
Hydrostatic Release Units (HRU) - Stowage and Float Free Arrangements for Inflatable Liferafts

Notice to all Owners, Masters, Officers, Skippers and Crews of Merchant Ships and Fishing Vessels

This notice replaces MGN 104.

PLEASE NOTE:-

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

Summary

The purpose of this Note is to provide general advice and guidance on the securing, stowage and launching of liferafts, and the fitting of the most common types of Hydrostatic Release Units - HRUs.

1. Required Functionally

1.1 A liferaft is required to do two things:

1.1.1 Float free and automatically inflate if the ship sinks

- This is achieved by fitting a Hydrostatic Release Unit which automatically releases when the liferaft is submerged.
- The liferaft then starts to float to the surface because of its internal buoyancy, pulling out the painter which is now only connected by the weak link at the end of the painter to the vessel.
- When the painter is pulled all the way to the end, the gas cylinder is activated, and the liferaft inflates.
- At this point the buoyancy force of the inflated liferaft is sufficient to break the weak link, and the liferaft will float to the surface, fully inflated and ready for boarding. For MED approved rafts the weak link should break at a force of between 1.8 and 2.6kN. Random pieces of small diameter line are not acceptable for use as weak links.

- Some rafts have more than one line coming from the canister. In these cases the manufacturer's literature must be consulted to establish which line is which. There may be separate firing lines, painter and multiple bousing lines.

1.1.2 Be manually released and thrown overboard

- In a more controlled abandonment, the liferaft retaining strap must be capable of being released quickly and easily, eg, by senhouse slip, and the liferaft is physically thrown over the side. The painter is then pulled to inflate the liferaft.
- This system relies critically on the painter being made fast to a strong point.
- If the raft is only secured to the ship by the weak link, and is thrown over the side, the dynamic shock of being thrown over may break the weak link, instead of pulling out the painter, and therefore the whole liferaft and painter may be lost.

1.2 For these reasons the liferaft and HRU must be fitted correctly, otherwise one or both of the above functions may not work.

1.3 Diagrams and pictures showing the method of fitting some of the most common types of HRU are shown in the appendix to this note.

2. **Key points on the stowage of liferafts and HRUs**

2.1. Servicing

Re-useable HRUs must be serviced annually to ensure they will work. Disposable types do not normally need servicing during the working life indicated by the manufacturer. The manufacturer's guidelines must be followed.

2.2. Readily Transferable

- It is the Maritime and Coastguard Agency's view that side-to-side transfer must be accomplished in less than 5 minutes as follows:-
 - liferafts of six persons to 15 persons capacity when carried by two persons;
 - liferafts of more than 15 persons capacity when carried by four persons.
- To avoid lifting liferafts over guardrails or bulwarks, portable rails or hinged openings may be necessary. Suitable protection should be provided to prevent the possibility of persons falling over the side.
- Where doubt exists as to whether the stowage position of a SOLAS liferaft (which can weigh up to 185 kg) does allow easy side-to-side transfer, a practical demonstration must be carried out at the first Safety Equipment Certification survey.

2.3. Davit Launched Liferafts (DLRs)

- Must be at least 9 m forward of propeller, if physically possible.
- Must be at least 2 m above waterline at embarkation position, in fully loaded condition, unfavourable 10° trim and 20° list.
- Two crew can prepare for embarkation and launching in less than 5 minutes per raft.

2.4. Marine Evacuation Systems (MES)

Rafts forming part of an MES installation must also float free in the event of a sudden sinking. Rafts must be stowed in accordance with paragraph 1.1. Any control or bousing lines that may cause the rafts to be dragged under water must be fitted with approved weak links.

2.5. Remote liferafts on Cargo ships where the horizontal distance from the extreme end of the stem or stern of the ship to the nearest end of the closest survival craft is more than 100 m

- HRUs are not required.
- Must have means of rapid, easy manual release, while being secured against sea damage.
- Must have sufficient means of embarkation (a knotted lifeline is not acceptable).

2.6. Ships operating in shallow waters

- On small ships, which operate in only 'favourable weather' or inland waterways, it may be practicable or preferable to arrange for liferafts to float free from their stowage without the need for HRU to hold them in place. A weak link with the correct breaking load will still be required to secure the painter to the ship so that the inflation system is activated and the inflated raft is then able to break free.
- In shallow water there is a danger that a sinking ship will touch bottom before the HRU has released or the raft has pulled enough painter/ firing line from the canister to activate the inflation system. Arrangements without HRUs should be considered, bearing in mind the possibility of accidental launching if the ship is likely to roll.
- On Open Reversible Liferafts (ORLs) the firing is typically arranged to operate after 1 – 1.5 m of line is pulled out, but this must be checked with the service station which prepared the raft. Where ORLs are stowed on cabin tops etc, the short firing line on ORLs may enable the raft to inflate before it hits the water. Where the rafts are stowed closer to the water operational procedures should cover the possibility that manual intervention may be needed to activate the inflation system. Easy access to the firing line should be available in these cases. Owners should ensure that the arrangements give the best chance of successful manual and automatic release in the circumstances and plying area.

2.7. Multiple liferafts on a single HRU

- Prototype testing of HRUs is carried out in accordance with the LSA Code which only requires that the tests are carried out with a single liferaft. Approval for use of the HRU normally only applies to its use to hold down one liferaft.
- Trials have been carried out to test the effectiveness of HRUs holding more than one raft to operate when submerged to a depth of 4 m. In some cases, the additional up thrust from the rafts has been sufficient to prevent the HRU opening and releasing the rafts.
- When considering whether to accept a situation where more than one liferaft is held down by a strap attached to a single HRU, the following should be taken into account:

- when multiple liferafts are to be secured on a single HRU, owners must show that the HRU used is approved for this use;
- the arrangements should be checked to ensure that the painters are not lead or connected in such a way as to inhibit release of the rafts eg., painters running through and fouling the cradle. Each painter should have its own weak link;
- that there is sufficient other LSA available so that in the event of a single HRU not operating, there would still be adequate survival craft to accommodate the persons on the ship;
- With the introduction of disposable HRUs, the retail price of the units has been reduced. They are not expensive and it is not difficult for shipowners to fit each raft with a single unit.

2.8. Tensioning of HRUs

Practical experience has shown that over tensioning, whether by overtightening of the securing straps or as in 2.7.2 above, can lead to the failure of the HRU to operate. Similar problems can occur when there is insufficient load on the HRU. Securing straps should then be taut but not over tight.

2.9. Vessels carrying liferafts which are not approved under the Maritime Equipment Directive (MED)

Those Vessels carrying liferafts that are not certified under the MED, including those built to the ISO 9650 standard, should check the compatibility between the liferaft and the HRU. MED approved HRUs are not necessarily compatible with smaller rafts (less than 6 people) as these may not have enough buoyancy to break the weak link. Some manufactures offer special HRUs for low buoyancy rafts.

3. **Key Points on stowage of liferafts and HRUs**

3.1. Liferafts must:

- float free;
- automatically inflate;
- have launching instructions displayed;
- be lit by emergency lighting at the stowage position and launch area;
- clear projections and belting when launched;
- be secured through an approved and compatible HRU;
- be approved for the stowage height;
- have adequate length painters for the drop height.

3.2. Do:

- consult manufactures instructions for HRU fittings;
- stow clear of propellers and thrusters;
- stow containers with drain holes at the bottom;
- stow longitudinally in horizontally fixed cradle;
- stow to give protection from weather, smoke, soot, oil, flooding and accidental damage;
- distribute evenly port and starboard, separated longitudinally to provide redundancy in event of collision, fire etc.;
- carefully identify and remove transport lashings;
- inspect frequently for damage to the container. If it is damaged it needs to be checked by an approved service station;
- ensure liferaft can be manually released easily in an emergency by operating the senhouse slip or other release mechanism, and does not need tools or a knife.

3.3. Don't:

- lash in Cradles;
- stow under overhanging decks or awnings;
- allow contact with materials containing copper or copper compounds;
- hose down;
- use bottle screws instead of slips;
- concentrate on all life-saving appliances in one place.

3.4. Consider:

- if it will be able to float free and clear;
- interference with other rafts or lifeboats;
- effects in icing;
- effects on ships compass;
- the ability to transfer liferafts on either side;
- height above waterline – should be as near to waterline as safe and practicable;
- that the painter is many meters long and must be deployed to its full length before the liferaft will inflate. Ensure that the risk of the painter snagging on obstructions, that might prevent it from deploying fully, is minimised.

More Information

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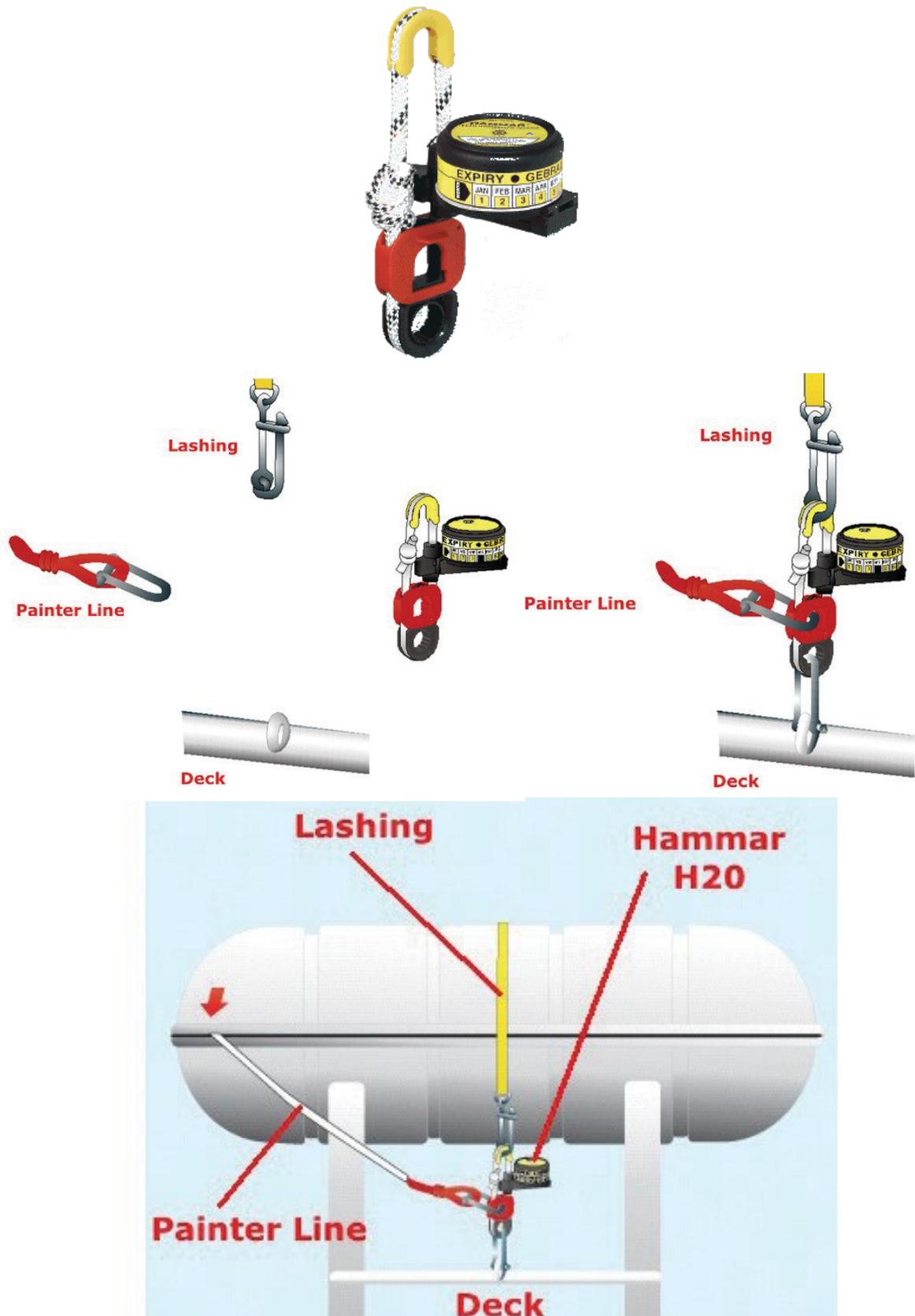
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APPENDIX - Diagrams of common types of Hydrostatic Release Units.
Hammar H20

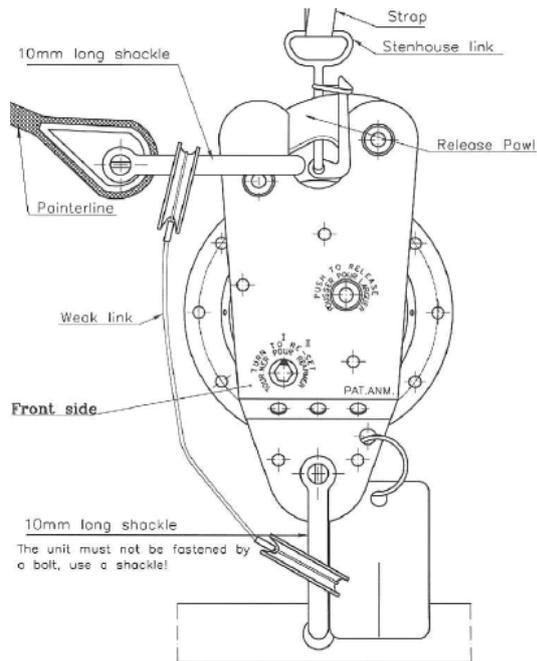


Non SOLAS Hammar H20

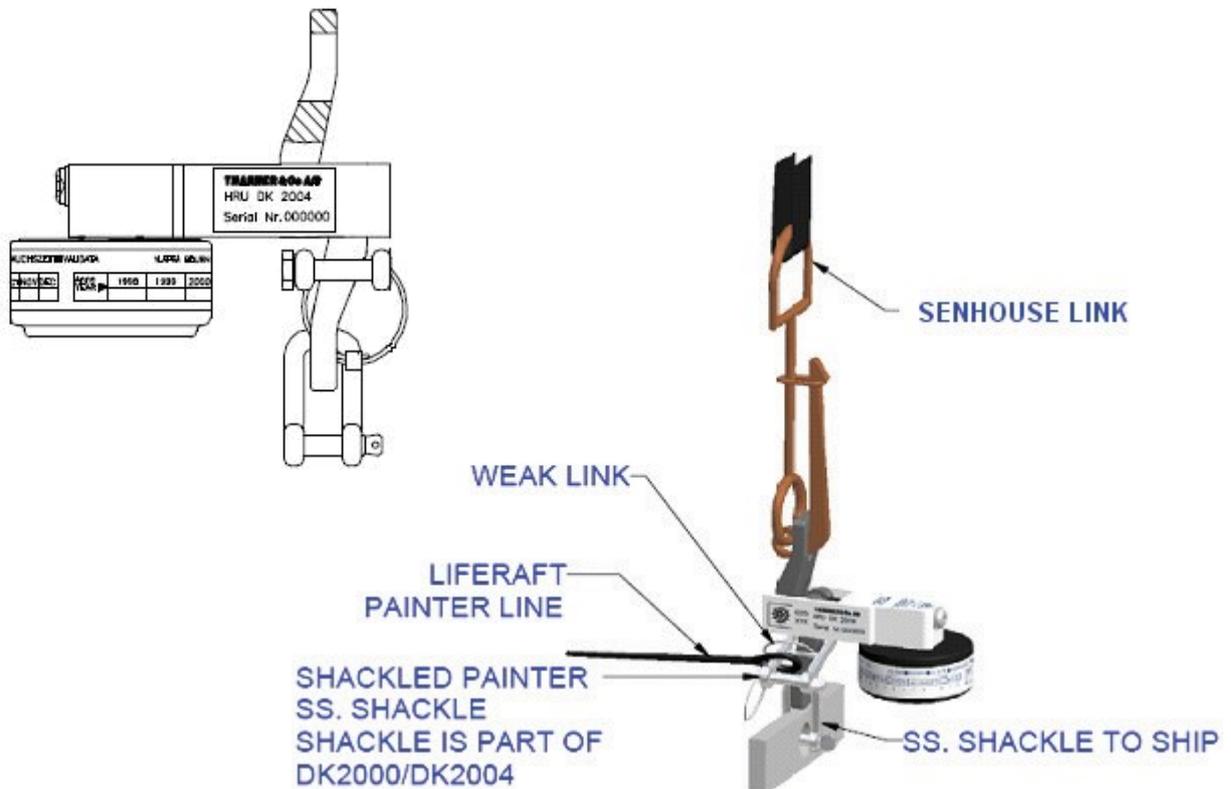
There is a specific Non-SOLAS HRU that is attached in the same way as the one shown in the diagram below but its body features are green instead of yellow and the lower thimble is green instead of black.



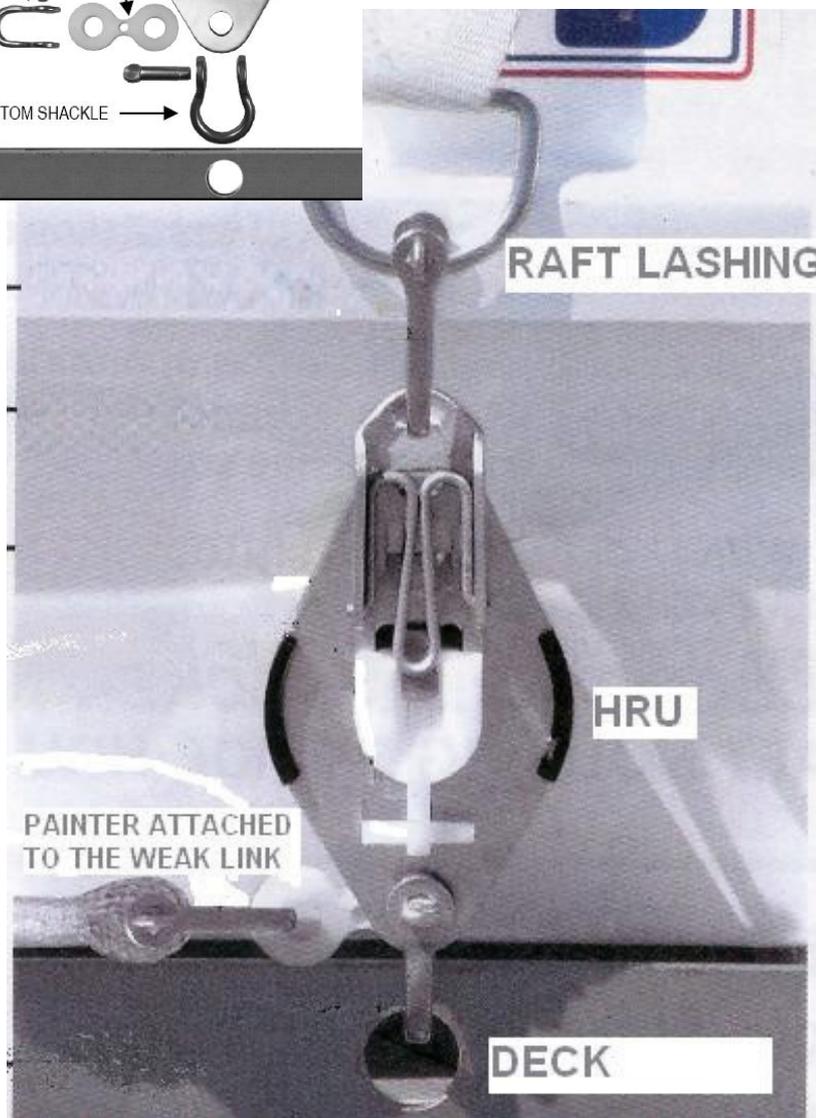
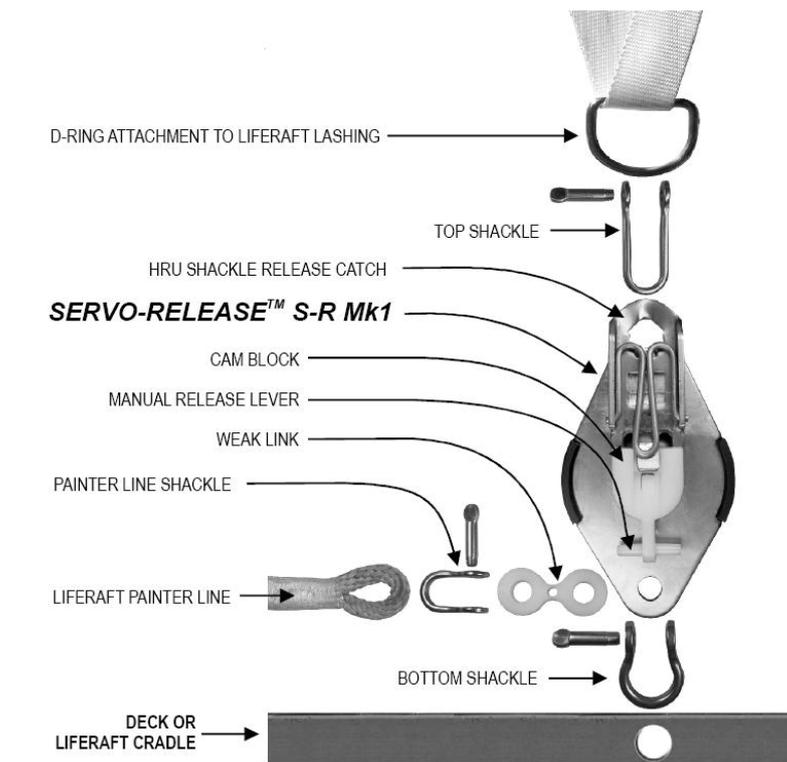
Thanner HRU DK- 84



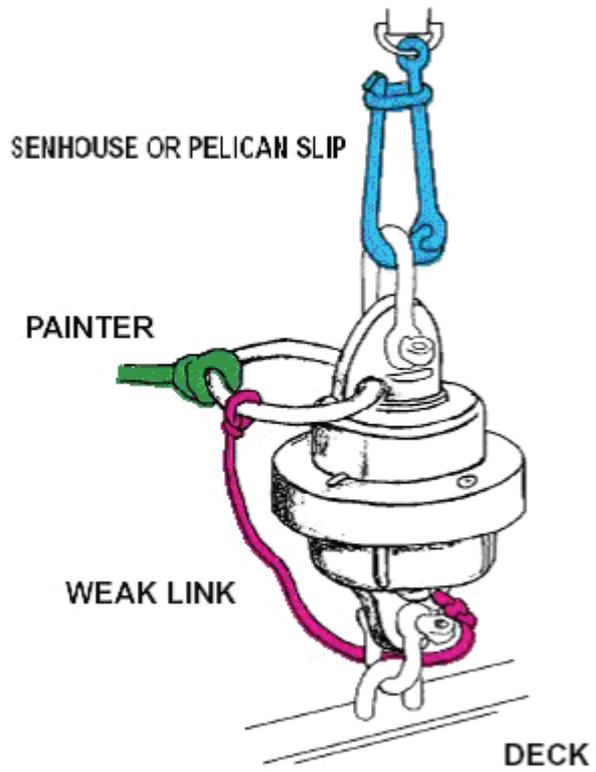
Thanner HRU DK- 2000/2004



SALCOM SERVO-RELEASE™ S-R Mk1



BERWYN MK9



BERWYN MK7

