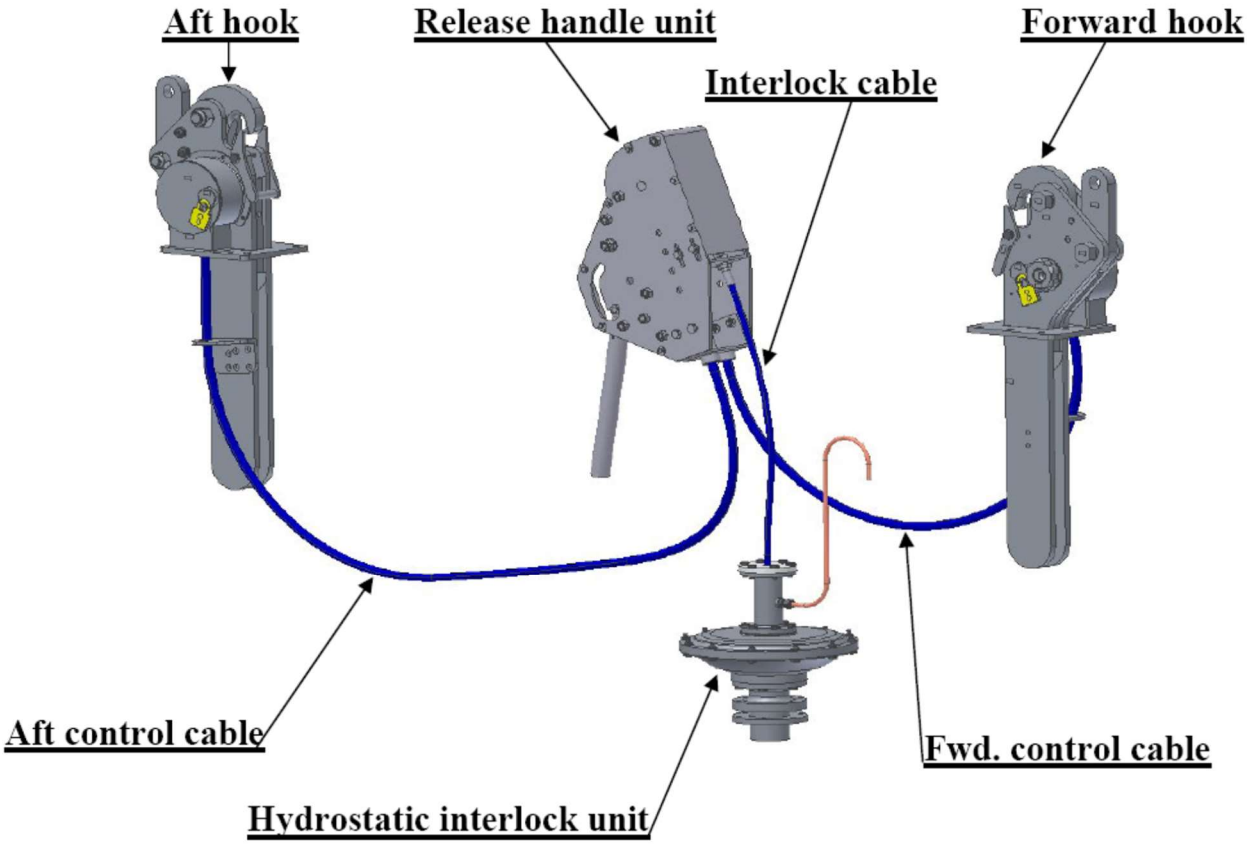
This section describes the details of the release gear system. Read this section carefully for safe operation. This release gear system consists of fore and aft hooks, a release handle near the steering console, a hydrostatic unit and the associated cables.
The releasing operation of the hooks is conducted at the release handle near the steering console through the control cables terminating at the fore and aft hooks. The interlock system including the hydrostatic interlock unit is provided to prevent the release of the hooks when the boat is not waterborne.
The system also has an on-load release function which makes it possible to over-ride the interlock by the hydrostatic unit. Incorrect on-load release operation may cause fatalities and due precautions should be taken for this operation.

7.2 Release gear system

The boat is equipped with an ON/OFF load release hook forward and aft. These hooks are controlled from a release handle mounted on the starboard of the pillar.

7.2.1 Structure and part name

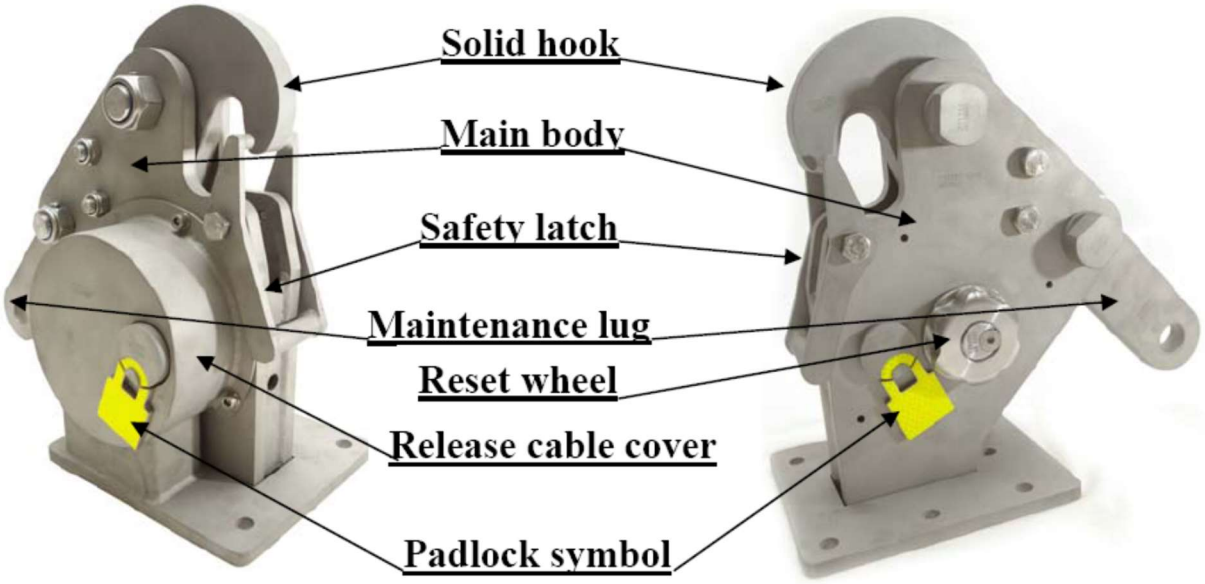
The structure and part names of the complete release system are shown below.



7.3 Fore and aft release hook unit

7.3.1 Structure and parts names

The structure and parts names of the fore and aft hooks are shown below.
The fore and aft hooks are generally identical except for the direction of installation.



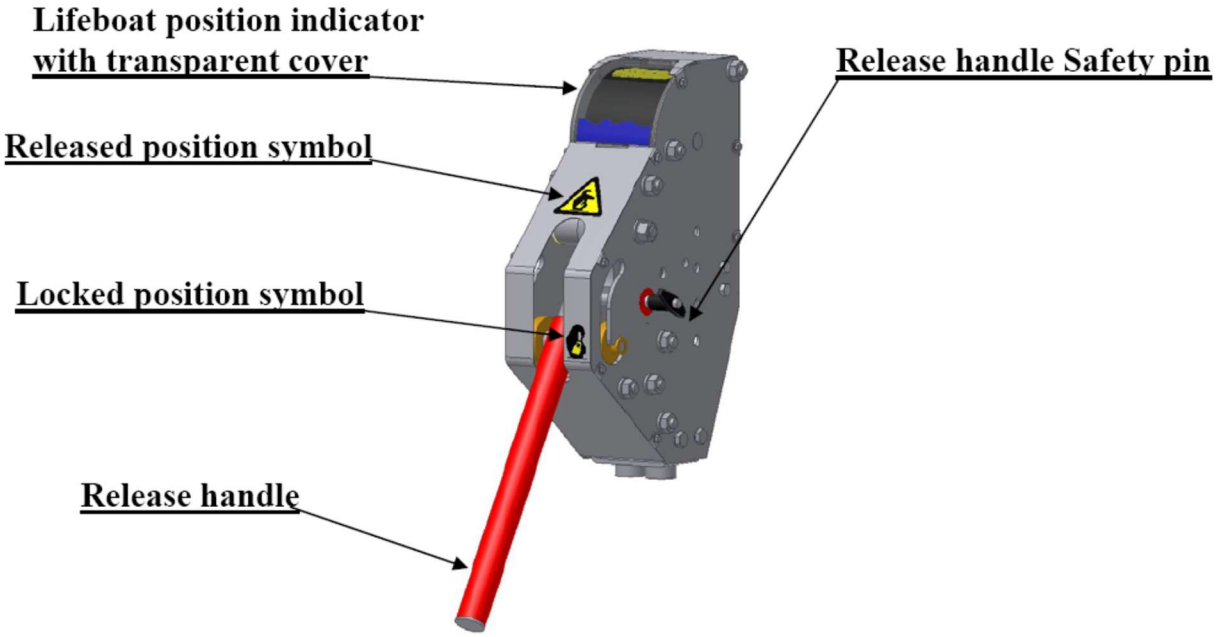
7.3.2 Explanation of padlock symbol positions

		
Locked position. The lifeboat can safely be lowered or hoisted by the falls.	Unsafe. Do not enter or do not hoist the life boat. When lifeboat is in stowed position: Hang off the boat in the maintenance lugs and investigate the irregular situation. When lifeboat is on the water. Repeat resetting procedure accoring to operatiom procedure.	Released position. The solid hook is free to rotate. The padlock symbol will be in this position after the release handle has been moved to released position.

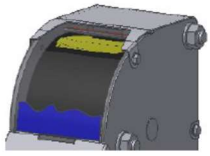
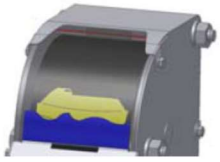
7.4 Release handle unit

7.4.1 Structure and parts name

The structure and parts names of the release handle are shown below.



7.4.2 Explanation of different positions of lifeboat position indicator

			
Lifeboat in stowed position or hanging in the air during lowering operation.	Lifeboat on the water. Safe release can be conducted.	When transparent cover for position indicator is broken. Warning before overriding the hydrostatic interlock.	Hydrostatic interlock overrided. The life boat can be released from a height.
If the indicator does not follow position 1 and 2 during lifeboat drill, the fault must be corrected. Contact lifeboat supplier.			

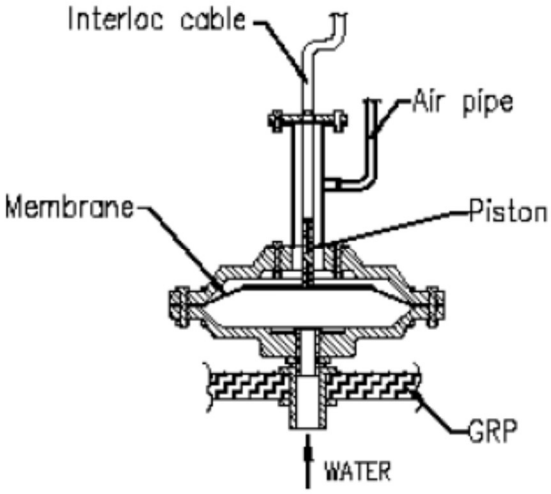
7.4.3 Operation

Operation of the release handle should in general, only be allowed when the lifeboat is fully waterborne. The lifeboat can be released by removing the safety pin and then pulling the release handle fully and quickly to the open position (off-load release).
In a situation where off-load release is not possible, the lifeboat can also be released by operation of the release handle even though the lifeboat is not fully waterborne. Break the interlock cover and force the lifeboat symbol down to the water surface. This over-rides the interlock function of the hydrostatic interlock unit (on-load release), and it is possible to pull the release handle and release the hooks.

7.5 Hydrostatic interlock unit

7.5.1 Structure and parts names

Structure and parts names of the hydrostatic interlock unit are shown below.



7.5.2 Operation

When the lifeboat is fully waterborne, the hydrostatic interlock unit pushes up the interlock lever through the interlock cable by the water lifting the float and thus allowing the release handle to be operated. This is confirmed by observing the position indicator: Lifeboat move from 1 to 2 (section 6.4.2). Contrary to this, operation of the release handle is not allowed by the hydrostatic interlock unit when the lifeboat is not fully waterborne.

8 SYSTEM DESCRIPTIONS

8.1 Steering console

The helmsman position is equipped with a steering console which contains the engine instrument panel, engine throttle/gear control lever, steering, searchlight with plug, compass and switches for cabin lights and position light. The helmsman also operates hook release and lowering control, see davit manufacturers manual for details about the latter.

8.1.1 Check before starting engine (Only if time allows during emergency)

Starting any engine can be dangerous in the hands of inexperienced people. Before attempting to start any engine, the operator should be familiar with the engine instructions mounted in the boat and the engine manufacturer's instruction manual.

- Ensure that the batteries are in serviceable condition and correctly connected.
- Check that the oil levels in the engine and the gearbox are correct.
- Check that the fuel tank is full and that the system is primed.
- Check that fuel valve on the top of the tank is open.
- Check that the water level in the header tank is filled up with mixture of water/anti-freeze. Under no circumstances must the engine be started without liquid in the cooling system.
- Ensure that the gearbox is in neutral.

8.1.2 To start engine - normal start

Disconnect ships external power supply by pulling the plug near the embarkation access.

Turn main battery switch to "ON" position. The charging light and oil pressure lights will now be on and the buzzer will sound.

Please refer to the starting instruction posted close to the helmsman's position or to the engine instruction manual.

If the engine should fail to start due to poor battery condition, continue with the emergency starting procedure. If the engine fails to start within 15 seconds, despite good battery condition, release the switch and investigate the cause. The starter motor should be allowed to cool for at least 15 seconds before attempting to restart.

Caution

This engine can be run with the boat out of the water for a maximum of 5 minutes, but the propeller shaft should only be engaged for a few seconds at a time to check its operation.

While the lifeboat engine is running the alternator will charge all batteries. The battery charger mounted on the pillar only operates when the boat is stowed in the Davit and the ships power supply is connected.

8.1.3 To start engine - emergency start

The procedure is same as the normal start, please refer to **section 7.1.2**, except need turn the emergency start switch clockwise to the ON position by using the same key as for main battery.

8.1.4 To stop engine

Please refer to the stopping instruction posted close to the helmsman's position or to the engine instruction manual.

Emergency stopping of the engine can be achieved by closing the fuel shut-off valve located on the injector pump on the engine. This valve is normally closed by a solenoid operated by the stop button, but it may be closed manually if the solenoid is defective.

8.2 Electrical system

The lifeboat electrical system is powered by 12V DC 70AH maintenance free batteries. To activate the system, the main or emergency battery switches must be turned on.

When the boat is stowed in the davit, power is supplied via the plug near the embarkation access at 42V AC. (The incoming power supply is fed directly to a 42V/300 W engine heater, (if fitted). Additional power is supplied to the battery charger 42V AC/12 V DC that charges the main and emergency starting batteries. These should not be applicable if solar power panel is installed.

8.2.1 Battery switches

Main engine starting is by 12V battery with electric starter. Emergency engine starting is by totally independent 12V battery system. Battery switches are mounted on the aft side of the pillar with a battery box in the aft engine compartment.

The external power supply (if fitted) must be disconnected before engine is started. Before the engine can be started the main switch must be turned clockwise to the 'ON' position. The engine starting procedures may now begin.

Should the main starting battery fail to start the engine, use the emergency battery to start the engine. The emergency start switch should be turned clockwise to the 'ON' position by using the same key as for main battery.

Radio battery if fitted, the radio battery switch must be turned clockwise to the ON position to supply power to the radio.

8.2.2 Battery charger

A battery charger (42V AC / 12V DC) is installed inside the canopy on the left side of the pillar. The charger is a totally enclosed cabinet with two channels capable of operating two circuits simultaneously and separately. The battery charger has indicator lights for both batteries.

The indicator lights signal the charging process and battery condition.

Red: Charger is not connected, faulty battery or battery is not correctly connected.
Yellow: Charging by 14,4V in progress
Green: Fully charged batteries, voltage drops to 13,3V for maintenance charging.

8.3 Fuel tank

A diesel fuel tank is located in the middle of the centre section. The tank capacity is sufficient for 24 hours operation at full speed. The tank is filled by removing the filler plug located on top of the tank.

8.4 Water and provision tanks

Water and provision tanks are located in the centre section of the lifeboat. It is recommended to store water in sealed containers in the tank. Details of quantities can be found in the loose equipment list.

8.5 Equipment tank

A tank is provided to the front of the boat for the storage of loose equipment and provisions. Details of provisions and equipment can be found in the loose equipment list.

8.6 Emergency air supply system (tanker version only)

The lifeboat is equipped with an emergency air supply system, which should be operated if fire or toxic gas conditions exist outside the boat. If the air system is to be used, carry out step 7.6.1 before passengers enter the boat and step 7.6.2 and 7.6.3 during launching.

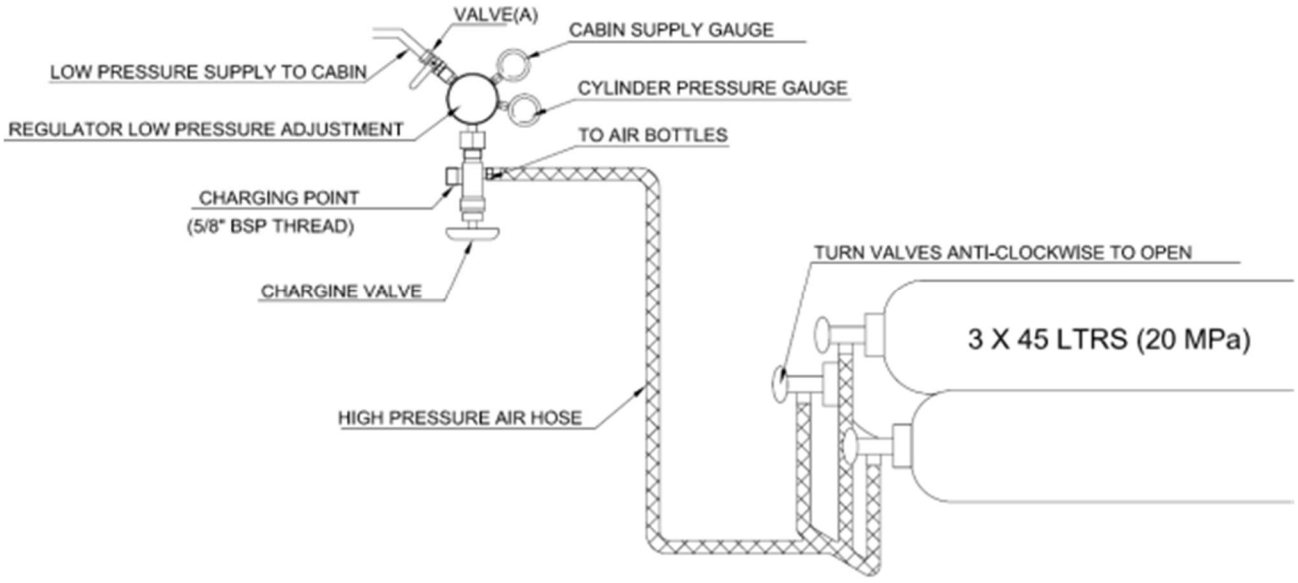


Figure 1 Emergency Air System

7.6.1 Helmsman is to inform crewmember to open valve on each air cylinder, **figure. 1**
7.6.2 Ensure that all hatches are closed.
7.6.3 Open valve(A) on low-pressure side of regulator.

Air is sufficient for 10 minutes operation, drive boat out of danger area at full speed.

Note

Regulator was pre-set at factory. It should not be re-adjusted.

The emergency air supply system is designed to supply the interior of the lifeboat with air for the passengers and engine. **(figure.1)**. The system consists of the following components:

a) Air cylinders pressurised to 20MPa (Min. 18MPa).
b) High pressure air hoses
c) Charging point with valve
d) Air pressure-regulating valve
e) Low pressure valve and air hose

Warning

This air system contains high-pressure air and it is dangerous if not properly maintained.

Only qualified personnel or representatives of VIKING should maintain this system.

The emergency air system should be kept fully charged at all times i.e. if the pressure drops below 18MPa the system should be recharged to 20MPa.

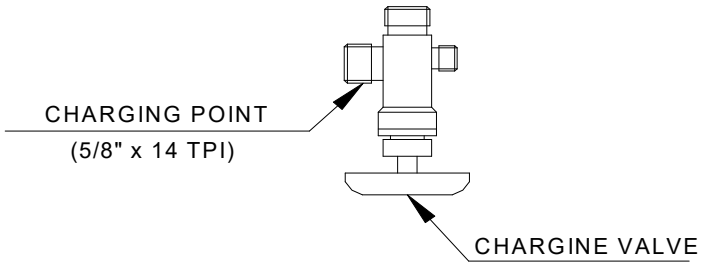


Figure 2 Detail of charging point

8.7 Sprinkler system (tanker version only)

The sprinkler system is designed to cover the entire surface of the lifeboat with a film of seawater when the boat is waterborne. This will protect the lifeboat and occupants should they have to encounter a fire on the sea. When the boat is waterborne, open the water inlet valve. This allow a self-priming pump to pump seawater through the boat internal piping to the sprinkler heads mounted on the canopy, which are fitted with spray nozzles that disperse the water into a thin film, which covers the boat.

Note that the visibility through windows is very poor when the sprinkler is operated. Ensure that all hatches and openings are closed. Increase engine R.P.M. to full speed for maximum sprinkler system protection and leave danger area.

8.8 Sea anchor

After removing sea anchor from the storage place, deploy as follows:

1. Secure the end of hawser and tripping line to the painter release hook.

2. Throw sea anchor into the sea. For proper operation, ensure that tripping line is slack when hawser line is taut.

3. Recover sea anchor by pulling tripping line.

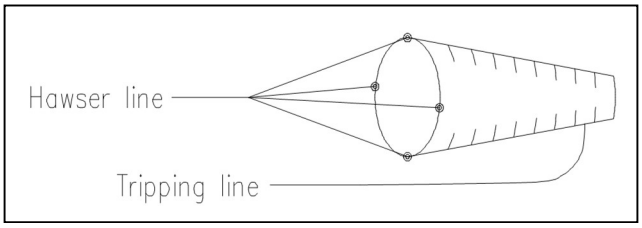


Figure 3 Sea Anchor

8.9 Rain water collector

The rain water collector consists of a rectangle section on top of the canopy with drain hole in the centre. Collect the water in the supplied plastic containers.

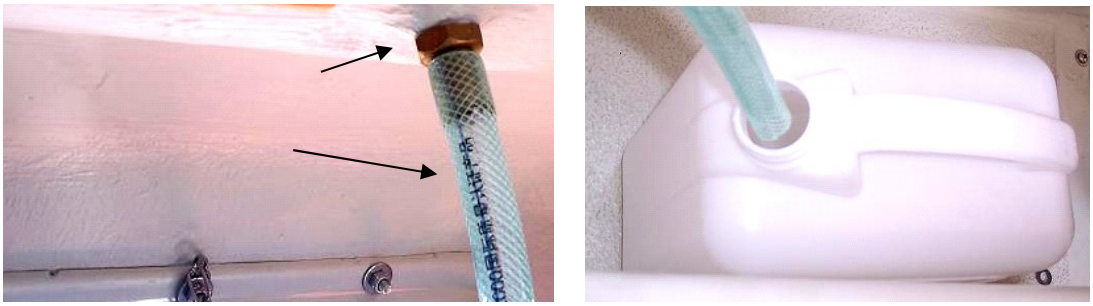


Figure 4 Rain water collector system

8.10 Painter release operation

At the forward end of the boat there is quick release hook to releasing the painter line. To disengage the painter under tension, pull sharply on the painter release handle in the front of the boat **(figure 5)**. To reset the hook, pull releases handle, return the hook to its original position and let go release handle. Make sure that the end of the hook is under the release lever **(figure 5a and 5b)**.

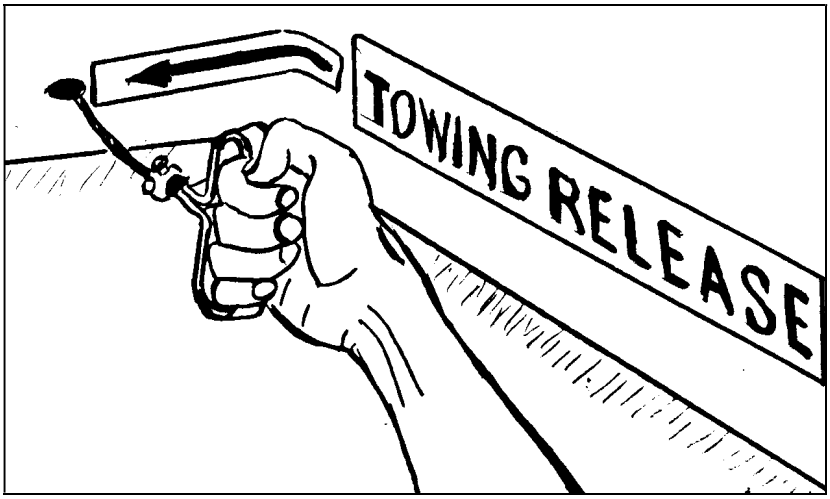


Figure 5 Painter release handle

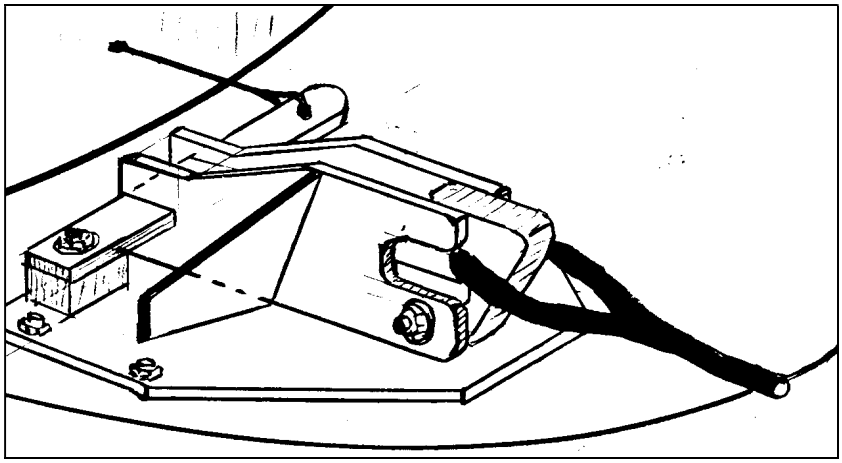


Figure 5a Painter release hook (closed)

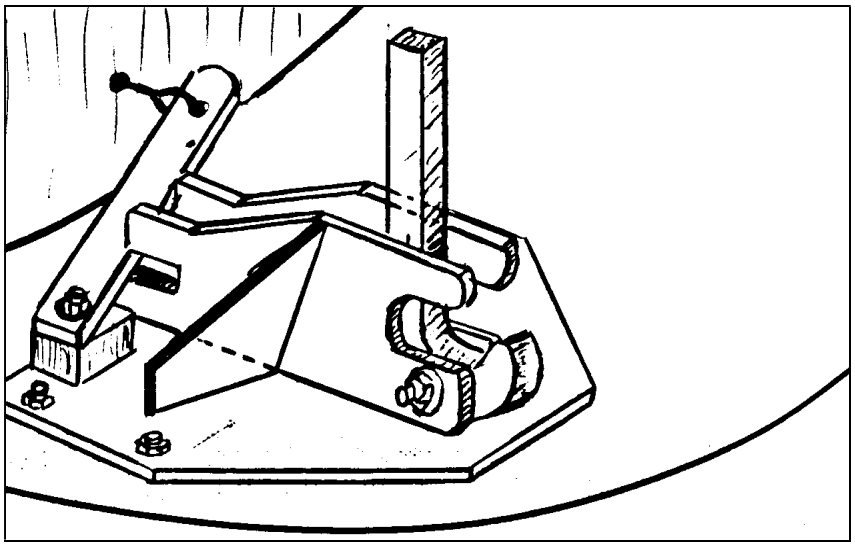


Figure 5b Painter release hook (open)

8.11 Drain plug operation

The lifeboat is fitted with an automatic drain valve, which will close automatically when the boat is waterborne. However, it is recommended that the drain plug be closed when the

boat is waterborne to prevent any leakage. The drain plug is fitted on the lower area of the boat. After recovery of the boat is completed always ensure that the drain plug is open.

The brass cover on the drain plug must not be removed when the drain plug is opened. If the cover is removed, the plastic ball will be lost and the plug will not close automatically when the boat is waterborne.

8.12 Bilge pump operation

Operate the bilge pump handle to remove water from bilge. To do this, handle must be removed from its stowed position and installed on the pump.

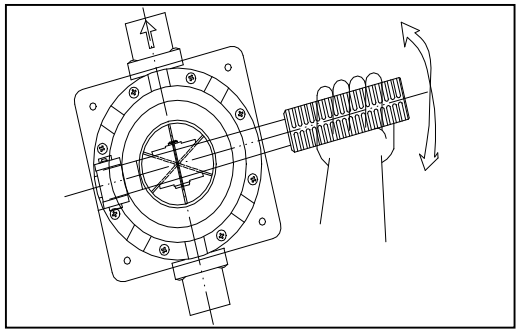


Figure 6 Bilge Pump

8.13 Fender/skates

After launching the lifeboat from the davit and when the boat is waterborne and headed away from danger zone the skates may be released in order to gain speed.

Remove the securing pin from the release mechanism on both sides of boat forward and aft. (i.e. 4 places).

Simultaneously pull on all release handles.

If it is not possible to operate all the skate release mechanisms at the same time, the aft skate should be released first by releasing the outboard side, then inboard side. Repeat this procedure with the forward skate.

Skates should only be released in a danger situation since they will be lost after this operation procedure.

8.14 Normal steering

The normal steering of the lifeboat is by mechanical arrangement as detailed in the maintenance section of the manual. Please note that some lifeboats might be equipped with hydraulic steering instead of mechanical steering. Please also refer to the maintenance chapter for details about this.

8.15 Emergency steering operation

If main steering system fails to operate the rudder, use emergency steering as follows，

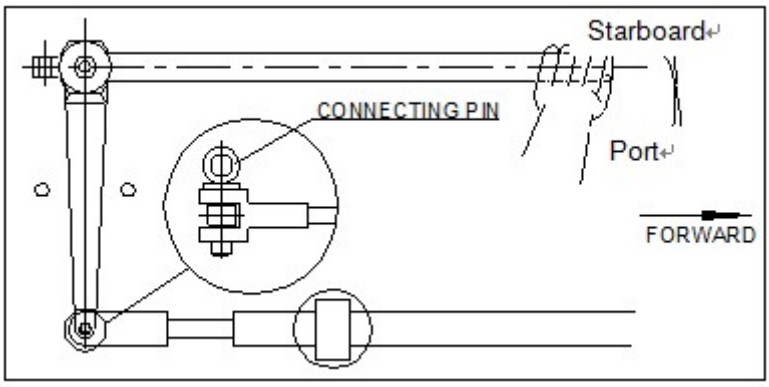


Figure 7 Emergency steering system

Remove emergency steering tiller from its stowed position and place the end of tiller over rudder stock.
It is now possible to steer the boat with this emergency tiller, but helmsman must give instructions on direction.

Note

Before operating emergency steering, the connecting pin may need to be removed (if mechanical steering with no feedback steering helm).

Before operating emergency steering, the by-pass valve on the hydraulic steering cylinder need to be opened (if hydraulic steering).

8.16 Rowing the boat

Should it be necessary to row the lifeboat, proceed as listed below

- Open side doors and secure in open position.
- Fit rowlocks in holders below side door on both sides.
- Remove oars from stowed position under the canopy and fit into the rowlocks, rowing the boat.

8.17 Rescue of person in the water

A person in the water will be drifting due to the effects of wind and sea, therefore it is important for the helmsman to plan any rescue and inform the crew of the plan.

To effectuate a safe and successful rescue bear in mind the following:

Set a course that puts the boat in a position where the person in the water is drifting towards the boat.

Reduce speed when close to the person in the water. It is better to stop short than to overshoot and have to go around again.

When very close to the person, hold the boat in position with short engagements of the gear and let him drift into the side of the boat.

Two crew members should position themselves on the side hatches of the boat on which the rescue is to be effected. The remaining people onboard should position themselves in the boat in order to keep it levelled and remain seated and calm during the operation.

When contact is made the crew should grab the person under the arms and together pull him up into the boat. If the person is injured he should be placed on the stretcher keeping his head elevated.

When recovering the person through the side door it is important to make sure no abrupt motions and making sure having sufficient freeboard to the hatch coaming to avoid sudden water ingress from waves. Door to be closed quickly after rescue is completed.

9 INSPECTION AND MAINTENANCE PROCEDURES

9.1 Required skills for maintenance and service

Weekly and monthly maintenance should be conducted by ship's crew in accordance with this manual, however VIKING recommends that ship's crew conducting maintenance on this equipment have attended a VIKING product training course to reduce risks listed in MSc Circ 1206 rev 1– Measures to prevent accidents with lifeboats.

Personnel undertaking inspections, maintenance and adjustment of lifeboats, launching appliances and associated equipment shall be qualified (fully trained) and familiar with their duties. Annual, Five-yearly inspections and repairs shall be conducted by VIKING original manufacturers authorized service personnel or by authorized, trained and qualified service partners.

Courses are available on request at: http://www.viking-safetyacademy.com/
Norway: E-mail safetyacademy-no@viking-life.com
Greece: E-mail safetyacademy-gr@viking-life.com

Please visit our website for more information: www.viking-life.com

9.2 Required operators skills

This equipment should only be operated by personnel certified in accordance with the "International convention on standards of training, certification and watch keeping for seafarers, 1978 as amended" (STCW) – Chapter VI, Regulation VI/2 – "Mandatory minimum requirements for the issue of certificates of proficiency in survival craft, rescue boats and fast rescue boats".

Lack of familiarity with lifeboats, davits, equipment and associated controls as well as unsafe practices during lifeboat drills and inspections can lead to serious accidents and/or equipment malfunction (MSc Circ 1206 rev 1 – Measures to prevent accidents with lifeboats).

VIKING Norsafe Original equipment manufacturer (OEM) strongly recommends that operating personnel have attended a VIKING Norsafe product training course, preferably in combination with the above mentioned STCW requirements, for the actual equipment. Skills should be maintained in accordance with training requirements as set out in SOLAS Chapter III, Part B, regulation 19, and refreshed in accordance with the STCW requirements and other regulations if required.

All products under MODU:
MSC.1/Circ.1486 Guidelines on alternative methods for lifeboat drills on MODUs 11.2.2
In addition to the specified mandatory training (e.g. as shown in table A-VI/2-1 of the STCW Code), the lifeboat coxswain should receive intermediate training (at least once every 2.5 years) at a facility satisfactory to the Administration.

Courses are available in Norway and Greece on request at: http://www.viking-safetyacademy.com/
Norway: E-mail safetyacademy-no@viking-life.com
Greece: E-mail safetyacademy-gr@viking-life.com

Please visit our website for more information: www.viking-life.com

9.3 General precautions/maintenance and product liability information

SOLAS regulation III/20 requires that all life-saving appliances shall be in working order and ready for immediate use before the ship leaves port and at all times during the voyage. Lifeboats, launching appliances and release gear are required by SOLAS regulation III/20 to be inspected weekly and monthly according to the instructions for on-board maintenance complying with the requirements of SOLAS regulation III/36. Also, MSC.1/Circ.1206 describes more detailed procedures for periodic servicing and maintenance of lifeboats, launching appliances and release gear.

This manual includes only the weekly and monthly inspection and maintenance, which are conducted on board under the direct supervision of a senior ship's officer.

MSC 1206 YEARLY INSPECTION OF LSA - PRODUCT LIABILITY.

Norsafe AS is strictly following the IMO intensions with MSC 1206 with respect of yearly Inspection and Control of our LSA delivered .

Norsafe has Certified and Authorized more than 50 Service Stations World Wide in order to take care of the Yearly Inspection of Norsafe Products delivered to Ships and Oilrigs .

The Norsafe Products that are Inspected and Accepted yearly by Norsafe Companies or Service Companies Authorized and Certified by Norsafe for such work , will normally carry the Norsafe Product Liability.

Norsafe Products that are not yearly Inspected and Accepted by Norsafe Authorized Personnel, will instantly lose their Norsafe Product Liability and also any other possible Norsafe Warranties or Guaranties.

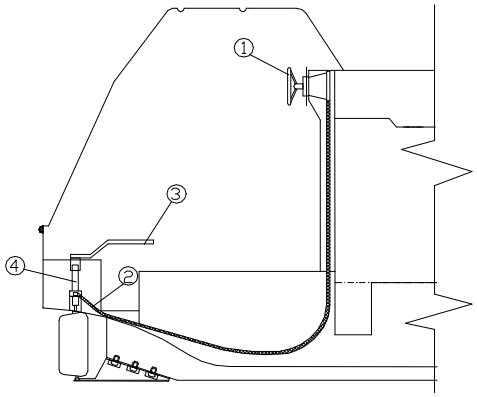
Arendal,31st December 2008

Geir Skaala

Chairman

9.4 Steering system

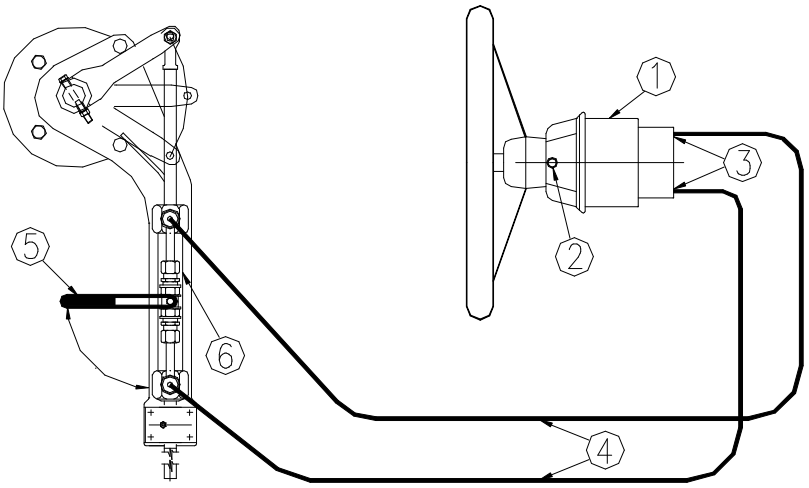
The mechanical steering system should operate freely and be greased if necessary.



1	Steering wheel
2	Cable steering
3	Emergency tiller
4	Rudder stock

If a hydraulic steering system is mounted, the following must be checked. The hydraulic steering system should be free of leaks and contain no air within the system. Check that no hydraulic fluid is present at any of the hose connections. If leaks are found tighten the connection and check hydraulic oil level on wheel pump.

The system must be free of air to operate properly. If it is suspected that air is in the system, it must be bled. See Sleipner/Tenfjord instruction manual for details.



1	Wheel pump
2	Charge plug
3	Oil lock
4	High pressure hose, max 80 bar
5	By pass valve
6	Hydraulic rudder machine type Junior

9.5 Bilge system

If the pump fails to prime or chokes, check for:

- Air leaks or blockages in the inlet hose and it's connection to the pump.
- A torn diaphragm.
- Dirt under valves or distorted valves.
- Collapse of the inlet hose during suction stroke.

To change the rubber parts
If the rubber parts are broken (Order spare part, see page 5), they can be replaced.

9.6 Hatches

Rubber gaskets around hatches should be checked for deterioration. If any signs of cracking or brittleness exist, gasket should be replaced immediately. Dry gaskets should be lubricated with Vaseline.

9.7 Windows

The windows installed in this boat are made from polycarbonate material/hardened glass. Periodic cleaning using proper procedures and compatible cleaners is recommended to prolong the service life. For general cleaning, it is recommended that the following instructions and cleaning agents be used. The below procedure and cleaners are also recommended for use on the interior surface of the polycarbonate/hardened glass windows.

Cleaning of exterior side of windows when lifeboat is stored in davit shall only be done by qualified persons.

CLEANING PROCEDURE

1. Rinse polycarbonate sheet/hardened glass with lukewarm water.
2. Wash polycarbonate sheet/hardened glass with a mild cleaning agent like baby shampoo, liquid dish soap or liquid hand washing soap and lukewarm water.
3. Use a soft cloth or sponge and gently wash with a side to side motion.
4. Rinse the cloth or sponge and change the water often.
5. Repeat rinse and dry with a soft cloth to prevent water spotting.

NEVER use a dry cloth, or your hands, to wipe off the windows; scratching will occur.
NEVER use abrasive cleaners, toothpaste, alkaline cleaners, abrasive pads, or gritty cloths on the windows.
NEVER scrape the windows with squeegees, razor blades or other sharp instruments.
NEVER scrub hard or use brushes on the windows.
NEVER scrub in a circular motion, use a side to side motion softly.
NEVER use window cleaning fluids (Windex, 409, etc.) or any solvents (gasoline, denatured alcohol, acetone, etc.) on the windows.
NEVER clean the windows in the hot sun or at elevated temperatures.

9.8 Fuel system

Only clean diesel fuel should be used. The fuel tank should be refilled after engine has been used. Before removing the filler cap, always clean around it to prevent dirt etc. from entering the system. Check all fuel lines for leaks and deterioration. Leaking couplings may be tightened; otherwise lines need to be replaced.

9.9 Electrical system

The main engine start battery, emergency start battery and the lifeboat radio battery (if fitted) should be checked to ensure the terminals are tight and clean. Should the terminals show any signs of corrosion disconnect and clean thoroughly and grease with a light silicone grease. **No other maintenance is required to the batteries**.
If the batteries need to be replaced, use sealed batteries only. Other types may cause explosion due to hydrogen release.

The wiring diagram and the components are described in the manufacturer's instructions and operation manual delivered with the lifeboat.

9.10 Emergency air supply system (tanker version only)

Should the air pressure in any of the air cylinder drop below 18MPa the system should be recharged to 20MPa. To recharge the system proceed as follows:

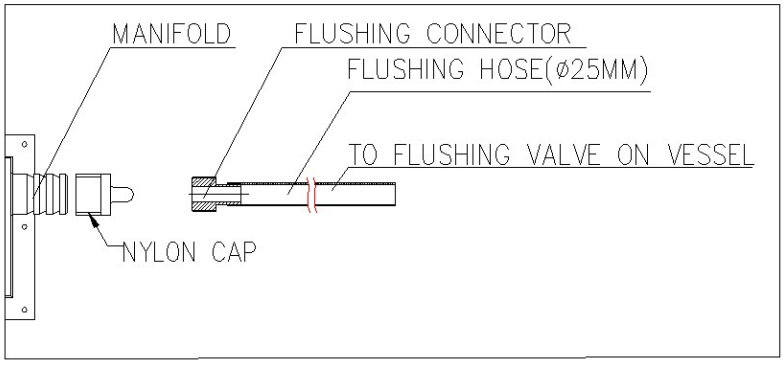
1. Make sure charging valve is closed.
2. Open low-pressure valve to purge air from system.
3. Close low-pressure valve.
4. Connect charging line to charging point **(figure 2)**.
5. Open charging valve.
6. Open valves on air cylinders.
7. Start compressor and charge to 20MPa.
8. Stop compressor when pressure is 20Mpa.
9. Close valves on air cylinders
10. Open low-pressure valve to check and relieve pressure at regulator.
11. Close charging valve.
12. Close low-pressure valve.
13. Disconnect charging line.

System is now ready for emergency use. Recharging air must be of breathable quality, dry, oil free, clean and with a water content of no more than 3-4PPM. Excessive moisture will cause misting, internal freezing of the regulator and jam in either open or closed position. This will temporarily (until ice melts) disable the system.

Before leak testing the system, open the valves on all air cylinders. Mix up a strong soapy water solution and with a small brush liberally cover all joints and connections. Leakage can be detected by spotting air bubbles.

9.11 Sprinkler system (tanker version only)

It is important that after using the sprinkler system, it is flushed with fresh water to remove salt deposits. To flush the system, proceed as follows:



1. Close the intake valve on the sprinkler pump.
2. Remove the nylon cap on the sprinkler manifold**.**
3. Screw the flushing connector to the sprinkler manifold.
4. Connect the flushing hose (ø25mm) to the flushing connector and flush for 10 minutes with fresh water at adequate flow rate.
5. After flushing, open the intake valve to drain the water inside the pipes.
6. Open the drain valve on the bottom of the pump to drain the sprinkler pump.
7. Close the drain valve and intake valve.
8. Close the flushing point on the manifold with the cap.

9.12 Lubrication and greasing points. Anticorrosion maintenance

Following mechanisms must be maintained according to the maintenance list with water-resistant grease:

- Under pressure valve and over pressure valve.
- Handles of hatches / doors inside and outside.
- Rudder shaft

For protection, spray corrosive surfaces with TECTYL.

NOTE!
For maintenance of following items please refer to the manufacturer's instruction manuals:

- Hooks
- Engine
- Gearbox
- Propeller shaft
- Hydraulic steering system
- Lifeboat davits and winches
- Under and overpressure valves

9.13 Inspection and maintenance plan of lifeboat and release gear

Lifeboats should be inspected and maintained weekly and monthly in accordance with the following tables. The tables list the items to be checked, the method of inspection, the procedures to be followed, and the frequency at which the items are to be attended to. This lifeboat should always be maintained to ensure that it is ready for immediate use.

- Table 8.10.1 Covers the basic lifeboat (including release gear)
- Table 8.10.2 Covers the lifeboat engine
- Table 8.10.3 Covers the electric parts
- Table 8.10.4 Covers the release gear system
- Table 8.10.5 Covers the lifeboat equipment

Table 8.10.1 - Inspection procedure and maintenance plan for lifeboat

Items		Method	Inspection procedure	Maintenance plan		
				Weekly	Monthly	When required
Outside hull		Visual	Inspect for deformation or other defects. Inspect for peeling or any damage of retro-reflective material.	X	X	
Outside canopy		Visual	Inspect for deformation or other defects.	X	X	
Buoyant lifeline		Visual	Inspect for any damage.	X	X	
Foldable canopy *1		Visual	Inspect for any damage to canopy.	X	X	
Inside boat	GRP	Visual	Inspect for deformation or other defects.	X	X	
	Wood	Visual	Inspect for crack or rot.	X	X	
	Metal	Visual	Inspect for corrosion.	X	X	
Drain valve		Visual	Inspect for any damage.	X	X	
Release gear		Visual	Check resetting condition. Remove any dirt on moving parts.	X	X	
Painter release device		Visual	Check resetting condition. Remove any dirt on moving parts.	X	X	
All hatches		Visual	Inspect for easy operation and good condition of gasket.	X	X	
		Operation		X	X	
Window		Visual	Inspect for surface pollution and clean according to instruction in this manual if necessary	X	X	
		Cleaning				X
Steering gear		Visual	Inspect for any damage of rudder, tiller and emergency tiller.	X	X	
		Operation	Inspect for good operation of main steering and connecting emergency tiller.	X	X	
Stern tube		Visual	Inspect gasket and check for leakage of seawater.	*2	*2	
Propeller and guard		Visual	Inspect for any damage.	X	X	
Breather valve		Operation	Inspect operation of valve.		X	
Water spray system	Clutch V-belt	Visual	Inspect for proper tension of V-belt. Inspect for any damage of belt.		X	
		Operation	Inspect for proper operation.		X	
	Spray pipe	Visual	Inspect for corrosion or any damage.		X	
	Spray nozzle	Visual	Remove any deposit.		X	
Air support system	High pressure pipe	Visual	Inspect for any damage.		X	
	Regulator	Visual	Inspect for any damage.		X	
	Air cylinder	Visual	Inspect for corrosion or any damage.		X	

Note: 1 Applicable only to partially enclosed lifeboats.
2 When waterborne.

Table 8.10.2 - Inspection procedure and maintenance plan for engine

Items	Method	Inspection procedure	Maintenance plan	
			Weekly	Monthly
Engine	Visual	Check in good condition.	X	X
	Operation	Start and operate the engine.		
		Check operation of throttle.		
		Check operation of clutch.		X
Lubricating oil	Visual	Check an amount of oil.		X
	Visual	Check viscosity of oil with finger and ensure it's not dirty.		X
Fuel oil tank	Visual	Check securing condition of the tank (corrosion or leakage and connecting parts). Check an amount of fuel oil.		X
Fuel oil pipe	Visual	Check any leakage on connecting parts.		X
Water cooler	Visual	Check an amount of fresh water.		X
Cooling water pipe	Visual	Check any leakage on pipe.		X
Starter switch	Operation	Check operating properly.	X	X
Glow lamp	Operation	Check light on when pre-heating.	X	X
Tachometer	Operation	Check proper indication of revolution.	X	X
Oil pressure warning lamp Charge lamp	Operation	Check proper light on or light off condition.	X	X
Stop wire	Operation	Stop the engine.	X	X

Table 8.10.3 - Inspection procedure and maintenance plan for electric parts

Items	Method	Inspection procedure	Maintenance plan	
			Weekly	Monthly
Battery	Visual	Check lead wire.		X
	Measure	Measure voltage of battery.		X
		When voltage is low, charge battery.		X
Inside lamp	Operation	Check light on.		X
Canopy lamp	Operation	Check light on.		X
Search light	Operation	Check light on.		X
Electric wiring	Visual	Check any defects on wiring.		X

Table 8.10.4 - Inspection procedure and maintenance plan for release gear system

Items	Method	Inspection Procedure	Maintenance plan		
			Weekly	Monthly	By launch and recovery drill
Release hook units	Visual	Check resetting condition. Remove any dirt on moving parts.	X	X	
	Operation	Inspect for easy operation.			X
Release handle unit	Visual	Check resetting condition.	X	X	
	Operation	Inspect for easy operation.			X
Hydrostatic unit	Visual	Inspect for any damage.		X	
	Operation	Inspect for easy operation.			X
Control & interlock cables	Visual	Inspect for any damage.		X	
	Operation	Inspect for easy operation.			X

Caution

The release hooks are maintenance-free and should not be greased or painted.
If the hooks are painted, this is an illegal design change, and the type approval is no longer valid.

Note

Ship crew should only conduct regularly flushing with fresh water and general cleaning, including functional tests in connection with life boat drills.

Table 8.10.5 - Inspection procedure and maintenance plan for lifeboat equipment

Check for condition, quantity and expiry date where applicable

No.	Items	Maintenance plan	
		Weekly	Monthly
1	Oars		X
2	Tholepins or crutches		X
3	Boat hooks		X
4	Buoyant bailer		X
5	Buckets		X
6	Survival manual	X	X
7	Compass		X
8	Sea-anchor		X
9	Painters		X
10	Hatchets		X
11	Watertight receptacle and fresh water		X
12	Dipper with lanyard		X
13	Graduated drinking vessel		X
14	Food ration in watertight container		X
15	Rocket parachute flare		X
16	Hand flare		X
17	Buoyant smoke signal		X
18	Waterproof electric torch		X
19	One daylight signalling mirror		X
20	One copy of life-saving signals	X	X
21	One whistle		X
22	A first-aid kit		X
23	Anti-seasickness medicine		X
24	One seasickness bag for each person		X
25	A jack knife		X
26	Three tin openers		X
27	Two buoyant rescue quoits		X
28	A manual pump	X	X
29	One set of fishing tackle		X
30	Portable fire-extinguishing equipment		X
31	A radar reflector		X
32	Thermal protective aids		X
33	Compartments for storage		X
34	A means for collecting rainwater		X
35	A boarding ladder		X
36	Seat belts		X
37	Instructions of immediate action	X	X
38	Water resistant instructions	X	X

9.14 On board maintenance procedures

9.14.1 General

As a result of inspection, any defective parts should be repaired in accordance with following procedures. Any shortage of quantity should be supplemented to the correct number. Defective parts other than the following should be recorded along with their details and ordered for maintenance and repair by the manufacturers.

9.14.2 Boat

Rust on metal parts
Give anti-rusting treatment according to degree of damage, or replace if significantly wasted.

Damage of fabric
Repair fabric products by same material according to degree of damage.

Gasket
Repair with adhesive sealant according to degree of damage.

Drain valve
Remove any dirt and check correct operation.

Water spray system
Remove any deposit from spray nozzles. Tighten up pipe connecting parts when any leakage was noted. Adjust to proper tension on V-belt.

Sprinkler valve
After installation, ball in valve must be greased with silicone.
Sprinkler pump and valves must be flushed with fresh water as soon as possible when boat is taken out of t water, during testing FAT or similar.
Operation of valves should also be checked during storage.

Under and over pressure control
Since the engine uses air for running, an automatic under pressure control valve is fitted inside the entrance door. This valve is normally open to let air into the boat and prevent discomfort to the passengers. When the internal compressed air system is in use, the valve shall automatically close. An overpressure relief valve are fitted to let excessive air out of the boat. It is designed to give a small overpressure to prevent toxic gases from entering the boat and at the same time prevent too high pressure inside the boat.

It is important that these valves move freely. This can be verified by pulling the bolt in the centre of the valve, and on release, it should move back

9.14.3 Engine

Oil coating and filling
When any rust exists, remove rust and coat with machine oil. Rotating parts should be filled with lubricating oil.

Operating test

An operational test of the engine should be carried out on board the ship and in the afloat condition after launching at an appropriate opportunity to check the running condition. After the operational test, ensure that the valves for the cooling water line are opened and flushed with fresh water and drained completely.

9.15 Inspection and maintenance of launching appliances (davits and winches)

Refer to the davit and winch manuals.

10 APPENDIX A

(NOTE: sign after completing all the items in the maintenance schedule)

INSPECTION LOG FOR LIFEBOAT INSPECTIONS.				
Check. no:	Date:	Sign.	Condition:	Actions taken:
1				
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INSPECTION LOG FOR LIFEBOAT INSPECTIONS.

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11 APPENDIX B

INSTRUCTIONS FOR SERVICE AND MAINTENANCE LIFEBOAT

			Date:
1 YEAR/5 YEAR SERVICES PROTOCOL			
Ref no:	Project:	Handled by:	Page no **of**

Job code	Job Description - for further details see manufacturers manual	Status/Remarks	1 yr.	5 yr.
	General items:			
000	Check lifeboat certificate		X	X
001	Check Davit certificate		X	X
002	Check Winch certificate		X	X
003	Check that normal maintenance procedures are carried out according to ship maintenance procedures		X	X
	Exterior			
101	Condition of hull and canopy - check for signs of damage and deterioration		X	X
102	Life lines, rings and clamps - replace when necessary		X	X
103	Check painter line with associated equipment, painter line = a rope in the bow for towing/mooring/fastening		X	X
104	Check condition of steelwork - corrosion, welding, protective paint etc.		X	X
105	Check condition of fender		X	X
106	Check the propeller, propeller protection, shaft and rudder are free for obstructions or stains		X	X
107	Check/test that all access doors are serviceable. Lubricate handles and hinges when necessary. Ensure that door seals are in good conditions - renew if necessary.		X	X
108	Check conditions of engine cooling pipes under hull.		X	X
109	Check the conditions of release hooks. Do complete detail inspection/checks according to separate checklist for hooks.		X	X
110	Check the drain plug and clean the surrounding area.		X	X
111	Check condition of all hatches, hinges to be lubricated.		X	X
112	Check row-locks.		X	X
113	Check ventilation cowls and ventilators.		X	X
114	Check condition of spray system including pipes and nozzles, i.e. sea water covering system to be initialized in case of sea surface fire.		X	X

According to IMO MSC.1/Circ.1206 rev.1, 1 year and 5 years control shall be carried out by VIKING authorised personnel

VIKING reserve the rights to make changes in this checklist without further notice

INSTRUCTIONS FOR SERVICE AND MAINTENANCE
LIFEBOAT

			Date:
1 YEAR/5 YEAR SERVICES PROTOCOL			
Ref no:	Project:	Handled by:	Page no **of**

Job code	Job Description - for further details see manufacturers manual	Status/Remarks	1 yr.	5 yr.
115	Check position indication lights; condition, function and approval/type certificate according to MED 96/98 EC		X	X
116	Check condition of retro-reflecting material and approval/type certificate according to MED 96/98 EC			
117	Check all markings, call signs, lettering		X	X
118	Check condition of reflective tapes, replace if necessary		X	X
	Interior			
119	Visually inspect condition of hull and canopy - check for any signs of damage and deterioration		X	X
120	Visually inspect condition of all steel and woodwork		X	X
121	Visually inspect condition of engine case		X	X
122	Visually inspect condition of control console and instrumentation		X	X
123	Visually inspect condition of seat belts		X	X
124	Check operation/function of the bilge pump		X	X
125	Steering gear and engine controls to be checked for operation - lubricate when necessary		X	X
126	Check condition remote control cables		X	X
127	Check engine approval/type certificate according to MED 96/98 EC		X	X
128	Inspect the fuel tank, i.e. condition of tank, drain valve and filler cap. Top up with fuel when necessary and ensure that filler cap is replaced and thoroughly tightened		X	X
129	Check fuel system for any leaks and rectify if necessary		X	X
130	Check condition of exhaust pipe		X	X
131	Check the general condition of the motor heat exchanger		X	X
132	Check water and anti-freeze on heat exchanger tank (refer to engine maintenance manual for data and lubrication chart)		X	X

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LIFEBOAT

	Date:
1 YEAR/5 YEAR SERVICES PROTOCOL	

Ref no:	Project:	Handled by:	Page no **of**

Job code	Job Description - for further details see manufacturers manual	Status/Remarks	1 yr.	5 yr.
133	Check the engine oil level and top up if necessary (refer to engine maintenance manual for data and lubrication chart)		X	X
134	Check gearbox oil level and top up if necessary (refer to engine maintenance manual for data and lubrication chart)		X	X
135	Check gear remote cables and control		X	X
136	Check gear function (free - forward - reverse)		X	X
137	Check condition of all batteries and battery connections (refer to engine maintenance manual for data and lubrication chart)		X	X
138	Visually inspect starter motor		X	X
139	Check spring starter condition/function		X	X
140	Hydraulic starter system to be checked for damage or faulty parts		X	X
141	Check the hydraulic starter oil level and top up if necessary (refer to engine maintenance manual for data and lubrication chart)		X	X
142	Hydraulic starter indicator / pressure gauge to be checked by pumping up system until correct pressure is obtained		X	X
143	Recharge the hydraulic starter system		X	X
144	Visually inspect the hook release gear control system. Do complete detail inspection / checks according to separate checklist for hooks.		X	X
145	Check air cylinders exterior condition and re-certification date. Air cylinders to be re-certified every 5th year		X	X
146	Check and record air cylinders pressure. Arrange for recharge if the pressure is below lower operational level (ref. labelling or manual). Recharge only with dry air, otherwise possible internal corrosion might cause hazard of explosion.		X	X
147	Check air system for possible leakages		X	X
148	Check condition of valves and gauges on air system		X	X
149	Check condition of water spray pump		X	X

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INSTRUCTIONS FOR SERVICE AND MAINTENANCE LIFEBOAT

1 YEAR/5 YEAR SERVICES PROTOCOL

Ref no:	Project:	Handled by:	Date: Page no **of**

Job code	Job Description - for further details see manufacturers manual	Status/Remarks	1 yr.	5 yr.
150	Engine to be checked, started, run and stopped according to manufacturer's instructions.		X	X
151	Check that oil pressure is according to manual.		X	X
152	Check for possible vibrations in engine.		X	X
153	Check function of alternator / charging system.		X	X
154	Lowering boat into the water (This activity is always subject to approval in advance by rig manager / captain).			
155	Check inboard stern gland (propeller shaft seal) for possible leakages. Tighten gland packing sufficiently (do not over tighten!) to avoid ingress of any water.		X	X
156	Check boat for leakages.		X	X
157	Life the boat back into the davit and ensure that the boat is secured ready for operation.		X	X
158	Check conditions and certificates of loose equipment in accordance with boat equipment list. See also separate checklist for loose items.		X	X
159	Check steering arrangement.		X	X
160	Check function of all internal lights.		X	X
161	Check bow line painter release hook.		X	X
162	Bowsing - tricing equipment must be checked for wear and a function test shall be carried out. This is the arrangement fitted between main davit arm and the link on the lifeboat release hook fall wire pulley system. It is used to keep the lifeboat steady to the ship side during embarkation and to control the release from ship side during lowering.		X	X
163	Test with 1.1xSWL load (Safety Working Load)			X

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INSTRUCTIONS FOR SERVICE AND MAINTENANCE LIFEBOAT

			Date:
1 YEAR/5 YEAR SERVICES PROTOCOL			
Ref no:	Project:	Handled by:	Page no **of**

Job code	Job Description - for further details see manufacturers manual	Status/Remarks	1 yr.	5 yr.
	Inventory according to SOLAS (quantity always to be checked against boat inventory list)			
164	Check quantity and condition of buoyant oars		X	X
165	Check boat hooks		X	X
166	Check survival manual		X	X
167	Check compass installation and function of illumination. Approval / type certificate according to MED 96/98 EC required		X	X
168	Check condition of sea-anchor and line			
169	Check painter lines, length at least twice the stowage height, 1 pcs > 15m		X	X
170	Hatches, one at each end of lifeboat		X	X
171	Three litre water for every person		X	X
172	Rustproof dipper with lanyard		X	X
173	Food ration > 10,000 kJ p.p.		X	X
174	Rockets parachutes flares with approval / type certificate according to MED 96/98 EC required		X	X
175	Hand flares with approval / type certificate according to MED 96/98 EC required		X	X
176	Buoyant smoke signals with approval / type certificate according to MED 96/98 EC required		X	X
177	Waterproof electric torch, spare set of batteries, spare bulb		X	X
178	Daylight signalling mirror with instructions		X	X
179	Copy of life saving signals in waterproof card		X	X
180	Whistle or equivalent sound signal		X	X
181	First aid kit in waterproof case		X	X
182	Anti-seasickness medicine p.p.		X	X
183	Seasickness bag p.p.		X	X
184	Jack-knife kept attached to the boat by a lanyard		X	X
185	Tin openers		X	X
186	Buoyant rescue quoits att. to 30m buoyant line.		X	X
187	Manual pump		X	X
188	Set of fishing tackle		X	X
189	Sufficient tools for minor adjustment / repair engine.		X	X

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INSTRUCTIONS FOR SERVICE AND MAINTENANCE
LIFEBOAT

			Date:
1 YEAR/5 YEAR SERVICES PROTOCOL			
Ref no:	Project:	Handled by:	Page no **of**

Job code	Job Description - for further details see manufacturers manual	Status/Remarks	1 yr.	5 yr.
190	Check condition and service status of portable fire extinguished equipment against oil fires. Approval / type certificate according to MED 96/98 EC required.		X	X
191	Check condition and function of searchlight. Approval / type certificate according to MED 96/98 EC required		X	X
192	Radar reflector approval / type certificate according to MED 96/98 EC required		X	X
193	Thermal protective aids for 10% of the crew and at a minimum of 2 pcs. Approval / type certificate according to MED 96/98 EC required		X	X
194	Box safety matches (storm matches, phosphor)		X	X
195	Water collecting (raining) canvas, or other means for collecting rainwater.		X	X
196	Search and rescue transponder (SART). Approval / type certificate according to MED 96/98 EC required		X	X
197	Fixed two-way VHF radiotelephone. Approval / type certificate according to MED 96/98 EC required		X	X
198	Portable two-way VHF radiotelephone. Approval / type certificate according to MED 96/98 EC required		X	X
199	Emergency position indication radio beacon (EPIRB). Approval / type certificate according to MED 96/98 EC required		X	X

According to IMO MSC.1/Circ.1206 rev.1, 1 year and 5 years control shall be carried out by VIKING authorised personnel

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11 Guidelines for Periodic Servicing and Maintenance of Lifeboats, Launching appliances and on-load release gear

General

1 The objective of these Guidelines is to establish a uniform, safe and documented performance of periodic servicing and maintenance of lifeboats, launching appliances and on-load release gear.

2 These Guidelines relate to the application of the ISM Code to periodic servicing and maintenance of lifeboat arrangements and should therefore be reflected in procedures developed for a ship under that Code.

3 The general principle in these Guidelines may also be applied for the periodic servicing and maintenance of life rafts, rescue boats and fast rescue boats and their launching appliances and release gear.

4 Detailed guidance regarding some procedures covered by these Guidelines is provided in the appendix.

SOLAS regulations

5 These Guidelines relate to the requirements contained in:

.1 SOLAS regulation Ⅲ/20 – Operational readiness, maintenance and inspections; and

.2 SOLAS regulation Ⅲ/36 – Instructions for on-board maintenance.

Responsibility

6 The company* is responsible for servicing and maintenance onboard its ships in accordance with SOLAS regulation Ⅲ/20 and for the establishment and implementation of health, safety and environment (HSE) procedures covering all activities during servicing and maintenance.

7 The personnel carrying out servicing and maintenance are responsible for the performance of the work as authorized in accordance with the system specified in paragraph 10.

8 The above personnel are also responsible for complying with HSE instructions and procedures.

9 Where satisfied with an organization’s ability to carry out these functions, the Administration may authorize such organization and its personnel to perform the functions of the manufacturer and manufacturer’s certified personnel as assigned under these Guidelines, if manufacturer certified facilities are not available.

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* For the purpose of these Guidelines, company is as defined in SOLAS regulation IX/1.2.

Authorization

10 Where these Guidelines require certification of servicing personnel, such certification should be issued by the manufacturer in accordance with an established system for training and authorization.

Qualification levels

11 Weekly and monthly inspections, and routine maintenance as defined by the manufacturer, should be conducted under the direct supervision of a senior ship's officer in accordance with the instructions provided by the manufacturer.

12 All other inspections, servicing and repair should be conducted by manufacturer's representative or a person appropriately trained and certified by the manufacturer for the work to be done.

Reports and records

13 All reports and checklists should be correctly filled out and signed by the person who carries out inspection and maintenance work and should also be signed by the company's representative or the ship's master.

14 Records of inspections, servicing, repairs and maintenance should be updated and filed onboard the ship.

15 When repairs, thorough servicing and annual servicing are completed, a statement confirming that the lifeboat arrangements remain fit for purpose should be issued by the manufacturer's representative or by the person certified by the manufacturer for the work.

* * *

12 DISMANTLING/ RECYCLING

To reduce environmental impact at the end of life for this product, it is recommended that the LSA equipment, together with the vessel/platform it is installed, is following The Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships.
The following general recommendations are given upon the general recycling routines, and if not covered by these recommendations please refer as a minimum to the local legislations applicable.

- Loose equipment, food and water should be removed and environmentally safe handled
- All hydraulic oils and fuels should be tapped and environmentally safe handled
- Products should be dismantled and different materials sorted and handled separately
- All electric components should be environmentally safe handled
- All metal parts and components should be recycled at a suitable licensed plant
- Plastics should be recycled or burned at a licensed waste incineration plant

APPENDIX

SPECIFIC PROCEDURES FOR MAINTENANCE AND SERVICING

1 GENERAL

1.1 Any inspection, servicing and repair should be carried out according to the system for inspection and services developed by the manufacturer.

1.2 A full set of maintenance manuals and associated documentation issued by the manufacturer should be available on board for use in all operations involved in the inspection, maintenance, adjustment and re-setting of the lifeboat and associated equipment, such as davits and release gear.

1.3 The manufacturer's system for inspection and services should include the following items as a minimum.

2 ANNUAL THOROUGH EXAMINATION

2.1 As items listed in checklists for the weekly/monthly inspections also form the first part of the annual thorough examination, when carrying out this examination the inspection of these items should be performed by the ship's crew in the presence of the manufacturer's representative or a person appropriately trained and certified by the manufacturer for the work to be done.

2.2 Inspection and maintenance records of inspections and routine maintenance carried out by the ship's crew and the applicable certificates for the launching appliances and equipment should be available.

2.3 Repairs and replacement of parts should be carried out in accordance with the manufacturer's requirements and standards.

Lifeboats

2.4 The following items should be examined and checked for satisfactory condition and operation;

.1 Condition of lifeboat structure including fixed and loose equipment;

.2 engine and propulsion system;

.3 sprinkler system, where fitted;

.4 air supply system, where fitted;

.5 manoeuvring system;

.6 power supply system; and

.7 bailing system.

2.5 The following should be examined for satisfactory condition and operation after the annual winch brake test with the empty boat, as required by paragraph 3.1:

.1 operation of devices for activation of release gear;

.2 excessive free play (tolerances);

.3 hydrostatic interlock system, where fitted;

.4 cables for control and release; and

.5 hook fastening.

Notes:

1 The setting and maintenance of release gear are critical operations with regard to maintenance the safe operation of the lifeboat and the safety of personnel in the lifeboat. All inspection and maintenance operations on this equipment should therefore be carried out with the utmost care.

2 No maintenance or adjustment of the release gear should be undertaken while the hooks are under load.

3 Hanging-off pennants may be used for this purpose but should not remain connected at other times, such as when the lifeboat is normally stowed and during training exercises.

4 The release gear is to be examined prior to its operational test. The release gear is to be re-examined after its operational test and the dynamic winch brake test. Special consideration should be given to ensure that no damage has occurred during the winch brake test, especially the hook fastening.

2.6 Operational test of on-load release function:

.1 position the lifeboat partially into the water such that the mass of the boat is substantially supported by the falls and the hydrostatic interlock system, where fitted, is not triggered;

.2 operate the on-load release gear;

.3 reset the on-load release gear; and

.4 examine the release gear and hook fastening to ensure that the hook is completely reset and no damage has occurred.

2.7 Operational test of off-load release function:

.1 position the lifeboat fully waterborne;

.2 operate the off-load release gear;

.3 reset the on-load release gear; and

.4 recover the lifeboat to the stowed position and prepare for operational readiness.

Note:

Prior to hoisting, check that the release gear is completely and properly reset. The final turning-in of the lifeboat should be done without any persons on board.

3 OVERHAUL OF ON-LOAD RELEASE GEAR

Overhaul of on-load release gear includes:

.1 dismantling of hook release units;

.2 examination with regard to tolerances and design requirements;

.3 adjustment of release gear system after assembly;

.4 operational test as per above and with a load according to SOLAS regulation III /20.11.2.3;

.5 examination of vital parts with regard to defects and cracks.

Note:

Non-destructive examination (NDE) techniques, such as dye penetrants (DPE), may be suitable.