

## Calculation of freeboard and load line mark – Passenger Certificate

Freeboard on vessels with a passenger certificate shall be calculated according to regulations of 1 July 2014 No. 1072 on the construction of ships chapter 5 section 45.

Passenger vessels shall have markings for equal summer and winter freeboard. In addition, reduction in freeboard for fresh water shall be calculated.

### Summer and winter load line

Markings for equal summer and winter load line shall correspond to maximum displacement in the loading conditions. Light ship data from an inclining test shall be the basis of the loading conditions.

### Calculation of fresh water reduction

The reduction in the freeboard for fresh water shall be maximum 1/48 of the draughts corresponding to the assigned freeboard, and as a minimum be as defined by the Load Line Convention Annex B Appendix I Chapter II regulation 40.7

Fresh water reduction

$$\text{Fresh water reduction} = \min \left( \frac{\text{Moulded draught}}{48}, \frac{\Delta}{40 * T} * 10 \right) [\text{mm}]$$

where,

- Moulded draught – draught corresponding to maximum displacement measured in millimetres from the top of the keel plate for vessels built in steel or aluminium and from the bottom of the keel rabbet for vessels in wood or composite materials.
- $\Delta$  – largest displacement in salt water in tonnes from loading conditions.
- T - tonnes per centimetre immersion in salt water at maximum displacement in the loading conditions.

### Measurements to be included in drawing

- Moulded depth
  - Measured from top of keel plate for vessels in steel or aluminium
  - Measured from the lower edge of the keel rabbet for wood and composite ships
- Deck thickness
- Distance from deck line to top of freeboard deck at side (see figure 1)
- Distance from load line, summer and fresh water, to deck line
- All quantities as given in figure 2 and 3

### Placement of load line mark

1. The deck line shall be marked at the middle of the length (Loa)
2. The load line mark shall be placed directly below the deck line on each side of the vessel on a level with the summer load line. Figure 2 and 3 show the load line mark for starboard and port sides, respectively.
3. The load lines shall be marked in such a way that their upper edges indicate the position of each load line. The letters indicating the load lines should measure 50 mm in height and approximately 35 mm in width, with a line thickness of 10 mm.

4. The letter P and all lines shall be 25 millimetres in breadth

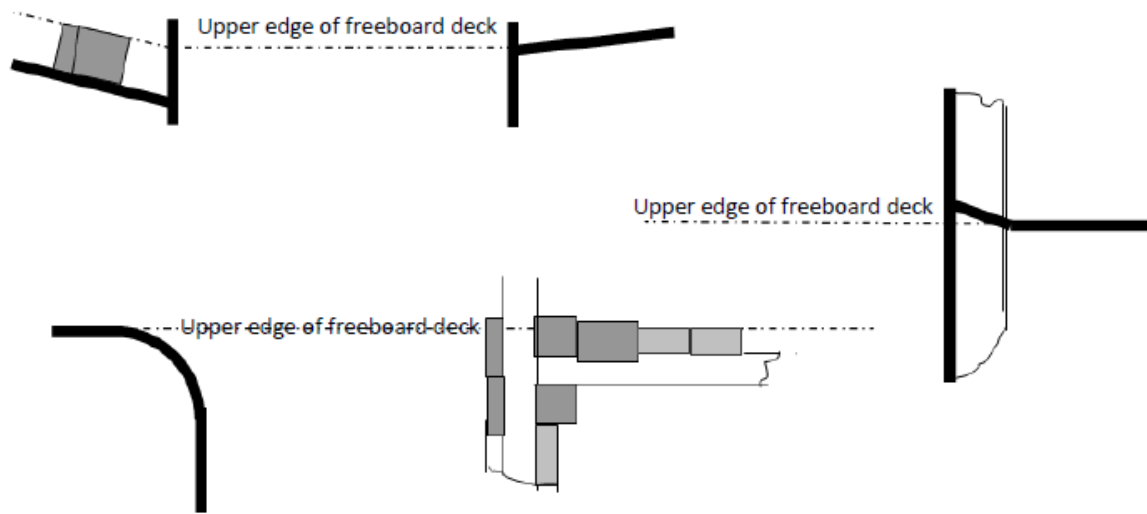


Figure 1

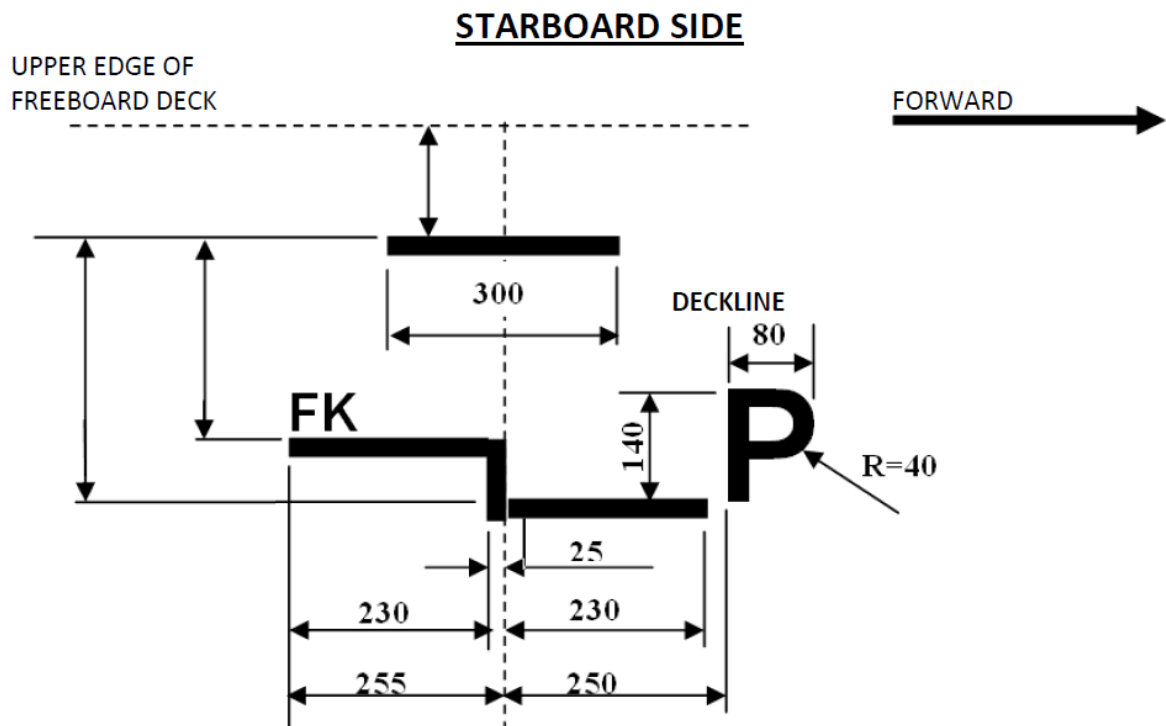


Figure 2

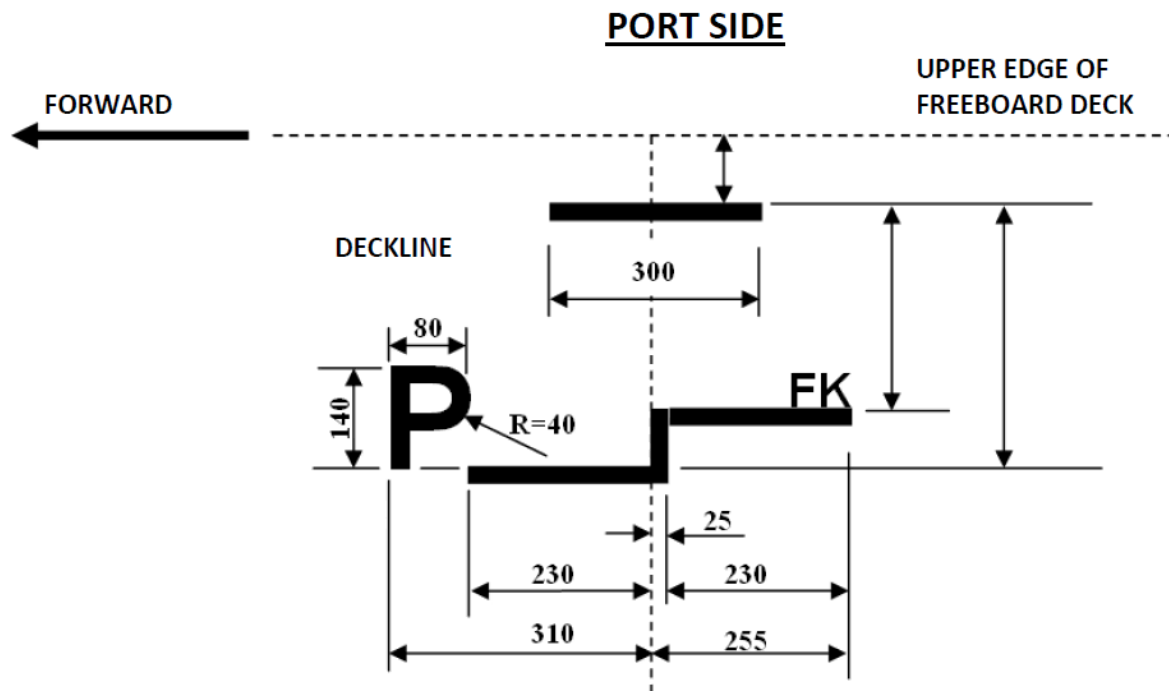


Figure 3

The lines and letters shall be painted in white or yellow on a dark ground or in black on a light ground. They shall also be carefully engraved, marked out with prick punching or welding beads directly on the shell plating on steel ships, and on wooden ships they shall be engraved at least 3 millimetres into the sides of the ship. The lines and letters shall be plainly visible. If necessary special arrangements shall be made for this purpose.