

D7 Watertight integrity

(1979)
(Rev.1
1990)
(Rev.2
1996)
(Rev.3
Jan
2012)

D7.1 Watertight boundaries

D7.1.1 All units are to be provided with watertight bulkheads as may be required by the Rules. In all cases, the plans submitted are to clearly indicate the location and extent of the bulkheads. In the case of column stabilized drilling units, the scantlings of the watertight flats and bulkheads are to be made effective to that point necessary to meet the requirements of damage stability and are to be indicated on the appropriate plans.

D7.1.2 All surface type units are to be fitted with a collision bulkhead as may be required by the Rules. Sluice valves, cocks, manholes, watertight doors, etc., are not to be fitted in the collision bulkhead. Elsewhere, watertight bulkheads are to be fitted as necessary to provide transverse strength and subdivision.

D7.2 Tank boundaries

D7.2.1 Tanks for fresh water or fuel oil, or any other tanks which are not intended to be kept entirely filled in service, are to have divisions or deep swashes as may be required to minimize the dynamic stress on the structure. Tight divisions and boundary bulkheads of all tanks are to be constructed in accordance with the Rules. The arrangement of all tanks-, together with their intended service and the height of the overflow pipes, is to be clearly indicated on the plans submitted for approval. Consideration is to be given to the specific gravity of the liquid in the tank.

D7.2.2 Tanks are to be tested in accordance with the Rules.

D7.3 Boundary penetrations

D7.3.1 Where watertight boundaries are required for damage stability, they are to be made watertight throughout, including piping, ventilation, shafting, electrical penetrations, etc. For compliance with the requirements of damage stability, D3.7.3, where individual lines, ducts or piping systems serve more than one compartment or are within the extent of damage, satisfactory arrangements are to be provided to preclude the possibility of progressive flooding through the system to other spaces, in the event of damage.

D7.3.2 Piping systems and ventilation ducts designed to watertight standards of the type mentioned in D7.3.1 are to be provided with valves in each compartment served. These valves are to be capable of being remotely operated from the weather deck, pump room or other normally manned space. Valve position indicators are to be provided at the remote control stations.

D7.3.3 Non-watertight ventilation ducts as mentioned in D7.3.1 are to be provided with watertight valves at the subdivision boundaries and the valves are to be capable of being operated from a remote location, with position indicators on the weatherdeck, or in a normally manned space. For self-elevating units, ventilating systems which are not used during the transit operations may be secured by alternative methods, subject to special consideration.

Notes:

1. This UR apply to mobile offshore drilling units contracted for construction on and after 1 January 2013.
2. The "contracted for construction" date means the date on which the contract to build the vessel is signed between the prospective owner and the shipbuilder. For further details regarding the date of "contract for construction", refer to IACS Procedural Requirement (PR) No. 29.

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D7.4 Closures

D7.4.1 General

External closing appliances are to be as prescribed by applicable load line requirements. Special consideration will be given to openings in the upper deck of column stabilized units.

D7.4.2 General requirements related to watertight integrity.

- (1) ~~External openings fitted with appliances to ensure watertight integrity, such as air pipes (regardless of closing appliances), ventilators, ventilation intakes and outlets, non-watertight hatches and weathertight doors, which are used during operation of the unit while afloat, are not to submerge when the unit is inclined to the first intercept of the righting moment and wind heeling moment curves in any intact or damaged condition. These openings include air pipes (regardless of closing appliances), ventilators, ventilation intakes and outlets, non-watertight hatches and weathertight doors. Openings, such as side scuttles of the non-opening type, manholes and small hatches, which are fitted with appliances to ensure watertight integrity, may be submerged*. Small hatches, normally used for access by personnel, which may be submerged, are to be closed by approved quick-acting watertight covers of steel or equivalent material. An alarm system (e.g. light signals) is to be arranged showing personnel, both locally and at a central position, whether the covers in question are open or closed. In addition, a signboard to the effect that the closing appliances are to be closed while the unit is afloat, and is only to be used temporarily, is to be fitted locally. Such openings are not to be regarded as emergency exits. Where flooding of chain lockers or other buoyant volumes may occur, the openings to these spaces should be considered as downflooding points.~~

* Such openings are not allowed to be fitted in the column of stabilized units (See D5.3).

- (2) External openings fitted with appliances to ensure watertight integrity, which are kept permanently closed while afloat, are to comply with the requirements of D7.4.2 (4).
- (3) Internal openings fitted with appliances to ensure watertight integrity, ~~which are used during operation of the unit while afloat,~~ are to comply with the following:
- (i) ~~Doors are to be capable of being remotely controlled from a central position (ballast control room) as well as being operable locally from both sides of the bulkhead.~~
Doors and hatch covers which are used during the operation of the unit while afloat should be remotely controlled from the central ballast control station and should also be operable locally from each side. Open/shut indicators should be provided at the control station. In addition, remotely operated doors provided to ensure the watertight integrity of internal openings which are used while at sea are to be sliding watertight doors with audible alarm. The power, control and indicators are to be operable in the event of main power failure. Particular attention is to be paid to minimizing the effect of control system failure. Each power-operated sliding watertight door shall be provided with an individual hand-operated mechanism. It shall be possible to open and close the door by hand at the door itself from both sides.
- (ii) ~~The requirements regarding remote control under (i) may be dispensed with provided an alarm system (e.g. light signals) is arranged showing personnel, both locally and at a central position, whether the doors in question are open or closed. Hatch covers required for watertight integrity are to have similar alarms. In~~

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~~addition, a signboard to the effect that the closing appliance is to be closed while afloat and is only to be used temporarily, is to be fitted locally.~~

Doors or hatch covers in self-elevating units, or doors placed above the deepest load line draft in column-stabilized and surface units, which are normally closed while the unit is afloat may be of the quick acting type and should be provided with an alarm system (e.g., light signals) showing personnel both locally and at the central ballast control station whether the doors or hatch covers in question are open or closed. A notice should be affixed to each such door or hatch cover stating that it is not to be left open while the unit is afloat.

- (iii) The closing appliances are to have strength, packing and means for securing which are sufficient to maintain watertightness under the design water pressure of the watertight boundary under consideration.
- (4) Internal openings fitted with appliances to ensure watertight integrity, which are to be kept permanently closed while afloat, are to comply with the following:
 - (i) A signboard to the effect that the opening is always to be kept closed while afloat is to be fitted on the closing appliance in question.
 - (ii) Opening and closing of such closure devices should be noted in the unit's logbook, or equivalent.
 - (iii) Manholes fitted with bolted covers need not be dealt with as under (i).
 - (iv) The closing appliances are to have strength, packing and means for securing which are sufficient to maintain watertightness under the design water pressure of the watertight boundary under consideration.

D7.4.3 General requirements related to weathertight integrity.

- (1) ~~External openings fitted with appliances to ensure weathertight integrity, which are used during the operation of the unit while afloat are not to submerge when the unit is inclined to an angle necessary to comply with the requirements of D3.8.1. Additionally, for column stabilized units such openings are not to submerge within the range necessary to comply with the requirements of D3.8.3 (2)(b) and D3.8.3 (3)(b) and within a zone measured 4.0 m perpendicularly above the final damaged waterline per D3.8.3 (2)(a). Refer to Fig.3.~~

Any opening, such as an air pipe, ventilator, ventilation intake or outlet, non-watertight sidescuttle, small hatch, door, etc., having its lower edge submerged below a waterline associated with the zones indicate in (i) or (ii) below, is to be fitted with a weathertight closing appliance to ensure the weathertight integrity, when:

- (i) a unit is inclined to the range between the first intercept of the right moment curve and the wind heeling moment curve and the angle necessary to comply with the requirements of D3.8.1 during the intact condition of the unit while afloat; and
- (ii) a column stabilized unit is inclined to the range:
 - a) necessary to comply with the requirements of D3.8.3 (2)(b) and with a zone measured 4.0 m perpendicularly above the final damaged waterline per D3.8.3 (2)(a) referred to Fig.4, and
 - b) necessary to comply with the requirements of D3.8.3 (3)(b).

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- (2) External openings fitted with appliances to ensure weathertight integrity, which are kept permanently closed while afloat, are to comply with the requirements of D7.4.2(4) (i) and (ii).

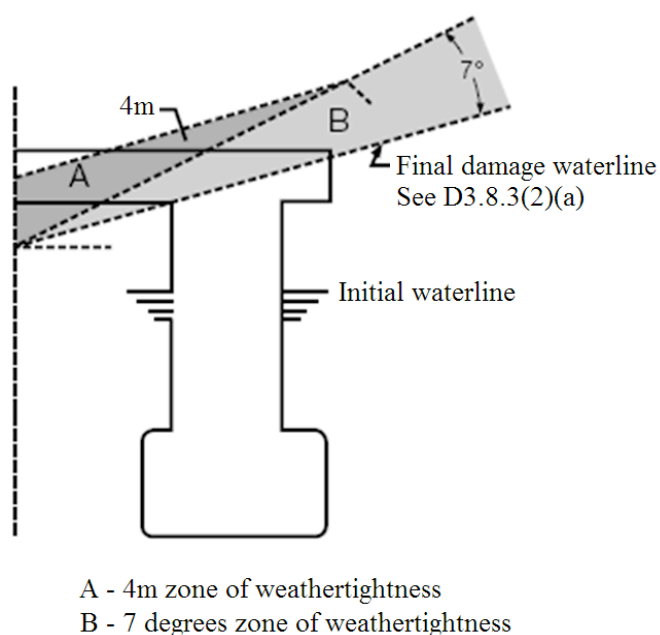
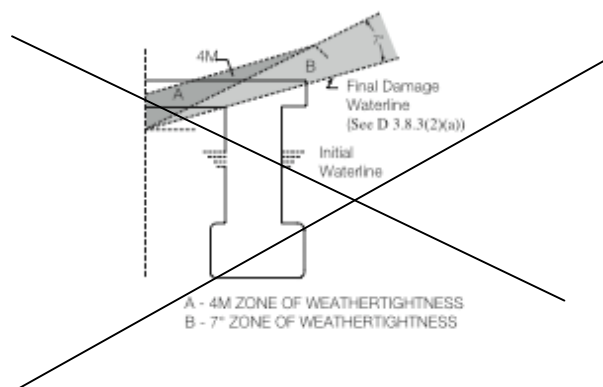


Fig. 34

Minimum weathertight integrity requirements for column stabilized units

- (34) External openings fitted with appliances to ensure weathertight integrity, which are secured while afloat are to comply with the requirements of D7.4.32(23) (i) and (ii).

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