§ 178.430 Drainage of well deck vessels.

(a) The weather deck on a well deck vessel must be watertight.
(b) The area required on a well deck vessel for drainage of well formed by the bulwarks shall be determined by §178.450.
(c) The freeing ports or scuppers on a well deck vessel must:
   (1) Be located to allow rapid clearing of water in all probable conditions of list and trim;
   (2) Have a combined drainage area of at least the area required by §178.450 of this part; and
   (3) If the deck is less than 255 millimeters (10 inches) above the deepest load waterline of the vessel, be fitted with non-return devices.

§ 178.440 Drainage of open boats.

The deck within the hull of an open boat must drain to the bilge. Overboard drainage of the deck is not permitted.

§ 178.450 Calculation of drainage area for cockpit and well deck vessels.

(a) The drainage area required on a vessel must be computed using the following formula:

For protected waters required drainage = \(0.1 \times \text{Basic Drainage}\)
For partially protected waters required drainage = \(0.5 \times \text{Basic Drainage}\)
For exposed waters required drainage = \(\text{Basic Drainage}\)

where:

- Basic Drainage area in centimeters\(^2\) = \(4389.12 \times \left[ (\text{Recess Volume} \times \text{Recess Ratio}) + (\text{Weather Deck Volume} \times \text{Weather Deck Ratio}) \right]\)
- Basic Drainage area in inch\(^2\) = \((\text{Recess Volume} \times \text{Recess Ratio}) + (\text{Weather Deck Volume} \times \text{Weather Deck Ratio})\)
- Recess Volume = \((B_R \times D_R) - V_R\)
- \(B_R\)=average height in centimeters (feet) of the bulwark above the well deck or cockpit deck;
- \(D_R\)=total deck area of the cockpit or well deck in the after \(\frac{2}{3}\) of the vessel length (LOD) measured in centimeters\(^2\) (feet\(^2\)).
- \(V_R\)=volume of any weather tight structure below the bulwark of the well deck or cockpit deck.
- Recess Ratio = \(L_R / L_C\)
- \(L_R\)=the length of the recess in the after \(\frac{2}{3}\) vessel length (LOD).
- \(L_C\)=\(\frac{2}{3}\) vessel length (LOD).
- Weather Deck Volume = \((B_D \times D_D) - V_S\)
- \(B_D\)=average height in centimeters (feet) of the bulwark above the weather deck;
- \(D_D\)=total deck area of the weather deck adjacent to bulwarks but not in way of the cockpit or well deck in the after \(\frac{2}{3}\) of the vessel length (LOD) measured in centimeters\(^2\) (feet\(^2\)).
- \(V_S\)=volume of any weather tight superstructure below the bulwark on the weather deck located within \(D_D\).
- Weather Deck Ratio = \(L_D / L_C\)
- \(L_D\)=the length of the weather deck bulwark in the after \(\frac{2}{3}\) of the vessel length (LOD).
- \(L_C\)=\(\frac{2}{3}\) vessel length (LOD).

(b) Vessels with bulwarks in the forward part of the vessel shall not form a well with the deckhouse which retains water.