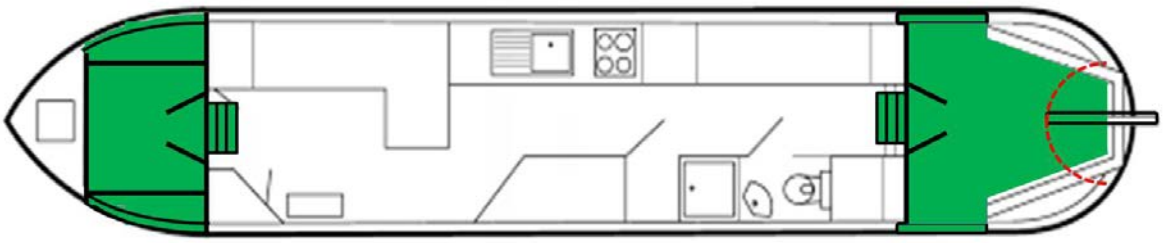
This appendix provides additional information concerning the requirement for all designated external Crew Areas, companionway steps, and boarding planks to be provided with suitable slip-resistant surfaces.

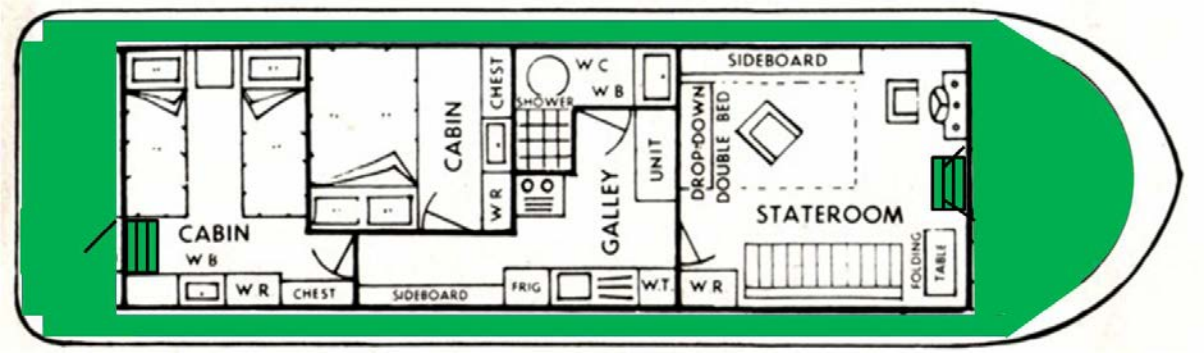
This appendix add detail to the following topics

The BSS requirement for suitable slip-resistant surfaces applies only to those external Crew Areas, as designated by the hire boat operator.

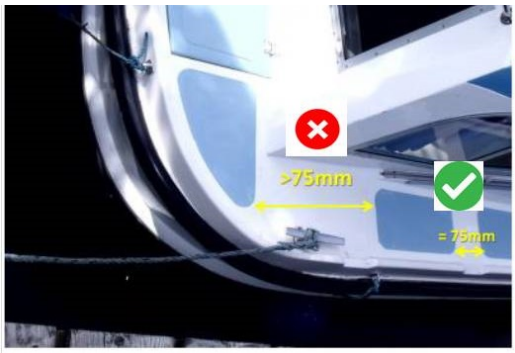
Companionway steps designated by the hire operator for hirers to enter the interior of the boat from an external Crew Area are included in this requirement, as are boarding planks.



It is recommended that hire operators include all areas on the exterior of the boat where hirers are permitted to walk and/or stand. It is possible that information in the following format will be found displayed on the boat or be provided for hirers within an information folder.



It is essential to avoid gaps in suitable slip-resistant surfaces - Gaps can be caused by a) a break in the continuity of the slip resistant surface (see example 1 below); b) degradation of the existing surface through wear or damage (see example 2 below) or c) contamination of the existing surface; examples include fuel, oil, grease, anti-freeze solution, sewage, toilet tank additives etc and organic growth over the winter period. **Any gaps must not be greater than 75mm (for non-glazed areas)**

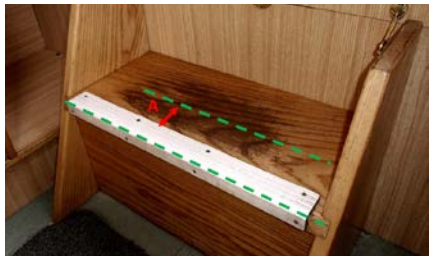


Example 1

Example 2

Small deck fittings on which hirers occasionally stand, such as deck filling points, Desmo-type table leg bases, cleats and winches are exempt from requirements for suitable slip-resistant surfaces.

There is no requirement for suitable slip-resistant surfaces to extend to the outer edges of individual external Crew Areas, boarding planks or companionway steps, but hire operators are recommended to determine through risk assessment where to terminate suitable slip-resistant surfaces, particularly in regard to step and deck edges.



Suitable slip-resistant surfaces on 'companionway steps' need not be continuous, but there must be no gaps greater than 75 mm on the leading edge of each step. The leading edge

The leading edge extends from the front edge half-way towards the back edge of each step, therefore to be compliant, the gap 'A' below must be less than 75mm.

Any gaps must not be greater than 500 mm for glazed areas (e.g. deck hatch)

Hire operators are recommended to follow the hatch maker's recommendations for suitable slip-resistant coverings.

Measurements to establish any gaps apply along the edge of hatches and not diagonally across.

Any loose coverings in place to provide a suitable slip-resistant surface, such as rubber mats or gratings must not be capable of unintended movement.

Such coverings must be held in place by fixings or by the layout of adjacent boat structures

All types of slip-resistant surfaces found on hire boats during an extensive review were considered acceptable.

Suitable slip-resistant surfaces are those intentionally prepared, machined, covered, moulded, etc. to provide increased adherence between the foot (or shoe) and the surface of the deck.

The information below covers the surfaces assessed during an extensive review carried out by the BSS. Note that embossed metal plate must be covered/painted with a suitable slip-resistant coating.

When selecting slip-resistant surfaces hire operators are recommended to choose on the basis of their longevity and slip resistant performance as indicated by the manufacturer.

It is essential to remove contamination from slip-resistant surfaces

Contamination of slip-resistant surfaces can significantly degrade the effectiveness of the slip-resistant surfaces.

It is recommended that as part of hire boat turn-round routines, hire operators take the opportunity prior to the hire to inspect and if necessary remove any contaminates from slip-resistant surfaces, such as fuel, oil, grease, anti-freeze solution, sewage, toilet tank additives etc.

It is also recommended to introduce a calendar-based schedule of deeper cleaning (as recommended by the slip-resistant material / coating manufacturers), to avoid any 'layering' of contaminants.

Man-made boards with phenolic coatings (WISA, BUFFALO etc)

Gaps to the extent that the phenolic coating is missing where the plywood substrate is exposed can be visually assessed by reference to changes in the reflectivity of the surface under normal light conditions. Under both wet and dry conditions, gap areas appear dull when compared to the surrounding material (helm position circled the image). When contaminated, subtle changes of surface colouration are evident and vary by degree dependent upon the contaminant in place (arrowed in the image). Regardless of whether the board surface is eroded (partially or completely) or contaminated, the Examiner will establish (by measurement) that the extent of the gap does not exceed the 75 mm break in continuity of the slip-resistant material/finish.

Polymer-bonded embossed / plain sheeting (TREADMASTER)

While the likelihood of encountering gaps caused by wear in polymer-bonded embossed/plain sheeting surfaces is highly unlikely, it is possible that surface could sustain impact damage.

The Examiner will establish (by measurement) that the extent of the gap does not exceed the 75 mm break in continuity of the slip-resistant material/finish.

Integral (moulded) FRP slip resistant surfaces

While the likelihood of encountering gaps caused by wear in moulded FRP surfaces is highly unlikely. The Examiner will establish (by measurement) that the extent of the gap does not exceed the 75 mm break in continuity of the slip-resistant material/finish.

Proprietary slip-resistant paints

(with suspended aggregate or natural /synthetic beads and proprietary paint additives (aggregates, natural / synthetic beads)

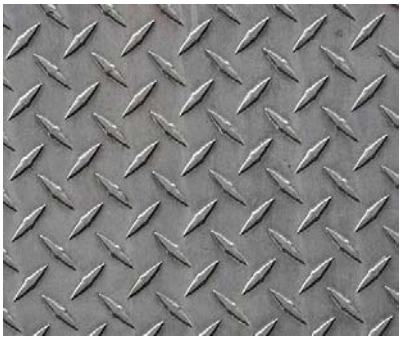
Gaps in the slip-resistant surface include those where the underlying finish (primers & undercoats) are exposed or provides visibility of the basic hull / superstructure material (steel, aluminium, GRP or wood). An example of coating wear exposing underlying primer is depicted in the image.

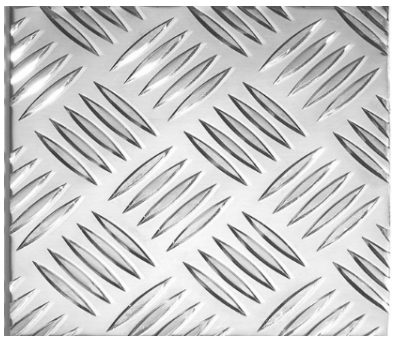
The Examiner will establish (by measurement) that the extent of the gap does not exceed the 75 mm break in continuity of the slip-resistant material/finish.

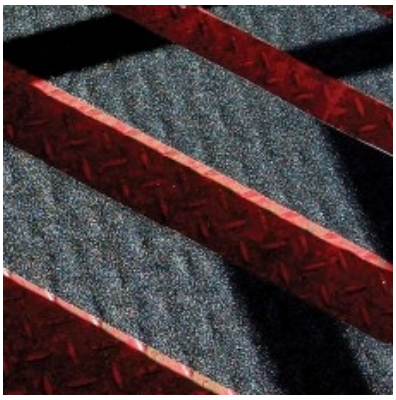
Adhesive tapes (bonded natural aggregate / synthetic bead)

Following risk assessment, some operators may elect to enhance the slip-resistant properties of rounded edges (particularly on GRP craft). Where gaps exist, the Examiner will establish (by measurement) that the break in continuity of the slip-resistant material/finish does not exceed 75 mm.

Embossed metal plate







In the event embossed steel or alloy plate is found this will need to be covered/painted with a suitable slip-resistant coating.

O.i DOWNFLOODING

Downflooding – downflooding occurs when river/canal water flows into the interior of a vessel through a hull opening above the normal waterline (which has the potential to sink the vessel).

Downflooding point - for any such hull opening the downflooding point is the actual point/location at which the river/canal water would cease to be held back by the vessel's structures and instead would start to flow unrestricted into the interior of the vessel.

Downflooding height – the vertical height of the downflooding point above the normal laden waterline (n.l.w.l.).

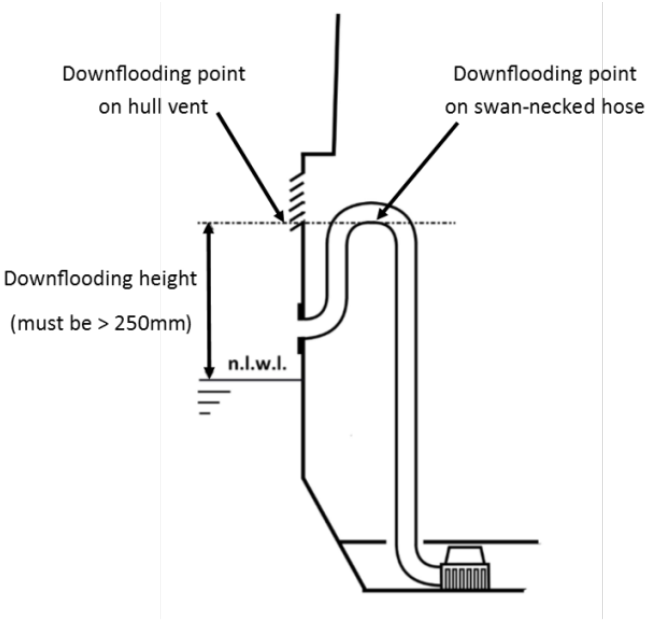


Fig 1 - Downflooding

O.ii SUMMARY OF CHECKING ACTIONS AND REQUIREMENTS

For hull openings where there is a potential risk of downflooding (where the hull opening is open to the interior of the vessel) the BSS requirement is that the downflooding height must be at least 250mm.

Examiners must apply a thorough and systematic approach to checking hull openings and establishing whether the associated downflooding heights are compliant:

a) Start by visually checking all openings in the hull up to the deck and measure their height above the n.l.w.l. All openings greater than 250mm above the n.l.w.l. are compliant and no further checking is required.

b) For hull openings within 250mm of the n.l.w.l. the next step is to determine whether the opening is connected to a watertight system. If the associated system within the boat is watertight to the interior of the vessel then there is no risk of downflooding occurring. Examples of potentially watertight systems are shown at section **O.4** (below). Where they can be seen or reached, examiners must check the condition of the skin fitting and internal pipes, hoses, ducts, connections and other associated vessel structures – if such items are found to be in good condition examiners may consider the hull opening to be watertight and therefore compliant. However, if examiners find that the integrity of a watertight system has been compromised then this should be reported to the hire operator and recorded on Salesforce as a non-compliance.

O.ii SUMMARY OF CHECKING ACTIONS AND REQUIREMENTS CONTINUED

c) For hull openings within 250mm of the n.l.w.l. not connected to a watertight system the next step is to establish the actual downflooding point and to measure the downflooding height:
   - If the bottom of the hull opening is the downflooding point (e.g. on a hull vent) then it will not be compliant as the downflooding height will be less than 250mm.
   - Where the actual downflooding point is inboard of the hull (e.g. on a swan-necked bilge pump discharge hose), establish the actual downflooding point and measure the downflooding height. If the downflooding height is less than 250mm it's not compliant. If the downflooding height is 250mm, or greater, then the height itself is compliant, but examiners must check the condition of the skin fitting and internal pipes, hoses, ducts, connections and other associated vessel structures where they can be seen or reached. If examiners find that the integrity of skin fitting, or internal pipes, hoses, ducts, connections or other associated vessel structures between the skin fitting and the downflooding point have been compromised then this should be reported to the hire operator and recorded on Salesforce as a non-compliance.

d) If the downflooding height above the n.l.w.l of a downflooding point within a self-draining cockpit or well deck does not meet the 250mm requirement then an alternative compliance option is available as explained at section **O.5** (below).

Note – examiners are only required to check internal pipes, hoses, ducts, connections and other associated vessel structures, whether these are associated with a watertight system or a downflooding point, where they can be seen or reached. In circumstances where a hull opening is found to be within 250mm of the normal laden waterline but the internally connected pipes, hoses, ducts or other associated vessel structures, etc, cannot be seen or reached, and therefore the watertightness or downflooding height cannot be confirmed, examiners are recommended to bring the presence and location of the hull opening to the hire operator's attention and to make appropriate notes on their checklist, but the opening cannot be recorded as being non-compliant.

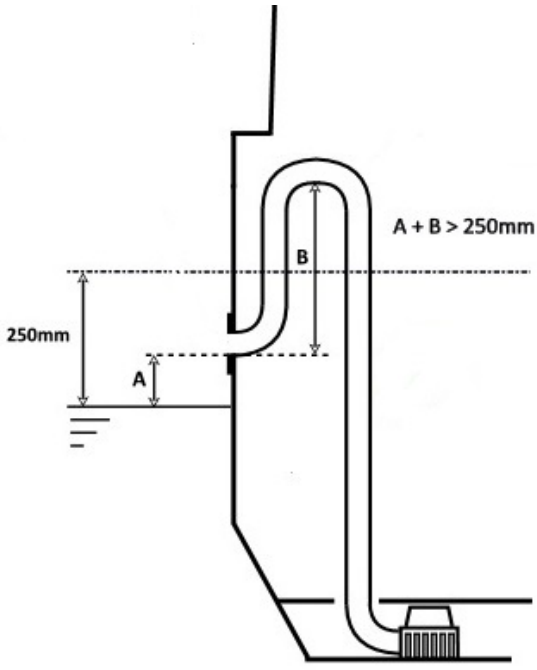
O.iii MEASURING DOWNFLOODING HEIGHTS

It's important to always measure downflooding heights accurately.

This is relatively easy to achieve when the downflooding point is the bottom of the hull opening (e.g. on a hull vent), but can be more involved when the downflooding point is inboard of the hull side (e.g. on a swan-necked bilge pump, or the coaming around a cockpit deck hatch).

In such circumstances it will often be necessary to extrapolate the downflooding height having measured to an accessible datum point/s.

Fig 2 – Measuring downflooding heights

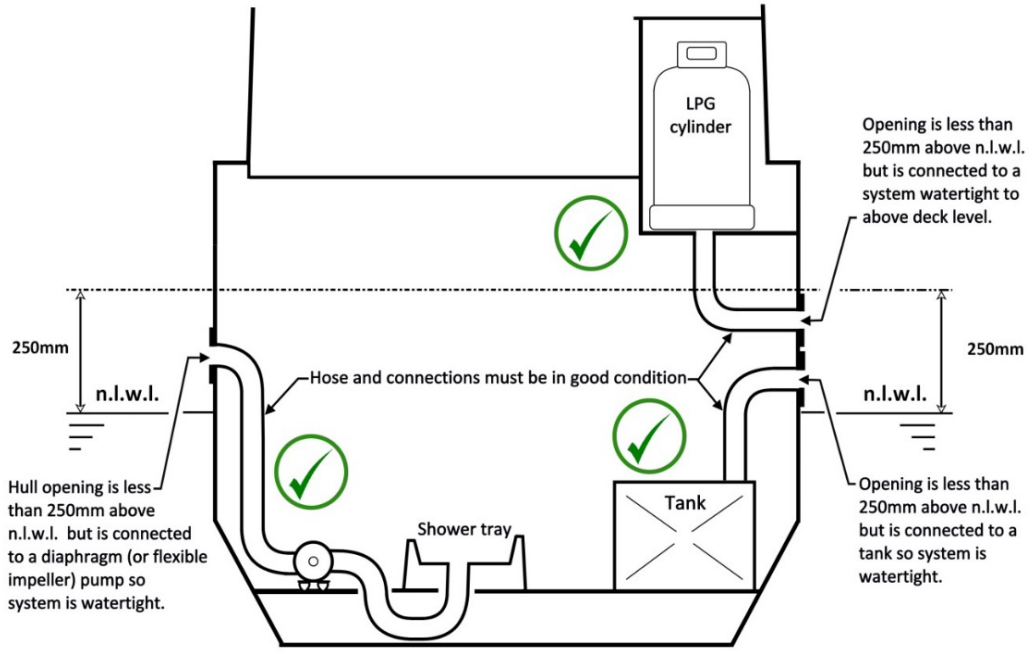


O.iv SYSTEMS WATERTIGHT TO THE INTERIOR OF THE VESSEL

A hull opening is watertight to the interior of the vessel if river/canal water cannot potentially flow into the interior of the vessel through the opening (either directly or via internally connected pipes, hoses, ducts, or vessel structure, etc). The following are examples of potentially watertight systems:

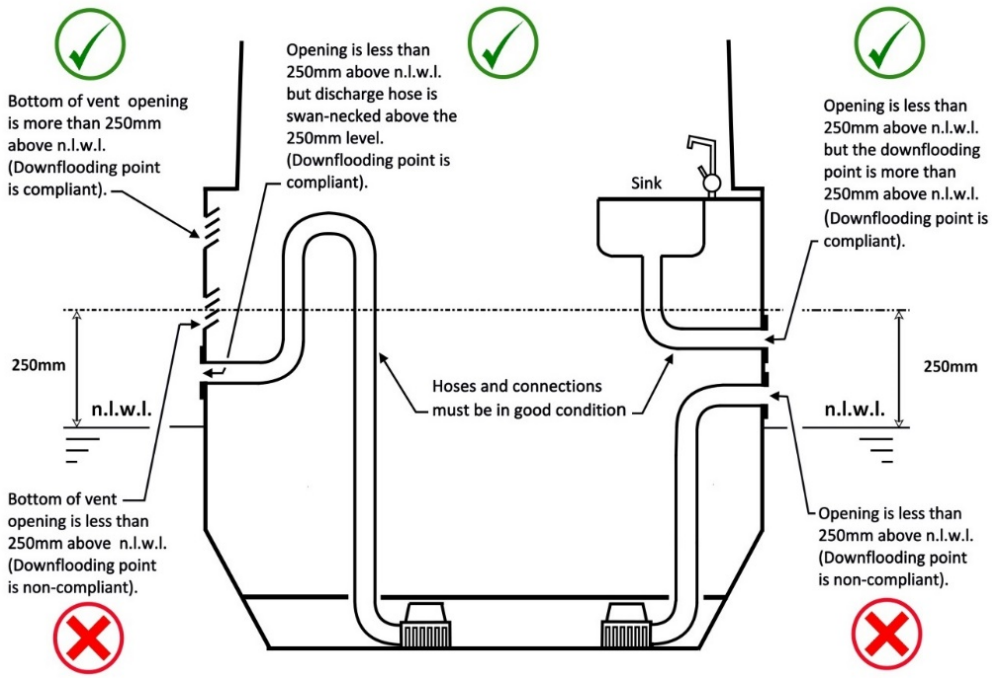
- Internal combustion engine exhausts (note - generally, exhaust systems on diesel heaters will not be watertight)
- Installations where internal pipework, etc, is connected directly to a diaphragm pump
- Installations where internal pipework, etc, is connected directly to a pump incorporating a flexible impeller within an housing
- Installations incorporating a non-return valve
- Tank systems (e.g. water tanks, and toilet holding tanks)

Fig 3 – Examples of systems watertight to the interior of the vessel



O.v EXAMPLES OF COMPLIANT AND NON-COMPLIANT DOWNFLOODING POINTS

Fig. 4



O.vi DOWNFLOODING POINTS WITHIN SELF-DRAINING COCKPITS AND WELL DECKS

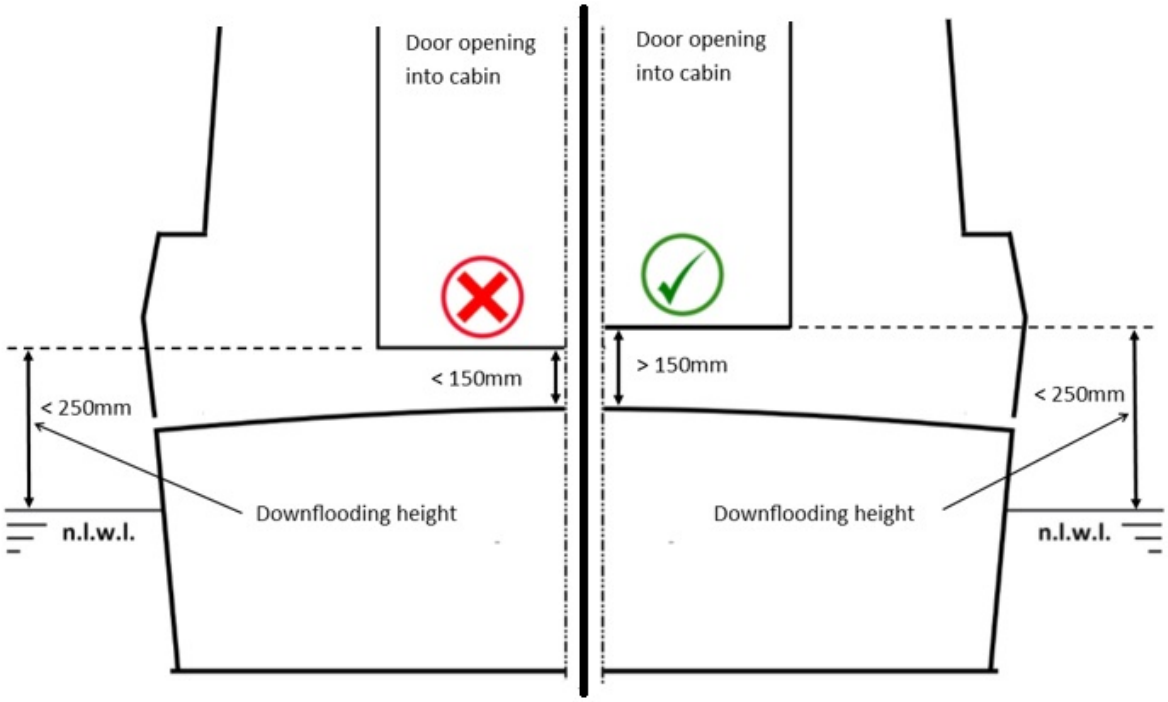
When assessing downflooding points within self-draining cockpits and well decks examiners should always start by determining whether the downflooding height is 250mm or greater. If the downflooding height is compliant (≥ 250mm) no further checking is necessary. However, as set out below, an alternative compliance option is permitted for downflooding points within self-draining cockpits and well decks.

ALTERNATIVE COMPLIANCE OPTION

Within self-draining cockpits and well decks the downflooding height may be less than 250mm provided the least height from the cockpit or well deck to the lowest downflooding point into the interior of the vessel is 150mm, or greater.

Fig 5 – Narrowboat well deck - example

The downflooding height is less than 250mm, so the actual downflooding height is non-compliant. However, the least height from the well deck to the downflooding point is greater than 150mm so downflooding is compliant with alternative compliance option



Note – to benefit from the alternative compliance option the cockpit or well deck must be watertight to the interior of the vessel to a height of at least 150mm above the deck. As such, where a cockpit or well deck is cambered it is the vertical height from the highest part of the deck to the lowest downflooding point which must be 150mm or greater.

Fig 5c – Narrowboat well deck - example

The downflooding height to the door opening (sill) is less than 250mm, so the actual downflooding height is non-compliant. However, provided the well deck is watertight to the interior of the vessel to a minimum height above the well deck of 150mm the downflooding point is compliant with the alternative compliance option

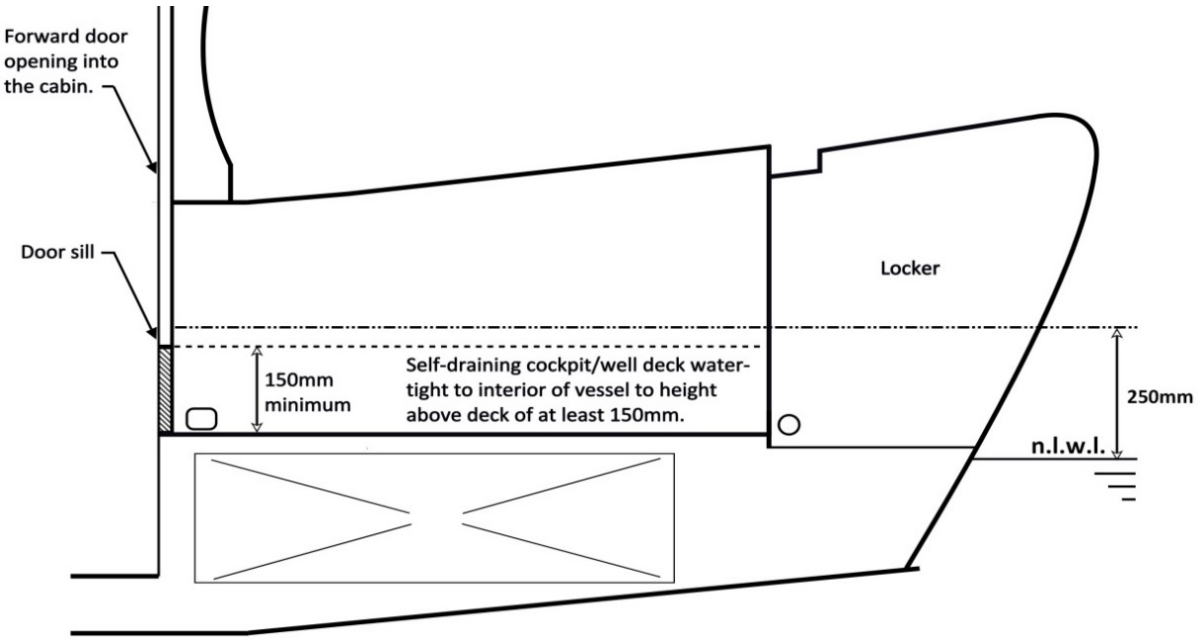


Fig 5d – Cruiser cockpit - example

The downflooding height to the door opening (sill) is less than 250mm, so the actual downflooding height is non-compliant. However, provided the cockpit deck is watertight to the interior of the vessel to a minimum height above the cockpit deck of 150mm the downflooding point is compliant with the alternative compliance option.