INTERNATIONAL STANDARD

**ISO
8849**

Small craft — Electrically operated bilge-pumps

Navires de plaisance — Pompes de cale à moteur électrique

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 8849 was prepared by Technical Committee ISO/TC 188, *Small craft*.

Small craft — Electrically operated bilge-pumps

1 Scope

This International Standard specifies requirements for electrically operated pumps intended for use in removing bilge-water from small craft. It applies to electrically operated bilge-pumps rated for less than 50 V direct current (d.c.).

2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 8846:1990, *Small craft — Electrical devices — Protection against ignition of surrounding flammable gases.*

3 Definitions

For the purposes of this International Standard, the following definitions apply.

3.1 automatic pump: Pump that is equipped with a sensing means that activates and deactivates the pump at pre-determined liquid levels.

3.2 ignition-protected device: Device that complies with the requirements of ISO 8846. (See definition 2.2 in ISO 8846.)

3.3 nominal voltages: Voltages that are commonly used on small craft with direct current, such as 6 V, 12 V, 24 V and 32 V.

3.4 non-submersible pump: Pump designed to be operated above water.

3.5 submersible pump: Pump designed to be operated completely immersed in water.

4 General requirements

4.1 Bilge-pumps shall be designed to operate continuously at 120 % of nominal voltage at the point within the range of performance recommended for the pump that results in the highest power consumption.

4.2 Bilge-pumps and devices used to convert bilge-pumps to automatic operation shall be ignition-protected in accordance with the requirements of ISO 8846.

4.3 Bilge-pumps shall be rated in litres of water flow per minute or per hour at static pressures of both 0 kPa and 10 kPa. Bilge-pump capacities shall be determined at nominal voltage, measured at the pump.

4.4 Bilge-pumps shall be provided with means for securely fastening them to the boat.

4.5 Materials used in the construction of bilge-pumps which can be expected to come in contact with sea-water shall be

a) selected or coated to be resistant to corrosion;

b) galvanically compatible;

c) resistant to deterioration by petrol (gasoline), oil and diesel fuel as well as bilge-cleaning agents.

4.6 Submersible pumps shall be provided with a strainer or other means of preventing debris entering the pump inlet. Inlet strainers and screens shall be designed such that they can be cleaned.

4.7 Installation and operating instructions shall be available for each bilge-pump. An electrical diagram shall be provided that identifies each conductor and includes the proper location of the control switch(es) in the circuit and the bonding connection if applicable. The recommended over-current protection for non-integrally protected bilge-pumps shall be stated.

Installation instructions shall require remote-mounted pumps to be fitted with a strainer or other means of preventing debris from entering the pump inlet.

4.8 Pumps shall be capable of operating dry at their design voltage for at least 7 h without creating a fire hazard, or means integral with the pumps shall be provided to shut the pump off automatically to prevent a fire hazard.

5 Electrical requirements

5.1 Bilge-pumps shall be of the two-wire type, with both power and return lines insulated from the motor and the pump housing.

5.2 Conductors used for connection to the power supply shall be stranded copper.

5.3 If external motor leads are provided with the bilge-pump, they shall be of a size in accordance with the power requirement but no less than a nominal 1 mm² unless they are run together in a sheath in which case a nominal 0,8 mm² is acceptable. Conductor insulation shall be rated to be used in damp places.

5.4 Submersible pumps shall have watertight electrical connections. The use of a length of watertight electrical cable sealed at the pump connection is recommended so that connections to the power supply may be made above the normal bilge-water level.

5.5 If external terminals are provided, for non-submersible pumps, they shall be designed or shielded to prevent short-circuiting that could result from accidental contact with a conductive object.

5.6 Metallic parts of the pump that could be exposed to contact with bilge-water may become a source of stray current leakage; they shall have provision for bonding conductor connections.

5.7 Bilge-pumps shall be protected against continuously locked rotor conditions by

— integral over-current protection; or

— over-current protection in the circuit of a size to protect the bilge-pump motor; or

— being capable of sustaining operation with a locked rotor for 7 h without generating surface temperatures in excess of 150 °C, at ambient temperature of 60 °C, and without evidence of charring, burning or melting.

5.8 Bilge-pumps shall be capable of withstanding a d.c. voltage of 500 V for 1 min without leakage in excess of 1 mA. The test voltage shall be applied between the current-carrying parts and the non-current-carrying metal parts. If the pump is internally earthed, the earth connection shall be broken in order to carry out this test.

5.9 Automatic bilge-pumps shall have a manual override switch.

6 Marking

6.1 Bilge-pumps shall be permanently and legibly marked with at least the following information:

— manufacturer's or private labeller's name or trademark;

— model or type identification;

— year of manufacture (this may be coded);

— electrical rating in volts and amperes or alternatively in volts and watts.

6.2 Evidence of compliance with this International Standard shall be indicated by the marking "ISO 8849" together with the word "MARINE" arranged in any suitable manner.

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Descriptors: shipbuilding, small craft, electric equipment, pumps, blige-pumps, specifications, marking.

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