

Application	Standard Voltage	Maximum Voltage
(a) Power, heating, and cooking equipment securely fixed in a permanent position	3 phase	230 250
	Single phase D.C.	400 440
		230 250
		24 -
		110 -
220 250		
(b) Fixed lighting	Single phase	110 -
		230 250
	D.C.	24 -
		110 -
220 250		
(c) Socket outlets for equipment supplied through flexible cables for general purposes	Single phase	110 -
		230 250
	D.C.	24 -
		110 -
		220 250
(d) Socket outlets for use where precautions against shock are to be taken	D.C.	12 -
		24 -
		110 -
		220 250
		55 -
(i) Where an isolating transformer is used supplying one socket only	Single phase	110 -
		230 250
(ii) Supplied without the above restriction	Single phase	24 -
		48 -
		55 55
(e) Socket outlets rated at more than 15 amps. Intended for apparatus the connection of which incorporates an earth continuity conductor	3 phase	400 440
(d) Internal communications	Single phase	12 -
		24 -
		115 -
		230 250
		6 -
	D.C.	12 -
		24 -
		48 -
		110 -
		220 250

36. Emergency Source of Electrical Power: Ships of Class II—

(1) In every ship of Class II there shall be provided in a position outside the machinery space a self contained emergency source of electric power. The location of this self-contained emergency source in relation to the main source or sources of electric power shall be such as to ensure that a fire or other casualty to the machinery space will not interfere with the supply or distribution of emergency power.

(2) The emergency source of power required by subclause (1) of this clause shall be capable of operating simultaneously for a period of 12 hours the following services:

- The ship's bilge pump if electrically operated,
- The ship's emergency lighting,
- The ship's navigation lights,
- The ship's communication equipment, and
- The ship's fire pump if electrically operated.

(3) The emergency source of electric power shall be either a battery capable of complying with sub-clause (2) of this clause without being re-charged or suffering an excessive voltage drop, or a generator driven by internal combustion type machinery with an independent fuel supply and with efficient starting arrangements, and the fuel provided for such machinery shall have a flashpoint of not less than 43°C.

37. Switchboards—(1) For voltage between poles or to earth exceeding extra-low voltage, switchboards shall be either of the dead front metal-clad type or, where the equipment is mounted on a panel of insulating material, the switchboard shall be totally enclosed by a metal surround having a hinged front cover.

(2) For voltages between poles or to earth above extra-low voltage, the following shall apply on D.C. systems:

(a) For D.C. generators not operated in parallel, one voltmeter and one ammeter shall be provided for each generator.

(b) For parallel operation, at least one ammeter shall be provided for each generator, and one busbar voltmeter,

together with either one voltmeter for each generator or one voltmeter with a changeover switch for measuring each generator voltage.

(c) The upper limit of each scale of every voltmeter shall be approximately 120 percent of the normal voltage of the circuit and the scale shall be provided with a red line to indicate normal voltage. The upper limit of the scale of every ammeter and wattmeter shall be not less than 130 percent of the normal rating of the circuit in which it is to be installed. The scale shall be provided with a red line indicating the normal full load.

(d) Ammeters for use with generators which may operate in parallel shall be capable of indicating reverse current up to 15 percent of the rated full load current of the generator.

(3) For voltages between phases or to earth above extra-low voltage, the following shall apply on A.C. systems:

(a) For A.C. generators not operated in parallel, each generator shall be provided with a voltmeter and frequency meter, and an ammeter in each phase conductor, or one ammeter and a selector switch designed to permit the reading of current in one phase.

(b) For A.C. generators operated in parallel, each generator shall be provided with an ammeter in each phase conductor, or an ammeter and a selector switch designed to permit the reading of the current in each phase; for paralleling purposes, two voltmeters, two frequency meters, and a synchronising device, the last-named being controlled by a switch or plug and comprising a synchroscope and synchronising lamps.

A plug or linked double-pole, multi-way switch, shall be provided to enable one voltmeter and frequency meter to be connected to one phase of any one generator before the machine is connected to the busbars; and the other voltmeter and frequency meter shall be permanently connected to one phase of the busbars. The connections shall be made to the corresponding phase of each generator.

(c) The upper limit of the scale of every voltmeter shall be approximately 120 percent of the normal voltage of the circuit and the scale shall be provided with a red line to indicate normal voltage.

The upper limit of the scale of every ammeter shall be not less than 130 percent of the rating of the circuit in which it is installed. The scale shall be provided with a red line indicating the normal full load.

(4) For voltages between poles or to earth below extra-low voltage, the main switchboard shall have suitable control equipment for the generator and battery including an ammeter to show charge and discharge current, a voltmeter, isolating switches and fuses for generator and battery, and a voltage regulator.

(5) Every outgoing subcircuit from a main switchboard or a distribution switchboard shall be controlled and protected by a switch and fuse or a circuit breaker in each phase or insulated pole.

(6) Every insulated system of supply, whether primary or secondary, shall be provided with means to indicate the state of the insulation from earth.

(7) All switchboards shall be of substantial and durable construction and any insulating materials used in the construction shall be mechanically strong, flame-retardant and moisture resistant.

(8) All switchboards, instruments and all apparatus controlling circuits shall be provided with labels of durable, flame-retardant materials bearing clear and indelible indications.

(9) Overload protection shall be provided on at least one line of D.C. system or a single phase A.C. system and on all three phases of a 3 phase system.

(10) In every distribution system which is designed to operate with an earth connection, no fuse, non-linked switch or non-linked circuit breaker shall be inserted in an earthed conductor.