

Hydrostatic Interlocks and Pins in Lifeboat Hook Systems

Introduction This document looks at the inclusion of hydrostatic interlocks and hook safety pins on stable and unstable lifeboat hook systems.

Function of a Hydrostatic Interlock The hydrostatic interlock serves the function of not allowing the operation of the hook release handle while the lifeboat is suspended above the sea. When the lifeboat reaches the water the interlock releases and allows the handle to operate.

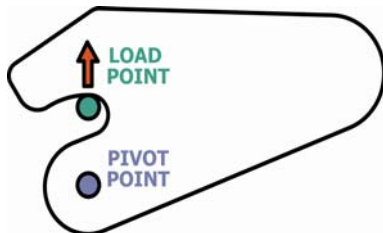
The Function of a Pin The pin serves the function of not allowing the hook to release until the pin has been pulled. Once the operator has manually pulled the pin out of each hook then the hooks are able to open.

Protection Against Unstable Hooks Both the hydrostatic interlock and pin are added safety features that are designed to protect against unstable lifeboat hooks. An inherently unstable hook is defined as a hook that uses the weight of the boat to open the hooks.

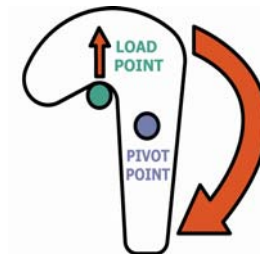
Stable Versus Unstable Hook Design An **unstable hook** is one in which the weight of the boat is used to open the hook in an on-load situation. A **stable hook** is one in which the weight of the boat is used to hold the hook closed and is not used to open the hook in an on-load situation.

Below is an example of a stable and unstable hook. As can be seen, instability is created by offsetting the load point from the pivot center of the hook. Stable hooks have the load point directly over the pivot center of the hook.

Inherently Stable Hook
Load Over Pivot Center
No Rotational Force
Weight of the Boat Holds the Hook Closed



Inherently Unstable Hook
Load Not Over Pivot Center
Rotational Force
Weight of the Boat Opens the Hook



Function of the Hydrostatic Interlock and Pin in an Unstable Hook

The hydrostatic interlock and pin serve a **valuable function** in an unstable hook system.

Due to a hook design that uses the weight of the boat to open the hook, the hooks are in an unstable condition when the lifeboat is suspended above the sea. It is therefore desirable to add additional safety features to prevent a premature release. Without these features it would be possible for an operator to operate the standard release handle and unintentionally release the lifeboat when suspended above the sea, with potentially catastrophic consequences.

Function of the Hydrostatic Interlock and Pin in a Stable Hook

The hydrostatic interlock and pin serve **no positive function** in a stable hook.

A stable hook uses the weight of the boat to hold the hooks closed. When the lifeboat is suspended above the sea the whole weight of the boat is holding the hooks closed. It is not possible for an operator to operate the standard release handle and unintentionally release the lifeboat when suspended above the sea, as the entire weight of the boat is holding the hooks closed. The addition of a hydrostatic interlock and pin would therefore serve no purpose.

Negative Aspects of Hydrostatic Interlocks and Pins

There are negative aspects associated with the use of hydrostatic interlocks and pins.

Hydrostatic interlocks require regular maintenance and if incorrectly maintained can malfunction. Improperly maintained hydrostatic interlocks have been known not to engage correctly when the lifeboat is suspended above the sea. In such a case they cannot prevent a premature release. They have also been known to remain engaged when the boat is in the water and hamper the release of the hooks when the lifeboat reaches the sea.

Hook pins are only of value if operators remember to manually insert the pins. In addition, if an operator neglects to remember to manually remove the pin in an emergency, the lifeboat will not be able to release from its cable.

Positive Impact for Unstable Hooks

For inherently unstable hook systems the ability of a hydrostatic interlock and pin to prevent the premature release of the hooks outweighs the negatives associated with these elements.

Negative Impact for Stable Hooks

Inherently stable hooks receive no benefit from hydrostatic interlocks or pins, however inclusion of these will impose the negatives associated with these elements.

Conclusion

Addition of hydrostatic interlocks or pins to unstable hooks is recommended. They add additional safety features to an inherently unstable design.

Addition of hydrostatic interlocks or pins to stable hooks is not recommended. They add no positive benefit, and in fact have a negative impact, to inherently stable hooks.
