FORM 17

TRINIDAD AND TOBAGO

THE FACTORIES (ELECTRICITY) REGULATIONS, 1951

Regulations made by the Governor in Council under Section 33 of the Factories Ordinance, 1946

SHORT TITLE, COMMENCEMENT AND APPLICATION

These Regulations may be cited as the Factories (Electricity) Regulations, 1951, and shall come into operation on the 26th day of April, 1951 and shall apply to the generation, transformation, conversion, switching, controlling, regulating, distribution and use of electrical energy in any factory and in any other premises, place, process, operation or work to which the provisions of Part V of the Factories Ordinance, 1946, with respect to the power to make Regulations and Orders are applied by that Ordinance.

DUTIES

It shall be the duty of the occupier to comply with these Regulations and it shall be the duty of all agents, workmen and persons employed to conduct their work in accordance with these Regulations.

DEFINITIONS

In these Regulations, the following expressions shall have the meanings hereby assigned to them respectively, that is to say:-

"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.

"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.

"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.

"Extra-high pressure" means a pressure in a system normally exceeding 3,000 volts, where the electrical energy is used or supplied.

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

"Conductor" means an electrical conductor arranged to be electrically connected to a system.

"Apparatus" means electrical apparatus, and includes all apparatus, machines, and fittings in which conductors are used, or of which they form a part.

"Circuit" means an electrical circuit forming a system or branch of a system.

"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.

"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 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.

"Cover with insulating materials" means adequately covered insulating materials of such quality and thickness that there is no danger.

"Bare" means not covered with insulating material.

"Live" means electrically charged.

"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.

"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.

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"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 passageway or compartment large enough for a person to enter, and used in connection with a switchboard when live.

"Authorised 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 a contractor as aforesaid, to carryout 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.

"Danger" means danger to health or danger to life or limb from shock, burn, or other injury to persons employed, or from fine, attendant upon the generation, transformation, distribution, or use of electrical energy.

"Public supply" means the supply of electrical energy by any local authority, company, or person authorized by law to distribute and sell electrical energy to any other person.

"Chief Electric Inspector" means the Chief Electric Inspector appointed under Section 3 of the Electricity (Inspection) Ordinance, 1945.

EXEMPTIONS

1. Nothing in Regulations 2, 3, 4, 7, 9, 10, 11, 15, 16, 17, 22, 23, 24, 25, 26, 28, 29, 30, 31 shall apply, unless on account of special circumstances the Senior Inspector of Factories in consultation with the Chief Electric Inspector shall give notice to the occupier that this exemption does not apply.

(a) To any system in which the pressure does not exceed low pressure direct or 125 volts alternating.
(b) In any public supply generating station to any system in which the pressure between it and the earth does not exceed low pressure.
(c) In any above-ground sub-station for public supply, to any system not exceeding low pressure.

2. Nothing in these Regulations shall apply to any service lines or apparatus on the supply side of the occupier's terminals where the supply is taken from a public supply, provided always that no live metal is exposed that it may be touched.

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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.

4. Nothing in these Regulations shall apply to apparatus, other than portable apparatus, forming part of the permanent electrical installation of a building, structure, ship or place by reason only that the apparatus, or the installation of which it forms part, is used for the lighting of any building operation or work of engineering construction or work in a ship to which the provisions of section 47(2) or section 48 of the Factories Ordinance, 1946 apply or for the supply of electrical energy for the purpose of any such operation or work.

5. Where the Senior Inspector of Factories in consultation with the Chief Electric Inspector is satisfied in respect of any factory or other place to which these Regulations apply that, owing to the special conditions of work or otherwise, any of the requirements of the Regulations can be suspended or relaxed without danger to the persons employed therein, he may by certificate in writing authorize such suspension or relaxation for such period and on such conditions as he may think fit. Any such certificate may be revoked at any time.

REGULATIONS

1. 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.

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

3. 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 to 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.

4. Every switch intended to be used for breaking a circuit and impartial contact. This applies to each pole of double-pole or multiple switches or circuit-breakers.

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

5. 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.

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

7. 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

8. 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.

9. 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.

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.

10. Where one of the main conductors of a system is bare and un-insulated, such as a bare return of a concentric system, no switch, fuse, or circuit-breaker shall be placed in this conductor, or in any conductor connected thereto, and the said conductor shall be earthed.

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.

11. 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 herewith; 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.

12. 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.

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

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13. 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.

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 other wise, if the metal work of the portable apparatus became charged, the metal work must be efficiently earthed; and flexible metallic covering of the conductors shall be itself efficiently earthed and shall not itself be the only each connection for the metal of the apparatus. And a lamp-holder shall not be in metallic connection with the guard or other metal work of a portable lamp.

In such places and in any place where the pressure exceeds low pressure, the portable apparatus and its flexible wore 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.

14. 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.

15. 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.

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.

16. All apparatus appertaining to a switchboard and requiring handling, shall so far as practicable be so placed or arranged as to be operated form 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.

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17. 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.

The following provisions shall apply to all such switchboards, working platforms and passage-ways constructed after 1st January, 1950, unless the bare conductors, whether overhead or at the sides of the passage-ways are otherwise adequately protected against danger by division 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 7 feet, and a clear width measured from bare conductor of not less than 3 feet.

(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 8 feet, and a clear width measured from bare conductor of not less than 3 feet 6 inches.

(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 4 feet 6 inches, and in the case of high-pressure and extra high-pressure not less than 8 feet, in each case measured between bare conductors, or (ii) the conductors on one side are so guarded that they cannot be accidentally touched.

18. In every switchboard for high-pressure or extra high-pressure:-

(a) Every high-pressure or extra high-pressure conductor within reach from the working platform or in any switch-board 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 –

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(1) 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 live is either (i) so separated from the relevant section by permanent or removable divisions or screen as not to be a source of danger to persons working on the relevant section or (ii) in such a position or of such construction as to be as safe as if so separated as aforesaid; or

(2) the switchboard itself is so arranged as to secure that the work is done without danger, without taking any of the precautions aforesaid.

19. All parts of generators, motors, transformers, or other similar apparatus at 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.

20. 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 leaking or contact from the higher-pressure system.

21. Where necessary to protect 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.

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

23. 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.

24. 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.

25. 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.

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

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27. 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 or such exposure of use.

28. 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 Senior Inspector of Factories directs that he shall not. No person except an authorized person, or a competent person over 21 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.

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

29. Instructions as to the treatment of persons suffering from electric shock shall be affixed in all premises or places where electrical energy is generated, transformed or used at a pressure normally exceeding 125 volts alternating or 250 volts direct.

30. 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 efficient means of ventilation and be kept dry.

31. 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.

32. Every underground sub-station not otherwise easily and safely accessible shall be provided with adequately means of access by a door or trapdoor 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 in high pressure.