

A-23 SOUND SIGNAL APPLIANCES

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A-23 SOUND SIGNAL APPLIANCES

Based on ABYC's assessment of the state of existing technology and the problems associated with achieving the requirements of this standard, ABYC recommends compliance with this standard by August 1, 1990.

A-23.1 **PURPOSE**

These voluntary technical practices and engineering standards are guides for the design, construction, performance, and installation of sound signal appliances for vessels operating in international waters and vessels operating in inland waters.

A-23.2 **SCOPE**

These voluntary technical practices and engineering standards apply to all sound signal appliances for use on vessels of less than 20 meters in length, regardless of the mode of operation or power source of the appliance.

NOTE: It is recommended that vessels 20 meters in length to less than 75 meters in length carry the sound signal appliances required by 72 COLREGS for vessels of that size. The United States recognizes that all vessels complying with the equipment requirements of the International Rules are considered to be in compliance with the Inland Rules. The reverse may not be true.

A-23.3 **DEFINITIONS**

- a. *Bell* - A percussion sound appliance which gives out a ringing sound when struck, or any device capable of producing similar sound characteristics.
- b. *Horn/Whistle* - A sound signal appliance capable of producing the sound prescribed by the rules and regulations for vessels for both international and inland waters.
- c. *Power Driven Vessel* - Any vessel propelled by machinery.
- d. *Power Operated Sound Signal Appliance* - One utilizing energy other than that generated manually or by lung power, including but not limited to electrical, compressed air or gasses, steam, or liquefied compressed gas.
- e. *Prolonged Blast* - A blast of from four to six seconds.
- f. *Short Blast* - A blast of about one second duration.
- g. *Sound Signal Appliance* - a device which produces sounds that will comply with the requirements of this standard.

A-23.4 **REQUIREMENTS IN GENERAL**

- a. The manufacturer shall provide instructions for the installation, maintenance, and operation of the sound signal appliance.
- b. The manufacturer of horns/whistles for installation on or use aboard vessels shall make available sound level and frequency information.

A-23.5 **CARRIAGE REQUIREMENTS**

- a. All power-driven and sailing vessels five meters (16.5 feet) and over in length, up to 20 meters in length, shall carry a power operated sound signal appliance that meets the requirements of this standard for horns/whistles.
- b. All vessels under five meters in length shall carry an efficient sound signal appliance which may be:
 - (1) Manually powered, or
 - (2) Power operated, or
 - (3) Lung powered.
- c. Vessels from 12 meters up to and including 20 meters in length shall be fitted with a bell. The bell may be replaced by other equipment having the same sound characteristics, provided that manual sounding of the prescribed signals shall always be possible. Actuation of a bell or other equipment by other than automatic means is considered to be manual operation.

A-23.6 **DESIGN AND CONSTRUCTION REQUIREMENTS**

- a. External parts of the sound signal appliance shall not have sharp edges which are liable to cause laceration injuries during installation, servicing, or use.
- b. Minimum specifications for electrical sound appliances shall be in accordance with [ABYC E-9, "DC Electrical Systems on Boats,"](#) or [ABYC E-8, "AC Electrical Systems on Boats,"](#) as applicable.
- c. Percussion bells shall be made of corrosion resistant materials. For vessels of from 12 to 20 meters in length percussion-type bells shall not have a mouth diameter of less than 200 mm, and the mass of the striker of percussion-type bells shall not be less than three percent of the mass of the bell.

A-23.7 **PERFORMANCE REQUIREMENTS**

- a. Acoustical
 - (1) The horn/whistle for a vessel under five meters in length has no frequency requirement. It shall be capable of producing a continuous sound at the equivalent of 98 dB(A) at one meter from the sound source for a period of four seconds at an ambient temperature of 77°F ± 10°F (25°C ± 5.5° C). For the purpose of meeting this requirement, a lung powered device shall be operated at no more than 180 cubic inches of air in the four second period

- (2) The horn/whistle for a vessel of from five meters to under 12 meters in length shall have a fundamental frequency between 250-1750 Hz and shall be capable of producing sound at the equivalent of 105 dB(A) at one meter from the sound source at an ambient temperature of $77^{\circ}\text{F} \pm 10^{\circ}\text{F}$ ($25^{\circ}\text{C} \pm 5.5^{\circ}\text{C}$) within an intermittent time cycle of six seconds on, two seconds off, six seconds on, 106 seconds off, for a period of eight hours. The basic power source may be replaced.
- (3) The horn/whistle for a vessel of from 12 to under 20 meters in length shall have a fundamental frequency between 250-700 Hz and shall be capable of producing sound at the equivalent of 120 dB in at least one 1/3 octave band at one meter from the sound source, at an ambient temperature of $77^{\circ}\text{F} \pm 10^{\circ}\text{F}$ ($25^{\circ}\text{C} \pm 5.5^{\circ}\text{C}$) within an intermittent time cycle of six seconds on, two seconds off, six seconds on, 106 seconds off, for a period of eight hours.

EXCEPTION: A horn/whistle for a vessel of from 12 to under 20 meters in length and which is restricted for use only on U.S. Inland Waters may, as an alternative, use a fundamental frequency that lies between 250-525 Hz in at least one 1/3 octave band at the signal strengths indicated below:

250-450 Hz - 120 dB at one meter in at least one 1/3 octave band

450-800 Hz - 115 dB at one meter in at least one 1/3 octave band

800-2100 Hz - 111 dB at one meter in at least one 1/3 octave band

The testing intermittent time cycle is six seconds on, two seconds off, six seconds on, 106 seconds off, for a period of eight hours.

- (4) A bell, or other device having similar sound characteristics replacing a bell, shall produce a clear tone. The minimum sound intensity shall be the equivalent of 110 dB(A) when measured at a distance of one meter from the sound source.

(b) Environmental

- (1) Plastic and elastomeric materials used for functional enclosures and functional parts which are exposed to ultraviolet radiation when permanently installed shall have demonstrated their ability to withstand the exposure to ultraviolet radiation to be expected in marine service without cracking, distortion, or other degradation which will result in the appliance's failure to perform in the intended manner.
- (2) An assembled appliance which has been designed and recommended for outside mounting shall be capable of withstanding exposure to salt spray without failure to perform in the intended manner.
- (3) An assembled appliance which has been designed and recommended for outside mounting shall be capable of withstanding the momentary drenching to which it will be subjected in normal operation without failure to perform in the intended manner.

c. Mechanical

Sound signal appliances shall withstand the degree of vibration and shock to which they are normally subjected in marine vessel applications without development of a physical failure which would impair normal operation.

d. Thermal

- (1) Sound signal appliances, except fluorinated hydrocarbon gas containers, shall be capable of being stored at temperatures from -4°F (-20°C) to 180°F (82°C) without a permanent change which would result in the appliance's inability to perform in the intended manner.
- (2) Sound signal appliances, except fluorinated hydrocarbon gas containers, shall be capable reduction in the sound pressure level required in [A-23.7](#).

A-23.8 **INSTALLATION**

- a. Consideration shall be given to mounting the sound signal appliance so as to minimize damage by contact with other objects under normal operating conditions.
- b. Installed pressurized containers shall be mounted in accordance with the supplied instruction.
- c. Appliances with directional properties shall be mounted with their maximum sound pressure level directed ahead, and the sound shall not be acoustically obstructed by fixed vessel structure or gear.
- d. Electrical sound signal appliances and electrical components of non-electrical appliances shall be installed in accordance with ABYC [E-8, "AC Electrical Systems,"](#) or ABYC [E-9, "DC Electrical Systems Under 50 Volts,"](#) as applicable.

A-23.9 **LABELING**

- a. Liquefied gas containers (fluorinated hydrocarbon, CO₂, etc.) used as the energy source for sound signal appliances shall be labeled in accordance with applicable regulatory requirements, and when the label indicates a hazard the label shall be readable as used or installed.
- b. Sound signal appliances, or the smallest container in which they are packaged, shall be labeled with or contain information indicating the correct application of the appliance by vessel length and applicable waters.
- c. Each sound signal appliance shall bear, by use of a nameplate or other permanent means, in a location that is accessible without removing the appliance:
 - (1) The manufacturer's name or identifying mark, and,

- (2) The mark "A-23", which shall indicate design conformance with this standard.

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