

BATTERY-CHARGERS AND RECTIFIERS.

41-31. Every battery-charger and rectifier shall be provided with efficient means suitably placed and so connected that the battery-charger and rectifier and all apparatus connected therewith may be isolated from the supply.

41-32. Every rectifier shall be installed in accordance with the following requirements:—

- (a) It shall where the rating exceeds 3 K.W. be controlled and protected by a circuit-breaker with overload trip-coils; and
- (b) It shall not be installed in any position where inflammable or explosive dust or gas is liable to be present.

41-33. Adequate precautions shall be taken in the installation of every battery-charger, rectifier, and the like as will ensure immunity from electrical hazard.

CONDENSERS.

41-41. Where a condenser is installed in conjunction with an individual appliance for the purpose of improving starting conditions and/or power factor, it shall be controlled and protected by the switch and cut-outs or circuit-breaker which control and protect the appliance, and the conductors connected to the condenser shall have a current-carrying-capacity of not less than the resultant current of the circuit, or it shall be connected to a separate subcircuit in accordance with the requirements of Regulation 41-42 hereof.

41-42. Where a condenser is installed in conjunction with more than one appliance for the purpose of improving starting conditions and/or power factor it shall—

- (a) Be connected to a separate subcircuit the conductors of which shall have a current-carrying-capacity as determined by the condenser capacity; and
- (b) Be controlled and protected by a switch and cut-outs or circuit-breaker; and
- (c) Be provided with discharge-resistors.

41-43. Adequate precautions shall be taken in the installation of every condenser as will ensure immunity from electrical hazard.

PART 42.—SWITCHGEAR.

SWITCHBOARDS.

42-01. The following provisions shall be observed in connection with the erection of every switchboard:—

- (a) It shall be placed in a well ventilated situation where inflammable or explosive dust or gas cannot accumulate and shall be so arranged as to prevent access of corrosive fumes to the switchboard. Whenever conveniently possible it shall be placed in a dry situation and in any case in which its situation is not, in the opinion of an Authorized Inspector, a dry situation the apparatus thereon shall be enclosed and rendered impervious to moisture; and
- (b) It shall be so erected as to permit of reasonable access to the face and to all leads and fixing-bolts at the back thereof; and
- (c) It shall not be erected above a stove or range or in a bathroom, lavatory, or washhouse; and
- (d) Where liable to mechanical injury it shall be adequately protected; and
- (e) The main switchboard shall not be erected in any room where cinematograph-film is stored, handled, or used.

42-02. (1) Where there is any live metal, at a voltage in excess of extra-low pressure, exposed at the back of a switchboard the board shall be so placed that there will be a space of not less than 12 in. between such metal and any object which is not readily movable.

(2) Where it is necessary to have access to the back of a switchboard for wiring purposes, the switchboard shall, where conveniently possible, be so placed that access can be obtained either from each side or from one side and the top and bottom, and between any object which is not readily movable and the back of the switchboard there shall be a space of not less than—

- (a) 4 in. where either the width or height of the board does not exceed 2 ft.; or
- (b) 6 in. where each such measurement exceeds 2 ft. but does not exceed 3 ft.; or
- (c) 9 in. where each such measurement exceeds 3 ft. but does not exceed 4 ft.; or
- (d) 12 in. where each such measurement exceeds 4 ft. but does not exceed 5 ft.; or
- (e) 24 in. where each such measurement exceeds 5 ft.:

Provided that where it is not conveniently possible to provide access from each side or from one side and the top and bottom or from the back every switchboard having a width in excess of 2 ft. shall have a space of 24 in. between any object which is not readily movable and the back of the switchboard.

(3) Where the space between any object which is not readily movable and the back of the switchboard is 24 in. or over all stays and conductors crossing over such space shall be so arranged as to allow a clearance above floor-level of not less than 6 ft. for stays and 6 ft. 6 in. for conductors.

(4) Where a panel is mounted less than 12 in. from any other panel such panels shall be deemed to be one switchboard.

(5) This regulation shall not apply to any switchboard so constructed and fixed that access cannot be obtained to the back thereof unless and until the switchboard is moved, provided such switchboard is suitably hinged and the conductors at the back are enclosed in a fire-resisting chamber.

42-03. (1) Every panel switchboard mounted upon a wall shall be so arranged that the space between all sides and the wall is completely enclosed by a substantial and close-fitting case. Where a switchboard is sunk into a wall the adjacent part of which is made of other than non-ignitable material the case shall be of rigid metal or non-ignitable material.

(2) Where any opening is made in the wall behind, such opening shall be closed on completion of the wiring so as to preclude the possibility of a draught tending to spread any fire which may start on the switchboard.

(3) Where there is any live metal, at a voltage in excess of low pressure, exposed at the back of any switchboard mounted otherwise than on a wall, such metal shall be made inaccessible (except to authorized persons) by screening or otherwise, and where a door is provided for access to the back of such switchboard it shall be provided with a spring or other device which shall ensure that the door remains wide open when not properly shut and locked.

42-04. Containing-cases for switchboards shall, except as provided in the next succeeding regulation, be secured in such a manner as to be easily removable for the purposes of inspection.

42-05. Non-removable cases for switchboards and designed for the purpose may be used, but they shall be of sufficiently ample dimensions to allow of easy access for the attachment of cables and for the installation or replacement of conduit and nuts.

42-06. Metal-clad switchgear may be mounted directly on a wall or on the metal framework of the switchboard.

42-07. (1) No cut-out, circuit-breaker, or switch (other than an isolating-switch) shall be fixed on the back of any switchboard if it is necessary to replace a fuse-link or operate such circuit-breaker or switch from behind the panel.

(2) Where no fuse-link or circuit-breaker is included in an earthed conductor all such circuit conductors shall be connected to a bus-bar in such a manner that each circuit conductor may be readily removed.

42-08. Every nut on any part carrying over 25 amperes, and fixed at the back of any switchboard, shall be effectively locked so that it cannot become loose.

42-09. Where not otherwise distinguishable all circuits, instruments, and important apparatus on every switchboard shall be clearly and permanently labelled for purposes of identification.

42-10. Every switch on any switchboard shall be so arranged that its blades or moving parts are disconnected from the source of supply when in the "Off" position, and shall be so mounted that the top of the handle (if any) is at a height not exceeding 7 ft. 6 in. above floor-level.

42-11. In every case in which the switches and fuse-links on any switchboard are fitted on the same pole, or phase, these switches shall preferably be so arranged that the fuse-links are disconnected from the source of supply when their respective switches are in the "Off" position.

42-12. All panel switchboards shall be mounted in accordance with Regulation 22-04 hereof.

42-13. (1) Where the main switchboard supplies distribution boards controlling separate sections of a building and the occupants of such sections have cause to use such distribution boards as main switchboards, then each such distribution board shall be controlled by a switch or circuit-breaker mounted thereon or adjoining.

(2) Where there is more than one distribution board connected to a common submain isolating-switches or cut-outs shall be mounted on, or adjacent to, each such distribution board for the purpose of isolating it from the submain.

CONTROL OF SUPPLY.

42-21. Every installation shall be adequately protected by suitable controlling apparatus as required by Regulations 22-21 to 22-25 hereof (both inclusive) easily accessible to the consumer.

42-22. (1) Where the supply is from an overhead service-line service cut-outs shall be fixed either outside the building or within a building as near the point of entry as possible, and in a permanently accessible position reasonably distant from, or protected from, combustible material. They shall not be placed between a ceiling and a roof.