

IMO Requirements

What are the international requirements for marine horns (ship's whistles)?

The 1972 International Regulations for Preventing Collisions at Sea ('72 COLREGS), ANNEX III, entered into force by the International Maritime Organisation (IMO), specifies the technical requirements for sound signal appliances on marine vessels.

Frequency range and minimum decibel level output is specified for each class of ship. The class is determined by the vessel's length. Sound pressure level intensity at a distance of one meter from the horn is stipulated, which determines the theoretical range of the horn, although the actual range will, under many conditions, be much greater than this. This information is displayed in the following table,

Whistle Class	Length of vessel (metres)	Limits of Fundamental Frequency (Hz)	Minimum Sound Pressure level in 1/3 Octave Band at 1 metre (dB)	Audibility range (nautical miles)
I	> 200	70 - 200	143	2
II	75 - 200	130 - 350	138	1½
III	20 - 75	250 - 700	130	1
IV	12 to < 20	250 - 700	120	½

The range of audibility in the table above is for information and is approximately the range at which a whistle may be heard on its forward axis with 90 per cent probability in conditions of still air on board a vessel having average background noise level at the listening posts (taken to be 68 dB in the octave band centred on 250 Hz and 63 dB in the octave band centred on 500 Hz).

In practice the range at which a whistle may be heard is extremely variable and depends critically on weather conditions; the values given can be regarded as typical but under conditions of strong wind or high ambient noise level at the listening post the range may be much reduced.

Certificates of Conformity

Certificates for Kahlenberg Horns have been issued by the U.S. Coast Guard, ABS, and the British MCA, among others, confirming their compliance with the '72 COLREGS.

Installation

When a directional whistle is to be used as the only whistle on a vessel, it shall be installed with its maximum intensity directed straight ahead.

A whistle shall be placed as high as practicable on a vessel, in order to reduce interception of the emitted sound by obstructions and also to minimize hearing damage risk to personnel. The sound pressure level of the vessel's own signal at listening posts shall not exceed 110dB (A) and so far as practicable should not exceed 100 dB (A).

Fitting of more than one whistle

If whistles are fitted at a distance apart of more than 100 metres, it shall be so arranged that they are not sounded simultaneously .

Combined whistle systems

If due to the presence of obstructions the sound field of a single whistle or one of the whistles referred to in paragraph 1(f) above is likely to have a zone of greatly reduced signal level, it is recommended that a combined whistle system be fitted so as to overcome this reduction. For the purposes of the Rules a combined whistle system is to be regarded as a single whistle. The whistles of a combined system shall be located at a distance apart of not more than 100 metres and arranged to be sounded simultaneously. The frequency of any one whistle shall differ from those of the others by at least 10 Hz.

Bell or Gong Requirements

(a) Intensity of signal

A bell or gong, or other device having similar sound characteristics shall produce a sound pressure level of not less than 110 dB at a distance of 1 metre from it.

(b) Construction

Bells and gongs shall be made of corrosion-resistant material and designed to give a clear tone. The diameter of the mouth of the bell shall be not less than 300 mm for vessels of 20 metres or more in length. Where practicable, a power-driven bell striker is recommended to ensure constant force but manual operation shall be possible. The mass of the striker shall be not less than 3 per cent of the mass of the bell.

Approval

The construction of sound signal appliances, their performance and their installation on board the vessel shall be to the satisfaction of the appropriate authority of the State whose flag the vessel is entitled to fly.