

Subsidiary Legislation made under s.58.

## **Factories (Electricity) Regulations**

**1956.12.06**

		<i>Commencement</i>	<b>6.12.1956</b>
Amending enactments	Relevant current provisions	Commencement date	
Order of 25.11.1969	r. 4		
Regs. of 28. 5.1970	r. 3(1)		
LN. 1994/063	rr. 22(2)(a)-(b), (c)(i), 33-34	1.8.1994	
Act. 2007-17	r. 4	14.6.2007	

**ARRANGEMENT OF REGULATIONS**

## Regulation

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**Title and application.**

1. These Regulations may be cited as the Factories (Electricity) Regulations, and shall apply to the generation, transformation, conversion, switching, controlling, regulating, distribution and use of electrical energy in all factories or parts thereof, and to all places to which the provisions of section 58 of the Act are applied.

**Interpretation.**

2. In these Regulations—

“apparatus” means electrical apparatus, and includes all apparatus, machines, and fittings in which conductors are used, or of which they form a part;

“authorized person” means (a) the occupier, or (b) a contractor for the time being under contract with the occupier, or (c) a person employed, appointed, or selected by the occupier, or by such a contractor to carry out certain duties incidental to the generation, transformation, distribution, or use of electrical energy, such occupier, contractor, or person being a person who is competent for the purposes of the regulation in which the term is used;

“bare” means not covered with insulating material;

“circuit” means an electrical circuit forming a system or branch of a system;

“conductor” means an electrical conductor arranged to be electrically connected to a system;

“covered with insulating material” means adequately covered with insulating material of such quality and thickness that there is no danger;

“danger” means danger to health or danger to life or limb from shock, burn, or other injury to persons employed, or from fire, attendant upon the generation, transformation, distribution, or use of electrical energy;

“dead” means at, or about, zero potential, and disconnected from any live system;

“earthed” means connected to the general mass of earth in such manner as will ensure at all times an immediate discharge of electrical energy without danger;

“extra-high pressure” means a pressure in a system normally exceeding 3,000 volts, where the electrical energy is used or supplied;

“high pressure” means a pressure in a system normally above 650 volts, but not exceeding 3,000 volts, where the electrical energy is used or supplied;

“insulating boots” means boots of such size, quality and construction according to the circumstances of the use thereof, that a person is thereby adequately protected from danger;

“insulating gloves” means gloves of such size, quality and construction according to the circumstances of the use thereof, that a person is thereby adequately protected from danger;

“insulating screen” means a screen of such size, quality and construction according to the circumstances of the use thereof, that a person is thereby adequately protected from danger;

“insulating stand” means a floor, platform, stand or mat of such size, quality and construction according to the circumstances of the use thereof, that a person is thereby adequately protected from danger;

“live” means electrically charged;

“low pressure” means a pressure in a system normally not exceeding 250 volts where the electrical energy is used;

“medium pressure” means a pressure in a system normally above 250 volts, but not exceeding 650 volts, where the electrical energy is used;

“pressure” means the difference of electrical potential between any two conductors, or between a conductor and earth as read by a hot wire or electrostatic volt-meter;

“sub-station” means any premises, or that part of any premises, in which electrical energy is transformed or converted to or from pressure above medium pressure, except for the purpose of working instruments, relays, or similar auxiliary apparatus; if such premises or part of premises are large enough for a person to enter after the apparatus is in position;

“switchboard” means the collection of switches or fuses, conductors, and other apparatus in connection therewith, used for the purpose of controlling the current or pressure in any system or part of a system;

“switchboard passage-way” means any passage-way or compartment large enough for a person to enter, and used in connection with a switchboard when live;

“system” means an electrical system in which all the conductors and apparatus are electrically connected to a common source of electro-motive force.

**Exemptions.**

3.(1) Nothing in these Regulations shall apply to any service lines or apparatus on the supply side of the consumer’s terminals, or to any chamber containing such service lines or apparatus, where the supply is given from outside by the Crown:

Provided always that no live metal is exposed so that it may be touched.

(2) If the occupier can show, with regard to any requirement of these Regulations, that the special conditions in his premises are such as adequately to prevent danger, that requirement shall be deemed to be satisfied.

(3) Nothing in these Regulations shall apply to any process or apparatus used exclusively for electro-chemical or electro-thermal or testing or research purposes, provided such process be so worked and such apparatus so constructed and protected and such special precautions taken as may be necessary to prevent danger.

**Power to exempt by order.**

4. The Government may, if satisfied that safety is otherwise practically secured, or that exemption is necessary on the ground of emergency or special circumstances, grant such exemption by order, subject to any conditions that may be prescribed therein; and may revoke such order.

**Duties.**

5.(1) It shall be the duty of the occupier to comply with these Regulations.

(2) It shall be the duty of all agents, workmen, and persons employed to conduct their work in accordance with these Regulations.

**Size and construction of apparatus and conductors.**

6. All apparatus and conductors shall be sufficient in size and power for the work they are called upon to do, and so constructed, installed, protected, worked and maintained as to prevent danger so far as is reasonably practicable.

**Insulation and protection of conductors.**

7. All conductors shall either be covered with insulating material and further efficiently protected where necessary to prevent danger, or they shall be so placed and safeguarded as to prevent danger so far as is reasonably practicable.

**Switches, switch-fuses, etc.**

8. Every switch, switch fuse, circuit-breaker, and isolating link shall be—

- (a) so constructed, placed or protected as to prevent danger;
- (b) so constructed and adjusted as accurately to make and maintain good contact;
- (c) provided with an efficient handle or other means of working, insulated from the system, and so arranged that the hand cannot inadvertently touch live metal;
- (d) so constructed or arranged that it cannot accidentally fall or move into contact when left out of contact.

**Construction of switches and circuit-breakers.**

9.(1) Every switch intended to be used for breaking a circuit and every circuit-breaker shall be so constructed that it cannot with proper care be left in partial contact. This applies to each pole of double-pole or multiple switches or circuit-breakers.

(2) Every switch intended to be used for breaking a circuit and every circuit-breaker shall be so constructed that an arc cannot accidentally be maintained.

**Fuses and automatic circuit-breaker.**

10. Every fuse and every automatic circuit-breaker used instead thereof, shall be so constructed and arranged as effectively to interrupt the current before it so exceeds the working rate as to involve danger. It shall be of such construction or be so guarded or placed as to prevent danger from overheating, or from arcing or the scattering of hot metal or other substance when it comes into operation. Every fuse shall be either of such construction or so protected by a switch that the fusible metal may be readily renewed without danger.

**Joints and connections.**

11. Every electrical joint and connection shall be of proper construction as regards conductivity, insulation, mechanical strength and protection.

**Cutting of pressure.**

12.(1) Efficient means, suitably located, shall be provided for cutting off all pressure from every part of a system, as may be necessary to prevent danger.

(2) In a supply from public mains there should be generally at least a main switch which an unskilled person may use without danger, situated as near as possible to the point of entry of the mains into the premises. It should be in an accessible position so that all pressure can be easily cut off from the installation either in normal working conditions or in the case of an emergency such as fire.

**Protection from excess of current.**

13. Efficient means, suitably located, shall be provided for protecting from excess of current every part of a system, as may be necessary to prevent danger.

**Prohibition of single-pole switches or conductors connected to earth.**

14.(1) Where one of the conductors of a system is connected to earth, no single-pole switch, other than a link for testing purposes or a switch for use in controlling a generator, shall be placed in such conductor or any branch thereof.

(2) A switch, or automatic or other cut-out may, however, be placed in the connection between the conductor and earth at the generating station, for use in testing and emergencies only.

**Bare and uninsulated conductors.**

15.(1) Where one of the main conductors of a system is bare and uninsulated, such as a bare return of a concentric system, no switch, fuse, or circuit-breaker shall be placed in that conductor, or in any conductor connected thereto, and the conductor shall be earthed.

(2) Nevertheless, switches, fuses, or circuit-breakers may be used to break the connection with the generators or transformers supplying the power:

Provided that in no case of bare conductor the connection of the conductor with earth is thereby broken.

**Protection of motors, converters and transformers.**

16. Every motor, converter and transformer shall be protected by efficient means suitably placed, and so connected that all pressure may thereby be cut off from the motor, converter or transformer as the case may be, and from all apparatus in connection therewith:

Provided, however, that where one point of the system is connected to earth, there shall be no obligation to disconnect on that side of the system which is connected to earth.

**Motors.**

17.(1) Every electrical motor shall be controlled by an efficient switch or switches for starting and stopping, so placed as to be easily worked by the person in charge of the motor.

(2) In every place in which machines are being driven by an electric motor, there shall be means at hand for either switching off the motor or stopping the machines if necessary to prevent danger.

**Connections of flexible wires for portable apparatus.**

18.(1) Every flexible wire for portable apparatus for alternating currents or for pressures above 150 volts direct current, shall be connected to the system either by efficient permanent joints or connections, or by a properly constructed connector.

(2) In all cases where the person handling portable apparatus or pendant lamps with switches for alternating current or pressures above 150 volts direct current, would be liable to get a shock through a conducting floor or conducting work, or otherwise, if the metal work of the portable apparatus became charged, the metal work must be sufficiently earthed; and any flexible metallic covering of the conductors shall be itself sufficiently earthed and shall not itself be the only earth connection for the metal of the apparatus. And a lamp-holder shall not be in metallic connection with the guard of other metal work of a portable lamp.

(3) In such places and in any place where the pressure exceeds low pressure, the portable apparatus and its flexible wire shall be controlled by efficient means suitably located, and capable of cutting off the pressure, and the metal work shall be efficiently earthed independently of any flexible metallic cover of the conductors, and any such flexible covering shall itself be independently earthed.

**Arrangement of switchboards.**

19. The general arrangement of switchboards shall, so far as reasonably practicable, be such that—

- (a) all parts which may have to be adjusted or handled are readily accessible;
- (b) the course of every conductor may where necessary be readily traced;
- (c) conductors not arranged for connection to the same system are kept well apart, and can where necessary be readily distinguished;



- (d) all bare conductors are so placed or protected as to prevent danger from accidental short circuit.

**Fencing of switchboards having bare conductors.**

20.(1) Every switchboard having bare conductors normally so exposed that they may be touched, shall, if not located in an area or areas set apart for the purposes thereof, where necessary be suitably fenced or enclosed.

(2) No person except an authorized person, or a person acting under his immediate supervision, shall for the purpose of carrying out his duties have access to any part of an area so set apart.

**Switchboard apparatus and measuring instruments.**

21. All apparatus appertaining to a switchboard and requiring handling, shall so far as practicable be so placed or arranged as to be operated from the working platform of the switchboard, and all measuring instruments and indicators connected therewith shall, so far as practicable, be so placed as to be observed from the working platform. If such apparatus be worked or observed from any other place, adequate precautions shall be taken to prevent danger.

**Switchboard passage-ways, platforms and means of access.**

22.(1) At the working platform of every switchboard and in every switchboard passage-way, if there be bare conductors exposed, or arranged to be exposed when live so that they may be touched, there shall be a clear and unobstructed passage of ample width and height, with a firm and even floor. Adequate means of access, free from danger, shall be provided for every switchboard passage-way.

(2) The following provisions shall apply to all switchboard platforms and passage-ways unless the bare conductors, whether overhead or at the sides of the passage-ways, are otherwise adequately protected against danger by divisions or screens or other suitable means—

- (a) those constructed for low-pressure and medium-pressure switchboards shall have a clear height of not less than 2150mm and a clear width measured from bare conductor of not less than 915mm.
- (b) those constructed for high-pressure and extra high-pressure switchboards, other than operating desks or panels working solely at low-pressure, shall have a clear height of not less than 2440mm and a clear width measured from bare conductor of not less than 1070mm.

- (c) bare conductors shall not be exposed on both sides of the switchboard passage-way unless either—
  - (i) the clear width of the passage is in the case of low- pressure and medium- pressure not less than 1370mm and in the case of high- pressure and extra high- pressure not less than 2440mm in each case measured between bare conductors; or
  - (ii) the conductors on one side are so guarded that they cannot be accidentally touched.

**High-pressure and extra high-pressure switchboards.**

23. In every switchboard for high-pressure or extra high-pressure—

- (a) every high-pressure and extra high-pressure conductor within reach from the working platform or in any switchboard passage-way shall be so placed or protected as adequately to prevent danger;
- (b) the metal cases of all instruments working at high-pressure or extra high-pressure shall be either earthed or completely enclosed with insulating covers;
- (c) all metal handles of high-pressure and extra high-pressure switches, and, where necessary to prevent danger, all metal gear for working the switches, shall be earthed;
- (d) when any work is done on any switchboard for high-pressure or extra high-pressure the switchboard shall be made dead unless—
  - (i) the section of the switchboard on which the work is done (hereinafter referred to as "the relevant section") is made dead and every other section which is alive is either (a) so separated from the relevant section by permanent or removable divisions or screens as not to be a source of danger to persons working on the relevant section; or (b) in such a position or of such construction as to be as safe as if so separated; or
  - (ii) the switchboard itself is so arranged as to secure that the work is done without danger without taking any of the precautions aforesaid.

**Protection of generators, motors, etc., at high-pressure and extra high-pressure.**

24. All parts of generators, motors, transformers, or other similar apparatus, at high-pressure or extra high-pressure, and within reach from any position in which any person employed may require to be, shall be, so far as reasonably practicable, so protected as to prevent danger.

**Transformation of energy.**

25. Where a high-pressure or extra high-pressure supply is transformed for use at a lower pressure, or energy is transformed up to above low-pressure, suitable provision shall be made to guard against danger by reason of the lower-pressure system becoming accidentally charged above its normal pressure by leakage or contact from the high-pressure system.

**Precautions to prevent metal from becoming electrically charged.**

26. Where necessary to prevent danger, adequate precautions shall be taken either by earthing or by other suitable means to prevent any metal other than the conductor from becoming electrically charged.

**Precautions to prevent conductor from becoming electrically charged.**

27. Adequate precautions shall be taken to prevent any conductor or apparatus from being accidentally or inadvertently electrically charged when persons are working thereon.

**Stands and screens.**

28. Where necessary adequately to prevent danger, insulating stands or screens shall be provided and kept permanently in position, and shall be maintained in sound condition.

**Portable stands, screens, boots, etc.**

29. Portable insulating stands, screens, boots, gloves, or other suitable means shall be provided and used when necessary adequately to prevent danger, and shall be periodically examined by an authorized person.

**Working space and means of access.**

30. Adequate working space and means of access, free from danger, shall be provided for all apparatus that has to be worked or attended to by any person.

**Lighting of premises.**

31. All those parts of premises in which apparatus is placed shall be adequately lighted to prevent danger.

**Apparatus exposed to weather, etc.**

32. All conductors and apparatus exposed to the weather, wet, corrosion, inflammable surroundings or explosive atmosphere, or used in any process or for any special purpose other than for lighting or power, shall be so constructed or protected, and such special precautions shall be taken, as may be necessary adequately to prevent danger in view of such exposure or use.

**Work where mechanical knowledge or experience is required.**

33.(1) No person except an authorized person or a competent person acting under his immediate supervision shall undertake any work where technical knowledge or experience is required in order adequately to avoid danger; and no person shall work alone in any case in which the Director directs that he shall not. No person except an authorized person, or a competent person over 18 years of age acting under his immediate supervision, shall undertake any repair, alteration, extension, cleaning, or such work where technical knowledge or experience is required in order to avoid danger, and no one shall do such work unaccompanied.

(2) Where a contractor is employed, and the danger to be avoided is under his control, the contractor shall appoint an authorized person, but if the danger to be avoided is under the control of the occupier, the occupier shall appoint an authorized person.

**Electric shock placard.**

34. Instructions as to the treatment of persons suffering from electric shock shall be affixed in all premises where electrical energy is generated, transformed, or used above low pressure, and in such premises, or classes of premises, in which electrical energy is generated, transformed or used at low pressure, as the Director may direct. These instructions will be in English and such other language or languages as the Director may direct.

**Access to and construction of sub-station.**

35. Every sub-station shall be substantially constructed, and shall be so arranged that no person other than an authorized person can obtain access thereto otherwise than by the proper entrance, or can interfere with the apparatus or conductors therein from outside; and shall be provided with sufficient means of ventilation and be kept dry.

**Control of sub-stations.**

36. Every sub-station shall be under the control of an authorized person, and none but an authorized person or a person acting under his immediate supervision shall enter any part thereof where there may be danger.

**Means of access to underground sub-stations.**

37. Every underground sub-station not otherwise easily and safely accessible shall be provided with adequate means of access by a door or trap-door with a staircase or ladder securely fixed and so placed that no live part of any switchboard or any bare conductor shall be within reach of a person thereon:

Provided, however, that the means of access to such sub-station shall be by a doorway and staircase—

- (a) if any person is regularly employed therein, otherwise than for inspection or cleaning; or
- (b) if the sub-station is not of ample dimensions and there is therein either moving machinery other than ventilating fans, or extra high-pressure.