

Vessel stability

The owner of every fishing vessel **must** have vessel documentation on board that is readily accessible to crew members and describes vessel characteristics, including stability.

Prior to sailing

Before leaving port, your vessel **must** be ready and capable to travel. Consider the following:

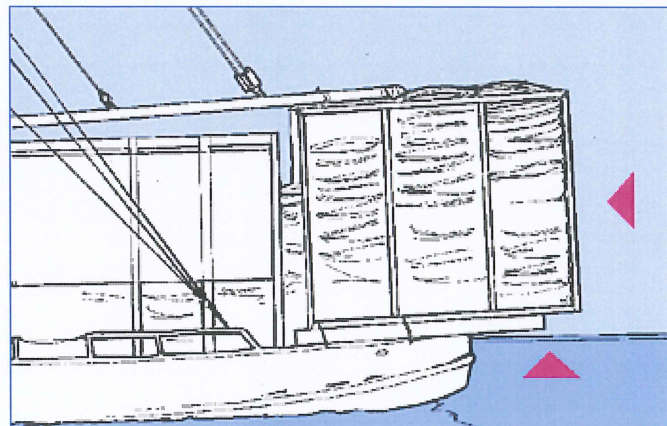
- The vessel **must** be seaworthy. The vessel **must** be watertight and equipment **must** be secured. Vessel stability is improved if fuel and water tanks are full, the boom is down, and weights (such as nets) are kept low.
- All cargo, fuel containers, other supplies, and the skiff – if your vessel has one – **must** be safely stored and secured.
- The vessel **must** be safely ballasted.
- Consideration **must** be given to current and forecast weather conditions.

See Appendix B for a checklist you can use or adapt to identify concerns with your vessel's systems, equipment, and supplies.

Threats to stability

Modifications (additions, change fishery/gear type)

- Typical modifications may include a larger drum, heavier net, a raised drum for more deck clearance, a larger winch, extended stern ramp, holds converted from dry to wet stowage, outfitting weights added high on the mast or superstructure, a shift from dead skiff to power skiff, a new platform on deck for traps, a full load of traps on deck, and the addition of live tanks.
- Record modifications to the vessel on the form found at www.tc.gc.ca/eng/marinesafety/bulletins-2008-01-eng.htm.



- Have major modifications to the vessel – such as trap extensions, wheelhouse alterations, and tank redesigns – thoroughly checked. Such modifications must be verified by a knowledgeable professional such as a naval architect.

Weight creep

- When carrying unnecessary spare parts
- From time to time, take an inventory and remove what is not needed on board

Extreme trim

- When weight is loaded at the stern or bow

Added weight

- When drying up, travelling with skiffs and net on the drum or with punts on board
- When towing skiffs and net

Reduced freeboard

- Due to loading, extra gear on board, and vessel modifications

Slack tanks and free surface effect

- Keep scuppers and freeing ports clear to allow water to quickly drain from the deck.

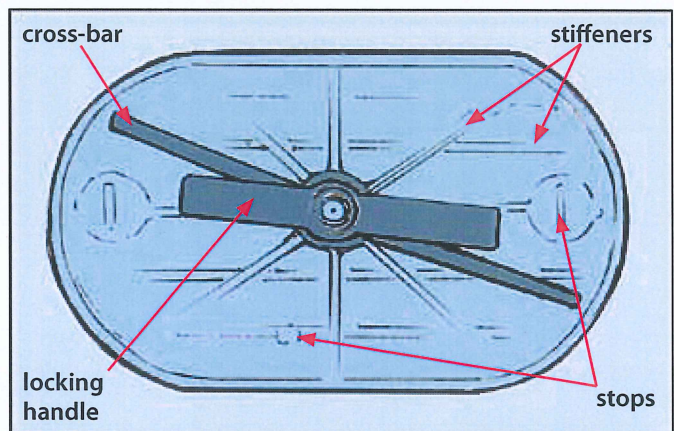
- Manage tanks to minimize free surface and its impact on stability. Be aware that packing fish wet compared to packing dry increases the total cargo weight by almost 30 percent. You may need to reduce your fish tank's volume accordingly to ensure adequate freeboard and stability.
- Avoid slack fish tanks whenever possible. Especially when in transit or when loading over the side, fish tanks should be either fully pressed or completely empty.

Watertight integrity

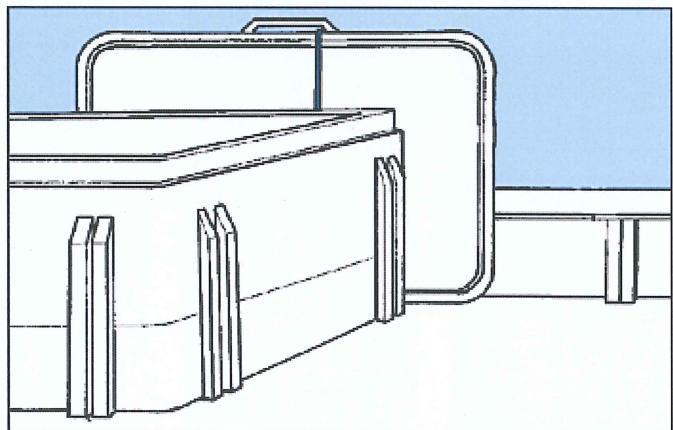
Water entering the hull decreases freeboard and increases free surface effect. Potential down-flooding points include doors, hatches, scuttles, and portholes.

- Make someone responsible for checking doors, windows, and hatch closures regularly to ensure that the seals are still effective.
- Stress the importance of keeping openings securely closed when underway, except when being used.
- **Single crossbar-type hatch covers**
Assessment by the Transportation Safety Board of the design, operation, maintenance, and seating of the hatch covers indicated the hatches are susceptible to failure. This results in leakage and, in extreme cases, down-flooding, which leads to the loss of stability and the loss of the vessel. Owners of vessels fitted with this type of hatch are strongly encouraged to:
 - Inspect the hatches for material defects
 - Contact the manufacturer for any operation and maintenance instructions, and conduct the recommended maintenance

- Ensure that the hatches will maintain watertight integrity under all conditions of operation
- Demonstrate to all crew members the correct operation of the hatches and point out potential problems with their operation and maintenance

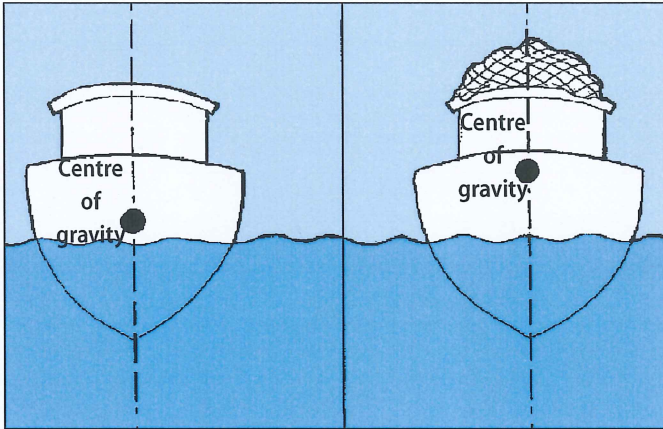


View of the underside of a single crossbar-type hatch cover.

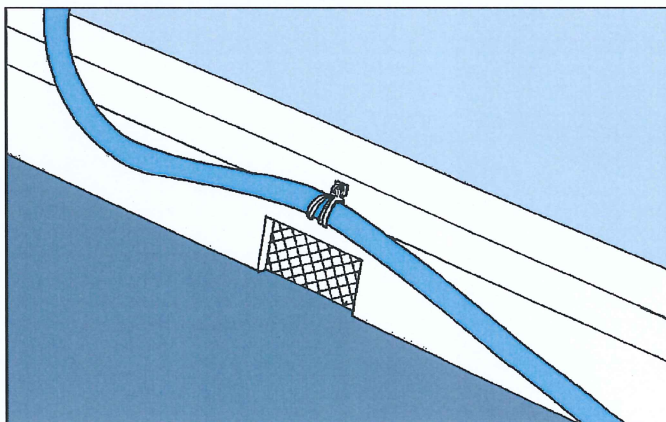


After removing hatch covers, secure them so they won't slide or shift.

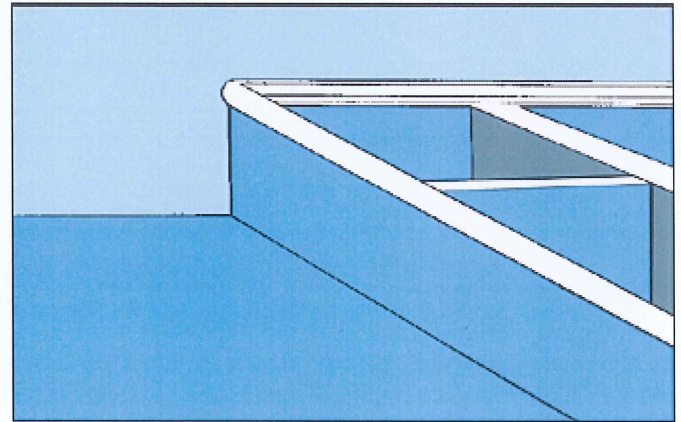
Other strategies for maintaining vessel stability include the following:



- Keep weight in the vessel as low as possible. This makes the vessel more stable and less likely to capsize. Make sure the vessel is not overloaded because overloading can cause the vessel to be unstable.



- Make sure scuppers are not blocked by equipment, tools, hoses, lines, or debris. Blocked scuppers can pose a serious hazard, especially in rough seas.



- Be aware of open tanks. Cover tanks after delivering or unloading fish. Secure them in heavy weather to keep water from sloshing out of the tanks. Water loss from the tanks can lead to free surface effect and related stability problems.

**Fish Harvesting Alert:
Vessels Capsizing and Lives Lost**

How stable is your vessel when you modify it for the same fishery?

<p>All Equipment Secured The vessel's stability is affected by the weight and location of equipment. Securing equipment is a key factor in maintaining the vessel's stability.</p>	<p>Center of Gravity The vessel's stability is affected by the location of the center of gravity. A low center of gravity is a key factor in maintaining the vessel's stability.</p>	<p>Freeboard The vessel's stability is affected by the height of the freeboard. A high freeboard is a key factor in maintaining the vessel's stability.</p>
<p>Margin of Safety The vessel's stability is affected by the margin of safety. A high margin of safety is a key factor in maintaining the vessel's stability.</p>	<p>Stability The vessel's stability is affected by the stability. A high stability is a key factor in maintaining the vessel's stability.</p>	<p>WorkSafe BC The vessel's stability is affected by the work. A high work is a key factor in maintaining the vessel's stability.</p>

Instruct all crew members in vessel characteristics — including stability.

For more information about vessel stability, refer to the WorkSafeBC pamphlet, *Fish Harvesting Alert: Vessels Capsizing and Lives Lost*, available online at www2.worksafebc.com/j/posters/2005/fishing_stability_2005.htm.