



South African Maritime Safety Authority

Ref: SM6/5/2/1

Date: 30 October 2018

Marine Notice No. 31 of 2018

Freeing Ports

TO ALL SHIP OWNERS, SHIP OPERATORS, MASTERS, SHIPS YARDS, NAVAL ARCHITECTS AND PRINCIPAL OFFICERS

Summary

This Marine Notice explains the requirements to clear water rapidly off the weather deck, in order to retain positive reserve stability, when using freeing ports. It also describes how to determine the minimum freeing port area required for the length/height of bulwark. It further explains how to decide on the location to fit freeing ports in order to clear water rapidly off the weather deck.

MS (Construction) Regulations, 1968 – Regulation 164(4) states:

164. (4) Freeing ports shall be sufficient for the purpose of efficient drainage of water on deck, and shall be suitably situated. The area of freeing ports shall be at least one square foot per 6 feet length of bulwarks which are 30 inches high for greater heights the area shall be increased in direct proportion.

This Marine Notice applies to every vessel > 25GT, other than a ski boat, surf boat or dinghy. SAMSA further only recommends that small fishing vessels < 25GT over 9m, if fitted with freeing ports, adhere to this marine notice in order to comply with the sound design practises, as described by Regulation 6(1)(a) of the *MS (National Small Vessel Safety) Regulations, 2007* as amended.

1 FREEING PORTS

- 1.1 Freeing ports are openings in the bulwarks on open deck to allow water to rapidly drain directly overboard. A good practical guide is to ensure that trapped water could be freed within one or two ship rolls from the weather decks when a vessel is at sea.
- 1.2 Water on deck is a factor which is to be avoided in the day to day operation of a vessel. Where the weather deck is enclosed by bulwarks it must have freeing ports, to allow rapid clearing of water under all weather and sea conditions.
- 1.3 As constructional precautions against capsizing, at each survey it is to be verified that the vessel has an adequate number of freeing ports in proper locations for getting rid of water rapidly. During surveys it is a requirement for surveyors to ensure that the freeing ports are as stated i.e. for numbers, areas and, if noted, type as per the vessel's plans or written records.
- 1.4 Where this is not the case, freeing ports should be reinstated to meet the criteria as described within *Regulation 164* of the *MS (Construction) Regulations, 1968*. In particular, surveyors should check that the freeing ports are not obstructed, welded closed or impeded in any way. Notes should also be made of those on vessels where it is possible for freeing port shutters to be held open or left closed and owners reminded of the dangers of trapped water on deck. Freeing port Area should be confirmed at renewal surveys and confirmed that the actual area meets the required area.

- 1.5 If an emergency exit is located in the well formed by the bulwarks, then a good practise to apply is for freeing ports be located nearby.
- 1.6 The constructions regulations do not stipulate the required number of Freeing Port's in a specific length bulwark, but rather the ratio of minimum freeing port area relative to bulwark length specified. This means that the arrangement and number of the freeing ports shall be carefully considered to ensure the most effective drainage of water from the weather deck and then suitably spaced over the length of the bulwark. Freeing ports shall be distributed along the deck in such a way that the locations are concentrated to the areas where the collection of water on deck will be the greatest having regard to sheer, probable trim, etc.
- 1.7 Requirements have been based upon past experience and removal of water trapped on deck makes a significant contribution to the vessels safety. **Existing areas which are deficient should be increased.**
- 1.8 Lower edges of freeing ports shall be as near to the deck as is practicable.
- 1.9 Where shutters are fitted to freeing ports the surveyor should ensure that these shutters can operate freely, comply with the requirements, and any safety bars are securely attached.
- 1.10 When assessing freeing port arrangements, surveyors should consider how water could be removed from the weather deck as quickly as possible and whether freeing ports are disposed in such a way that they will achieve this. In some cases, vessel may have drain holes and/or scuppers in addition to freeing ports. Scupper discharges below the weather deck, shall be fitted with an approved non-return valve as close as possible to the hull, with an indicator whether to show whether the valve is open or closed. All valves shall be of steel, bronze or other approved ductile material. Valves of ordinary cast iron or similar material are not acceptable
- 1.11 Freeing port areas should be calculated using the following formulae:

1.11.1 Total Bulwark Area: $A_T = (B_L \times B_H)$

1.11.2 Number of Freeing Ports for Bulwark Length: $F_T = (B_L \div FP_I)$

1.11.3 Freeing Port Size for Height of Bulwark: $\frac{B_H}{B_S} = \frac{x}{F_S}$

1.11.4 Total Minimum Freeing Port Area required for Total Bulwark Area: $F_A = (F_T \times x)$

<i>Description</i>	<i>Imperial</i>	<i>Metric</i>	<i>Acronym</i>	<i>Description</i>	<i>Acronym</i>
<i>Freeing Port Standard Size</i>	<i>1ft²</i>	<i>0.092903m²</i>	<i>F_S</i>	<i>Minimum Freeing Port Area</i>	<i>F_A</i>
<i>Bulwark Height Standard</i>	<i>30 inches</i>	<i>0.762mm</i>	<i>B_S</i>	<i>Number of Freeing Ports</i>	<i>F_T</i>
<i>Freeing Port Interval</i>	<i>6ft</i>	<i>1.8288m</i>	<i>FP_I</i>	<i>Total Bulwark Area</i>	<i>A_T</i>
				<i>Bulwark Length</i>	<i>B_L</i>
				<i>Bulwark Height</i>	<i>B_H</i>
				<i>Freeing Port Size required</i>	<i>x</i>

QUICK REFERENCE: <u>ONLY</u>	
<i>Used as an <u>indication only</u>, the owner, master or surveyor may use the below ratios to provide a quick indication of the total freeing port area required. However the calculation shown <u>above</u> should be used in order to obtain the exact definitive minimum freeing port area.</i>	
<i>Minimum Length of combined Freeing Ports: (BL_{ratio})</i>	<i>Bulwark Length x 16.8% and;</i>
<i>Minimum Height of combined Freeing Ports: (BH_{ratio})</i>	<i>Bulwark Length x 40%</i>
<i>Estimated Total Minimum Freeing Port Area</i>	<i>(BL_{ratio}) x (BH_{ratio}) = m²</i>

- 1.12 In all cases, the assumption is that vessels are provided with 'adequate' sheer to assist in clearing water. However if a surveyor considers that the vessel's sheer is not sufficient to ensure that the deck is rapidly and effectively freed of water, the freeing port area calculated according to section 1.11 could be increased where a Surveyor, in consultation with a Naval Architect, deems necessary.
- 1.13 Freeing ports shall be so arranged along the length of bulwarks as to ensure that the deck is freed of water most rapidly and effectively.
- 1.14 Freeing ports over 230 millimetres in height shall be fitted with safety bars spaced not more than 230 millimetres apart or provided with other suitable protective arrangements.
- 1.15 Freeing port shutters, if fitted, shall be of suitable construction (*see section 6*).
- 1.16 Freeing ports shall not be obstructed by any freeing port boxes or chutes fitted outboard, which in effect limit the minimum freeing port area requirements and therefore likely to result in insufficient freeing port area. If fitted, then the discharge area should be the same as the Freeing Port area.
- 1.17 If deck erections within a well limit the volume of water that may be retained onboard, then the owner or owners' naval architect may apply to SAMSA for an exemption. SAMSA may exempt any ship which if satisfied that compliance therewith is unreasonable or impracticable in the circumstances. In order for a Principal Officer to consider an application, the owners' naval architect shall provide a detailed motivation, risk assessment and calculated evidence showing that any entrapped volume of water can be rapidly cleared from the weather deck without jeopardising the vessel or her crew's safety.

2 FISHING VESSELS SPECIFIC

- 2.1 In a vessel in which freeing ports cannot be fitted, other efficient means of clearing trapped water from the vessel shall be provided to the satisfaction of SAMSA.
- 2.2 The catch must be properly secured against shifting which could cause dangerous trim or heel of the vessel. The scantlings of portable fish-hold divisions, if fitted, shall be to the satisfaction of SAMSA.
- 2.3 Poundboards (*Laaitjies*) and means for stowage of the fishing gear shall be arranged so that the effectiveness of freeing ports will not be impaired. Poundboards shall be so constructed that they can be locked in position when in use and shall not hamper the discharge of shipped water.
- 2.4 On fishing vessels, freeing ports are to be completely free of any obstructions such as pots, nets or debris of any kind.
- 2.5 In fishing operations, especially when towing, or hove-to when attending to pots or nets, a problem can arise with decked vessels having fixed bulwarks, whereby water is shipped over the bulwark onto the open weather deck. This not only creates uncomfortable working conditions, but more dangerously, can lead to the accumulation of water and consequential down flooding into open or below-deck spaces, and also create a detrimental effect on stability by the introduction of "free surface effect" particularly on a large deck area. It is essential, therefore, that means of rapidly clearing entrapped water is fitted in all vessels with fixed bulwarks. At the same time, however, the means of clearing water must not provide easy access for water to enter the open deck.

3 GLASS-REINFORCED PLASTIC (GRP) VESSELS

- 3.1 Any freeing ports insert into a bulwarks should be constructed with round corners in order to prevent any undue stress at the freeing port corners.
- 3.2 Vessels should never be constructed in such a manner that the hull strength and integrity is dependent on the bulwark. However, should any owner or ship yard be concerned that the strength of the bulwark is compromised due to the size and number of the freeing ports, then the immediate area around the freeing ports should be provided with additional strength. One method that can be applied is to fit an aluminium

or other suitable material compensating frame around the outer edges of the freeing port in order to strengthen the freeing port area and return strength to the bulwark.

4 STABILITY BOOKS

4.1 Although not a requirement, an added recommendation would be for a vessel's stability book to include a section detailing the vessels freeing port arrangements for ease of reference.

4.2 Such a section, could include a simple table, showing:

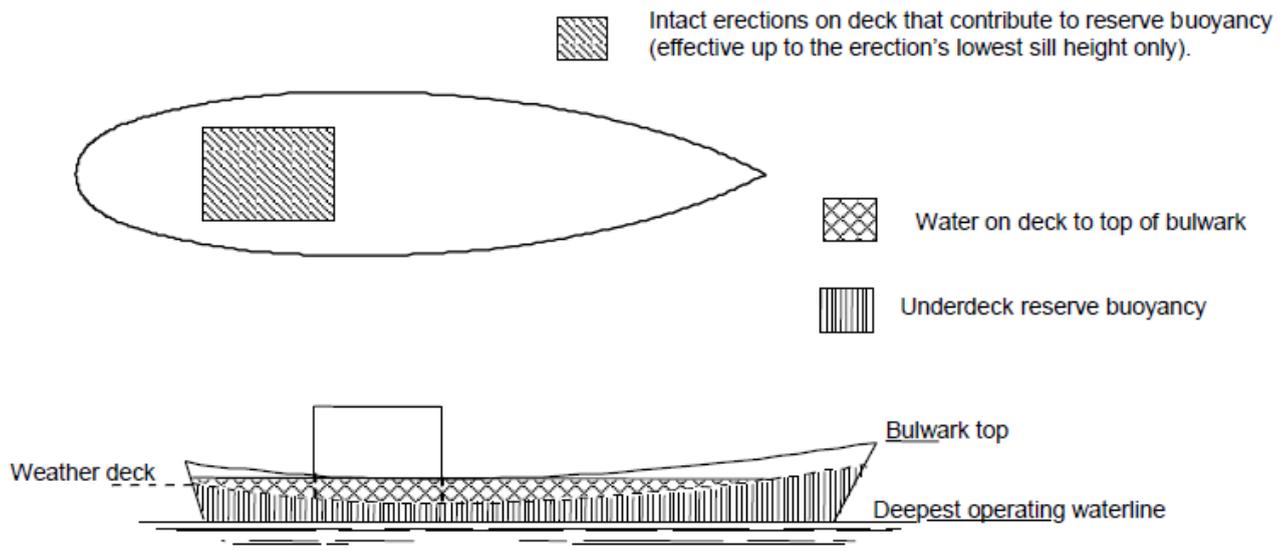
4.2.1 Total Number of Freeing Ports per Area

4.2.2 Freeing Port Sizes (Length x Height)

4.2.3 Total Freeing Port Area

4.2.4 Statement from the Naval Architect that the number, size and total area of Freeing Ports are sufficient to ensure that water can rapidly be cleared from the weather deck of the vessel.

5 RESERVE BUOYANCY

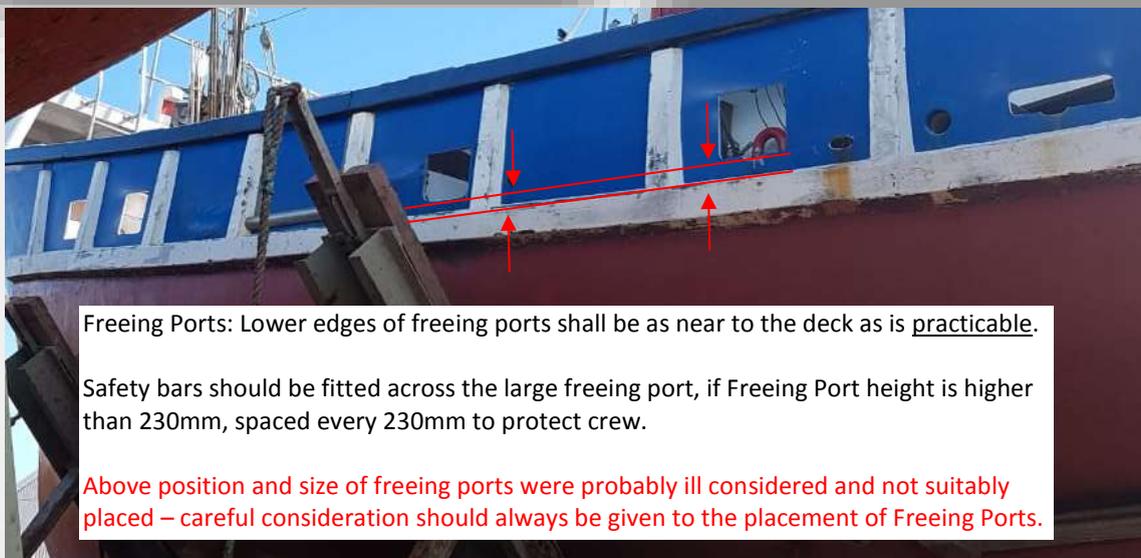


5.1 A check calculation can be carried out, by a qualified Naval Architect, should it be suspected that the reserve intact buoyancy of the vessel, when operating at its deepest operating waterline, is less than the volume of water that may be trapped by upper deck bulwarks and deck houses. The reserve intact buoyancy of the vessel is the sum of the under deck buoyancy (calculated from the waterline to the top of the weather deck) plus that part of any intact deck house or erection that contributes buoyancy up to a level corresponding to their lowest coaming or sill height.

5.2 If, as a result of the above buoyancy check, the vessel is found to be deficient in reserves of buoyancy, the required freeing port areas should be increased to ensure that any water on deck may be rapidly and effectively cleared. Additionally the heights of sills to hatchways and weathertight doors may be required to be increased in proportion to the deficiency.

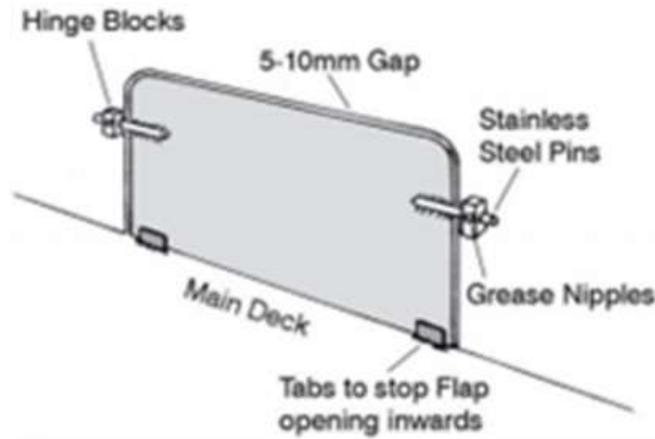
5.3 Any vessel found to be significantly deficient in reserves of buoyancy should undergo an in depth examination that covers both the vessel's arrangements for clearing water and its reserves of stability. Limitations on the vessel's maximum operating draught may require to be imposed for vessels with high bulwarks.

6 EXAMPLES OF TYPICAL FREEING PORT ARRANGEMENTS

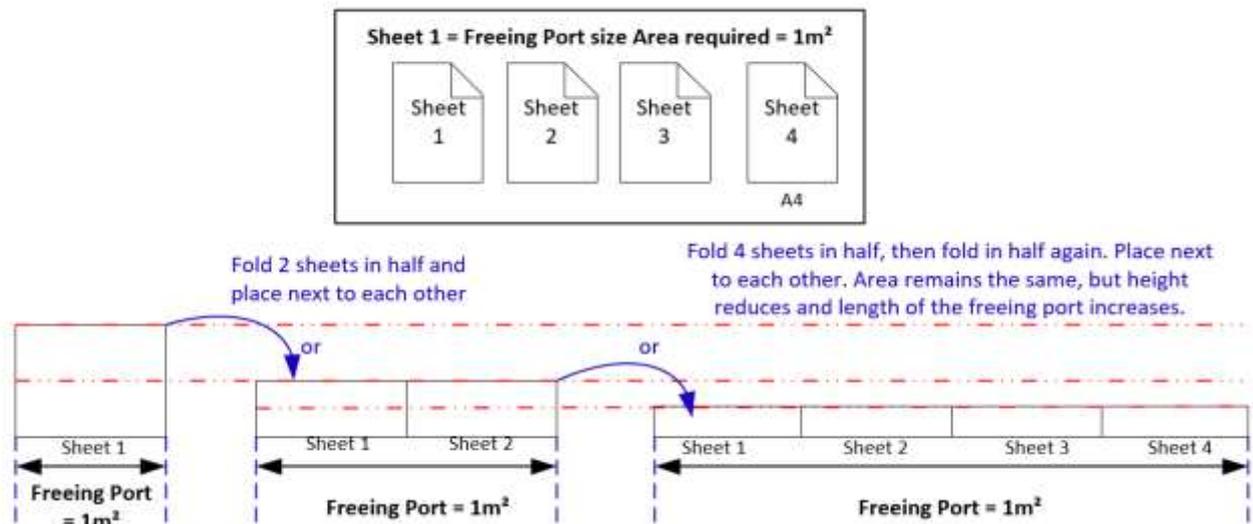


7 SHUTTER CONSTRUCTION

- 7.1 If shutters are fitted to freeing ports, ample clearance shall be provided to prevent jamming. Hinges shall have pins or bearings of non-corrodible material. Shutters shall not be fitted with securing appliances. Preventative Maintenance shall be considered, such as the fitment of grease nipples, to prevent these shutters from seizing.



8 DEMONSTRATION: UNDERSTANDING MANIPULATION OF FREEING PORT AREA



Using the practical example above, you can clearly see how the height of the freeing port reduces, the length increases but the Area remains the same, thus providing different options to choose from.

9 VESSEL MODIFICATIONS

- 9.1 Any modification to a vessel, which effects the vessels ability to rapidly clear water from the weather deck, shall be surveyed by SAMSA in order to establish if the vessels freeing ports and other water removal arrangements meets the required standards.
- 9.2 Owners/Master are to advise SAMSA of any modifications to their vessel, prior to these modifications taking place, and may be subject to a fine and/or prison sentence, if it is found that the owner/master failed to abide by any Regulations and/or the Merchant Shipping Act.

10 IN SUMMARY

- 10.1 Freeing Ports should be placed in such a manner that the lowest edge of the freeing port is as close as practical to the weather deck.
- 10.2 Water on deck, should be able to clear rapidly and a sufficient minimum number of freeing port area is required to do so, with freeing port suitably spaced over the length of the bulwark.
- 10.3 The Reserve Buoyancy of a vessel should never be compromised due to freeing ports not meeting the required standards.
- 10.4 Naval Architects or Ship yards are required, when building or designing a vessel, to show that the vessel meet the requirements for minimum freeing port area.
- 10.5 The arrangement of the freeing ports shall be carefully considered to ensure the most effective drainage of water trapped on the weather deck.
- 10.6 If for any reason, while a vessel is at sea, trapped water cannot be cleared from the weather deck rapidly, consideration should be given to increase the freeing port area with additional freeing ports, located in areas of high water entrapment.
- 10.7 Freeing Ports may be fitted with shutters in order to prevent water from unnecessarily entering the weather deck, however these shutters should not be permanently closed by any means.
- 10.8 An exemption could be considered by the Principal Officer on a case by case basis, with the evidence as provided per section 1.17.
- 10.9 Bulwarks are used for the **Protection of the Crew** – in other words, to prevent any crew member from falling overboard. Closed Bulwarks could be replaced by railings, stanchions or a combination of each. Freeing Ports added to any closed bulwarks, shall not affect the structural strength and integrity of the hull and therefore ship builders should not rely on closed bulwarks to strengthen the construction of a vessel.

11 REFERENCES

- 11.1 Marine Notice 22 of 2017: Lessons learnt from casualties Freeing Ports and Safe Access
- 11.2 Marine Notice 17 of 2015: Passenger Vessel Stability Criteria to South African Certificated Passenger Vessels

30 October 2018

SM6/5/2/1

Issued by and obtainable from:
The South African Maritime Safety Authority
146 Lunnon Road
Hillcrest Pretoria

P O Box 13186
Hatfield 0028
South Africa

Tel.: +27 12 366 2600
Fax: +27 12 366 2601
E-mail: marinenotices@samsa.org.za
Web Site : www.samsa.org.za