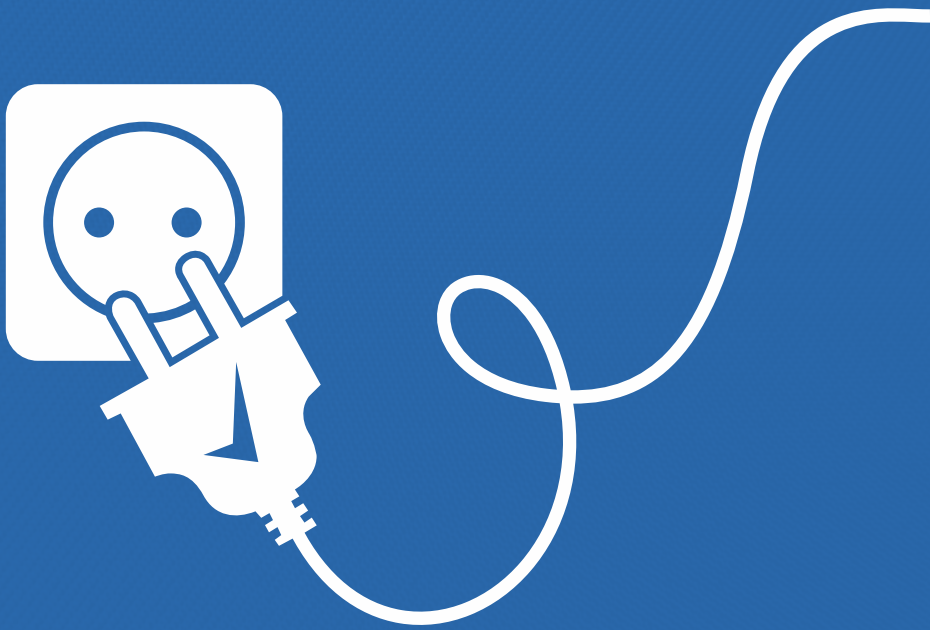
TATA

TATA POWER

ELECTRICAL SAFETY HANDBOOK



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ELECTRICAL INSTALLATIONS

1. Introduction

1.1 The term "electrical safety" broadly refers to the safety of generation, transmission, distribution and use of electricity. As far as members of the general public are concerned, the distribution and use of electricity in residential premises are the two aspects which have close relation to our household safety.

1.2 Unsafe electrical appliances and electrical installations may cause fire, electric shock and injury. To protect your family members and properties, you must ensure that you have a safe household environment (including your building and residential units) by paying attention to electrical safety.

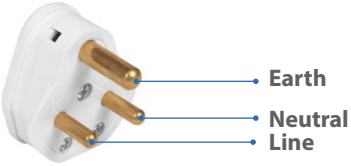
1.3 You must buy safe household electrical appliances, and use them properly and maintain them appropriately. To ensure the safety of the electrical installations in your residential premises and to ensure that there is no illegal addition or alteration, you must employ registered electrical contractors to carry out periodic inspection and maintenance.

2. Safety Tips for Buying and Using Electrical Appliances

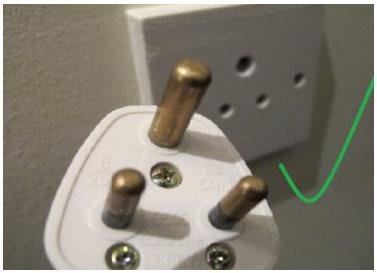
2.1 Buy electrical appliances which meet the local statutory safety requirements. Electrical appliances which are brought from outside may not be suitable for use under the local power supply conditions (e.g. rated voltage and frequency) and environmental conditions (e.g. temperature and humidity).

2.2 Electrical appliances must bear the proper markings as shown on the diagram or be accompanied with a Label indicated as same.

2.3 All electrical appliances other than the fixed electrical appliances (e.g. ceiling luminaries and electric water heaters) must be fitted with a 3-pin plug which complies with the safety requirements.



2.4 Do not buy or use any electrical appliance which is fitted with a 2-pin plug unless the appliance is fitted with a 2-round-pin plug which complies with safety standard IS 293 and is designed to receive power supply from a shaver supply unit inside a bath room (e.g. electric shaver, toothbrush or epilator).



2.5 For all fixed electrical appliances which do not receive power supply from socket outlets, the power supply connection must be carried out by a registered electrical contractor.

2.6 To prevent electric shock, electrical appliances must be effectively earthed, i.e. the metallic casing of an electrical appliance is connected to the "earth" pin of its plug. Electrical appliances without earth connection must be of double insulation or reinforced insulation design, and such appliances usually bear a symbol "⧈".

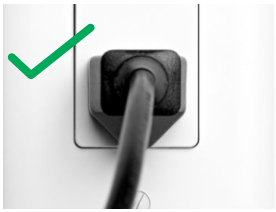
2.7 Electrical appliances must be accompanied by proper operating manuals depicting the installation, assembly, operation procedures and safety precautions. Adhere to the instructions given in its manual when using an electrical appliance.

2.8 Any electrical appliance of rated voltage less than 200V a.c. (e.g. audio-video (AV) appliances rated at 110V a.c.) must not be connected directly to the 220V A.C. household power supply system in India. Any such appliance must bear a proper warning label.

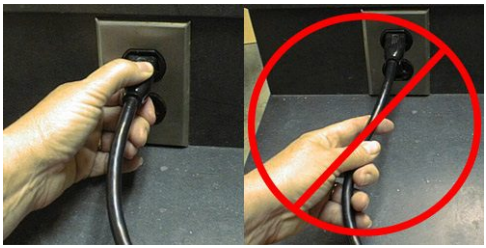
2.9 Set the voltage selector, if any, on an electrical appliance to 220V a.c. Otherwise; it may damage the appliance and cause fire.

2.10 Electrical appliances must be fitted properly with robust structures for stable operation. Under normal operation, there should not be any sign of overheating (e.g. discolouration, charring and deformation) or difficult starting, excessive noise or vibration, crack or loosen part. If the safety of an electrical appliance is in doubt, stop using it and hand over to an experienced technician for inspection.

2.11 Switch on the electrical appliance only after firmly plugging it into a socket outlet, and unplug the electrical appliance only after switching it off. Otherwise, it may cause hazard arising from sparking.



2.12 Do not unplug an electrical appliance by pulling its flexible power cord, this may damage the wire connection and cause danger.



2.13 Ensure that there is sufficient space around an electrical appliance for heat dissipation. To prevent overheating and fire, do not cover electrical appliances or place objects around them. TV sets and other AV products, chargers, luminaries, electric fans, electric heaters, refrigerators and washers/dryers, etc. are of particular concerns.

2.14 An electrical appliance with high power consumption (e.g. air-conditioner, dehumidifier, electric heater, electric water kettle/pot, electric rice cooker and washer/dryer) should receive power supply from a single fixed socket outlet to which the connection of any other appliance should be avoided.

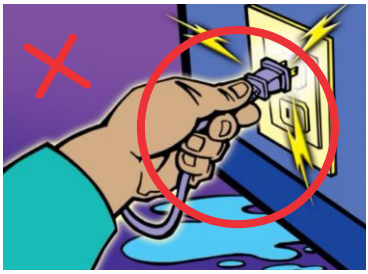
2.15 Keep children away from operating electrical appliances, especially those with heating or rotating parts (e.g. luminaries, hair dryers, irons, electric heaters, electric cooking ovens, electric fans and washers/dryers).

2.16 Do not let the flexible power cord of any electrical appliance to touch or be too close to any hot object (e.g. cooking range and electric heater).

2.17 To prevent danger, do not let water seep into or place any vessel containing water on any electrical appliance. Keep electrical appliances away from windows or balconies.

2.18 To prevent electric shock, avoid using any extension unit in a wet or humid environment (e.g. bathroom or kitchen). Great care should be taken whilst using an electrical appliance in such environment.

2.19 Avoid touching any electrical appliance, socket outlet or switch if hands are wet.



2.20 Place an electrical appliance on a flat and firm surface, and ensure that no excessive tension is applied to its flexible power cord.

2.21 Do not use any inflammable chemical substance (e.g. insecticide, thinner) near an operating electrical appliance.

2.22 For safety, before going out, electrical appliances (other than essential appliances) should be switched off as far as practicable.

2.23 For some electrical appliances, the starting current may be several times greater than that at normal operation. Therefore, when a blackout occurs, major electrical appliances should be switched off to avoid chances of momentary circuit overload and hence a blackout again when power supply is resumed.

3. Safety Guidelines for Household Electrical Appliances

3.1 Plugs

3.1.1 Only buy and use 3-pin ISI marked plugs.

3.1.2 3-pin plugs with following specifications must be used-

- pins
- grounded
- 5 A
- 220 – 240 V

3.2 Adaptors and Extension Units

3.2.1 Only buy and use adaptors and extension units which comply with the safety requirements.

3.2.2 Socket holes must be fitted with safety shutters.

3.2.3 Do not buy or use any adaptor or extension unit which is fitted with irregular socket holes. Each socket must only allow one type of plug to be inserted.

3.2.4 To prevent circuit overload and fire, not more than one adaptor or one extension unit should be inserted into a socket outlet.

3.2.5 Do not insert a 2-pin plug into a 3-pin-hole socket outlet, adaptor or extension unit by force.

3.2.6 Stop using an adaptor or extension unit if the socket holes cannot firmly hold a plug or if it is too hard to insert a plug into it.

3.2.7 Do not place any extension unit in a wet or humid environment (e.g. bathroom and kitchen).

3.2.8 Do not suspend any extension unit by the flexible power cord. This may damage the wire connections and cause danger.

3.3 TV Sets and other Audio-Video (AV) Products

3.3.1 Avoid placing any AV product in a humid, dusty or hot environment or under direct sunlight.

3.3.2 Disconnect power supply if an AV product is not to be used for a prolonged period of time. Avoid switching it off merely with a remote controller.

3.3.3 Place an AV product on a flat and firm surface to prevent it from falling down and causing injury.

3.4 Electric Water Heaters

3.4.1 The installation and alteration of any electric water heater must be carried out by a registered electrical contractor and a licensed plumber. Do not do it yourself.

3.4.2 Electric water heaters commonly used in households are shower type electric water heaters (also known as Low-pressure water storage type or open-outlet type electric water heaters) and unvented thermal storage type electric water heaters.

3.4.3 A shower type electric water heater is usually fitted with two protective devices, i.e. a thermostat and a thermal cutout. The water storage tank must not be pressurized. The pressure inside the tank is relieved via the water outlet, flexible hose and showerhead to prevent excessive high pressure from building up. It must only be fitted with an unblocked open-outlet type water mixer and shower accessories (including flexible hose and showerhead).

3.4.4 The water outlet of a shower type electric water heater must remain unblocked. Under normal operation, small amount of steam / water may come out from the showerhead. To prevent excessive high pressure from building up inside the tank and hence an explosion, do not install an on/off control valve at the water outlet .

3.4.5 The water storage tank of an unvented thermal storage type electric water heater may withstand a certain degree of high pressure. An electric water heater of this type must be fitted with a temperature and pressure relief valve in addition to the thermostat and the thermal cutout.

3.4.6 If any abnormality is found, switch off the electric water heater immediately and arrange an experienced technician to inspect it.

3.4.7 Switch off electric water heaters after use.

3.5 Chargers, AC Adaptors and Power Transformers

3.5.1 Care should be taken when buying or using battery chargers (for mobile phones or other products), AC adaptors (for notebook computers or portable video/still picture cameras, etc.), and power transformers (for electrical appliances rated at a voltage other than 220V).

3.5.2 Avoid connecting to power supply if not in use.

3.5.3 Under normal operation, they may be quite warm. However, they should not be too hot (e.g. too hot for hands).

3.5.4 Ensure that the output voltage of a charger, AC adaptor or power transformer matches with the input voltage of the appliance to be connected. Also, the rated output power (or current) must not be less than the input power (or current) of the appliance.

3.5.5 Battery charging time should not be too long. Adhere to the instructions given in the user manuals. Avoid leaving any operating battery charger unattended.

3.5.6 Do not let the electrodes of the output connector be in contact with any metallic object (e.g. the metallic casing of an electrical appliance). It may cause short-circuiting and fire.

3.6 Luminaries

3.6.1 Check if a luminary is suitable for direct mounting on a combustible surface (e.g. wooden or fibre false-ceiling), and check if a lamp bulb has its lamp cap at the lower position. See if there is any relevant symbol-

	**Suitable for direct mounting on a combustible surface**
	**Not suitable for direct mounting on a combustible surface**
	**Suitable for mounting on a combustible surface provided that a thermally insulating material is used to separate the luminaries from the surface**
	**Lamp cap must be at the lower position**

3.6.2 To prevent burns, do not touch an operating lamp bulb. Doing so with wet hands may also cause glass cracking.

3.6.3 The rated wattage of a lamp bulb must not be higher than that specified for the lamp holder. This may overheat the lamp holder or the lampshade and cause fire.

3.6.4 Before replacing a lamp bulb, switch it off and let it cool down.

3.6.5 To prevent fire, do not place any luminary (especially high-power luminary) close to any curtain, rug and cloth, etc. Check if there is a symbol specifying the required minimum distance to be maintained between a luminary and the illuminated objects.

3.6.6 To save energy, use energy-saving lamps as far as practicable.

3.6.7 General domestic Christmas decorative luminaries are not earthed. Therefore, these luminaries must be of double-insulation or reinforced-insulation design. Besides, these luminaries are not of waterproof design. Do not use them in an outdoor environment.

3.7 Air Conditioners and Dehumidifiers

3.7.1 To prevent damaging an air-conditioner or a dehumidifier, do not switch it on within 3 minutes after switching it off.

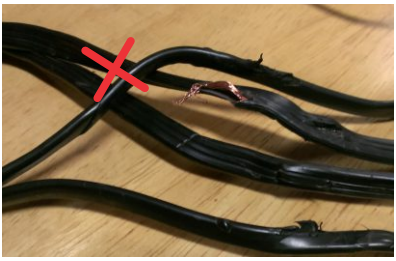
Always use a power plug and socket with a ground terminal, use the correctly rated breaker and fuse.

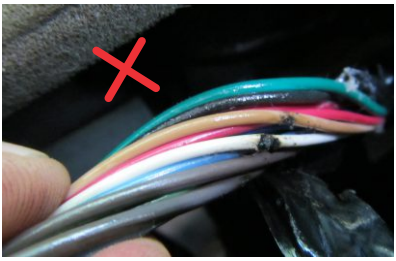
For electrical work, contact the dealer, seller, a qualified electrician, or an Authorized Service Center. Always ground the product as per the wiring diagram

3.7.2 Ensure that the air intake and outlet grills are not obstructed.

3.7.3 Do not touch, operate, or repair the product with wet hands. Hold the plug by hand when taking out.

3.7.4 Don't place lamps or TV sets near your air-conditioning thermostat.





3.7.5 Adhere to the instructions given in the user manual to clean electric fans, exhaust fans and cooker hoods periodically. Excessive dust on a fan motor may prevent it from normal heat dissipation.

3.8 Hair Dryers and Electric Heaters

3.8.1 To prevent fire, do not place an operating electric heater near any combustible object (e.g. blanket, cloth, curtain, rug and sofa).

3.8.2 Do not obstruct the air intake grill and outlet nozzle of an operating hair dryer or blowing type electric heater. Otherwise, it may overheat the heating elements and cause fire.

3.8.3 Avoid using any portable electric heater inside a bathroom. Accidental water seepage into an electric heater may cause electric shock.

3.8.4 Place an electric heater on a flat and firm surface to prevent it from collapsing and hence resulting in fire or burns.

3.9 Electric Irons

3.9.1 When not ironing, place the heated iron on a flat and firm surface. Unplug the iron before filling it up with water. After use, place the iron on a flat and firm surface, which is out of reach of children, for cooling down. Use three pin plug with earth wire for Iron.

3.10 Electric Blankets

3.10.1 Do not fold an electric blanket improperly or place any heavy object on it. This may cause overheating and fire. Adhere to the instructions given in the user manual.

3.11 Electric Rice Cookers and Kettles/Pots, etc.

3.11.1 When filling up an electric rice cooker, kettle/pot, multi-function cooker or coffee maker, etc., do not expose the connector at one end of the flexible power cord and the socket on the appliance to water. Ensure that the connector and socket are not deformed by prolonged use to avoid poor electrical contacts and overheating. Do not fill water above the specified maximum level.

3.11.2 Ensure that the bottom of the rice pan is dry before it is put into a rice cooker, and that the condensate collector is not clogged.

3.11.3 Ensure that there is no water seepage into an appliance when food is being processed.

3.11.4 Do not immerse an appliance or rinse it with water when cleaning.

3.12 Electric Cooking Ovens

3.12.1 To prevent fire, do not place any combustible object near an electric cooking oven (e.g. microwave oven, electric oven, toaster and toaster oven).

3.12.2 When using a microwave, electric or toaster oven, do not let water splash on the hot viewing glass. This may cause glass cracking and danger.

3.12.3 Do not use any utensil with metal ingredients in a microwave oven. It may cause explosion and catch fire. As some plastic utensils comprise of invisible metal ingredients, choose only suitable utensils for use in microwave ovens.

3.12.4 Do not heat any uncooked egg (with or without shell) or nut in a microwave oven as this may result in explosion. Read the instructions given in the user manual carefully.

3.12.5 Beware of overcooking and fire hazard. Do not leave any operating electric cooking oven unattended.

3.13 Blenders and other Electric Food Processing Appliances

3.13.1 Ensure that there is sufficient food in a blender, juice extractor or other food processor before switching on. Such an appliance should not be used for a prolonged period of time. Adhere to the instructions given in the user manual.

3.13.2 To prevent injury, any rotating part (especially the high-speed rotating cutter) of a food processor must be fixed securely. Ensure that the container lid is closed and secured before switching on.

3.13.3 Unplug the power supply if not being used or if a rotating part is being replaced.

3.14 Refrigerators

3.14.1 If a refrigerator is not to be used for a prolonged period of time, clear the food in it and unplug it.

Leave enough space between your refrigerator and the walls so that air can easily circulate around the refrigerator.

3.15 Washers/Dryers

3.15.1 Avoid leaving any operating washer/dryer unattended.

3.15.2 Do not exceed the loading capacity and adhere to the appropriate temperature setting and drying time as instructed in the user manual.

3.15.3 Do not dry clothes containing downs, latex, rubber or wax, etc in a dryer. Otherwise, it may cause overheating and fire.

3.15.4 Adhere to the instructions given in the user manual to remove foreign items in its drainage system periodically. This prevents the drainage pump from overheating.

3.15.5 Avoid obstructing the exhaust vent of a dryer. The blockage of the vent may cause internal overheating. Clean up the vent filter periodically.

3.16 Electrical Aquarium Appliances

3.16.1 Ensure that there is no water seepage into any electrical aquarium appliance (e.g. aquarium luminary, filter and air pump) when filling up an aquarium tank. Otherwise, it may cause electric shock.

3.16.2 Ensure that electrical appliances are well clear from the water level. Beware of possible splashing on the appliances due to fish movements.

3.16.3 Buy and use waterproof electrical aquarium appliances.

3.16.4 The heating tube of an immersion-type heater should be entirely immersed into water before switching on. Otherwise, it may cause glass cracking and danger.

3.17 Vacuum Cleaners

3.17.1 Do not use a vacuum cleaner to pick up water. Water content in vacuum cleaner may cause electric current leakage.

3.17.2 To prevent a vacuum cleaner from overheating, adhere to the instructions given in the user manual to clean up the dust bag periodically.

3.18 Electrical Appliances Fitted to Furniture

3.18.1 Electrical appliances fitted to furniture (e.g. luminaries and switches) must comply with the statutory safety requirements.

3.18.2 Any such appliance must be fitted with a 3-pin plug which complies with the safety requirements, and its parts (including the flexible cable connecting the plug, switches, electrical wiring and connectors, etc.) must be securely fixed.

3.18.3 Metallic casing must be earthed. Sufficient isolation or insulation for live parts must be ensured.

3.18.4 Electrical wires must be adequately sized to prevent overheating and fire.

3.19 Travel Adaptors

3.19.1 Travel adaptors which are designed for use are not regulated by the Electrical Products (Safety) Regulation. Extra care should be taken when buying any such adaptor or using it.

3.19.2 When using any such adaptor in a place, ensure that the rated voltage and current of the adaptor and the electrical appliance to be connected shall match with those of the power supply system in that place.

3.19.3 Avoid using any such adaptor for a prolonged period of time or leaving it unattended.

3.19.4 Do not use any such adaptor if its pins may not be inserted securely into a socket outlet.

3.19.5 When using such an adaptor, keep it away from any combustible object. Ensure that there is sufficient ventilation space around the adaptor for heat dissipation.

3.19.6 Do not use any 2-pin adaptor for 3-pin electrical appliances unless the appliances are of double or reinforced insulation design.

3.20 Additional Safety Tips for Individual Electrical Appliances

3.20.1 Electric Fans, Exhaust Fans and Cooker Hoods-Ensure the installation is at a location where there is sufficient space for free movement and heat dissipation.

Prevent any loose object (e.g. paper and cloth) from being sucked into an operating electric fan, exhaust fan or cooker hood. Otherwise, it may cause overheating and catch fire.

Install exhaust fans at a higher elevation than ceiling fans.

3.20.2 To prevent injury, avoid touching an operating ceiling fan whilst working at high levels. To prevent a ceiling fan from falling down, its installation must comply with the requirements given in the user manual. Replace conventional regulators with electronic regulators for ceiling fans.

3.20.3 Check if the flexible power cord between the moving and static parts of a fan has been damaged by prolonged use. A damaged cord may cause danger arising from short-circuiting or exposure of live wire cores.

4. Responsibilities of the Owners of Electrical Installations

4.1 Take appropriate measures (e.g. arranging for proper maintenance and repair) to prevent electrical accidents.

4.2 Ensure that the electrical installations are free of any illegal addition or alteration.

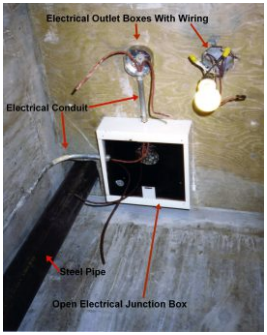
4.3 Arrange registered electrical contractors to carry out any electrical work (e.g. addition to, alteration of, inspection, testing and repair of an electrical installation), including those in connection with a renovation work. Registered electrical contractors shall arrange registered electrical workers of appropriate grades to carry out different categories of electrical work.

4.4 Arrange registered electrical contractors to inspect and test the electrical installations periodically.

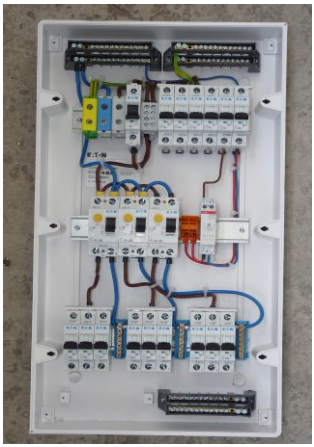
5. General Tips for Electrical Installations

5.1 Electrical installations must have effective earthing arrangement. To ensure safety, do not remove any earthing connection.

5.2 Concealed electrical wiring of new electrical installations must have suitable mechanical protection (e.g. conduits).



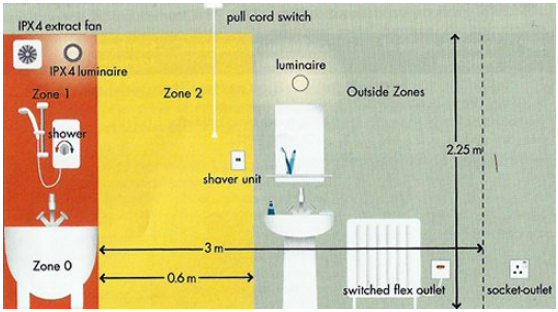
5.3 Electrical wiring must be segregated from telephone / telecommunication wiring. The wiring of these two categories must not be installed inside the same conduit or trucking unless specific safety requirements are complied with.



5.4 Distribution boards must have identification labels to indicate the purposes of individual circuits.

5.5 An electrical appliance with high power consumption should receive power supply from a single socket outlet. Therefore, sufficient nos. of socket outlets should be installed.

5.6 Any socket outlet installed in a bathroom must be at least 0.6 metre away from any shower basin and bathtub.



5.7 Socket outlets should be installed as far away as practicable from any water tap, gas tap and cooking range.

5.8 Circuits for socket outlets must be protected by a "earth leakage circuit breaker" (ELCB).

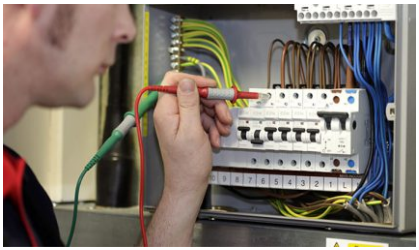
5.9 Outdoor luminaries, socket outlets and switches must be of weatherproof types.

5.10 For the luminary, exhaust fan and electric water heater inside a bathroom, the on/off switches should be installed outside the bathroom.

5.11 For more safety requirements on electrical installations, you may consult registered electrical contractors / workers.

6. Periodic Inspection, Testing and Certification

6.1 To ensure safety, any electrical installation in a residential unit, shop and office and the commercial electrical installation of any building must be inspected, tested and certified on a Periodic Test Certificate



6.2 The approved loading of the commercial electrical installation in most buildings exceeds 100A, whereas that of the electrical installation in general residential units usually does not exceed. If in doubt, the owners must arrange a registered electrical contractor to check.

6.3 After inspection, testing and repair, the registered electrical contractor shall issue a Periodic Test Certificate to confirm that the electrical installation is safe and complies with the statutory safety requirements.

6.4 Owners may consult a registered electrical contractor / worker for the checklists for periodic inspection and testing for electrical installations.

7. Proper Use and Maintenance of Electrical Installations

7.1 Arrange for immediate inspection and repair by a registered electrical contractor if the safety of an electrical installation is in doubt (e.g. current leakage or frequent tripping).

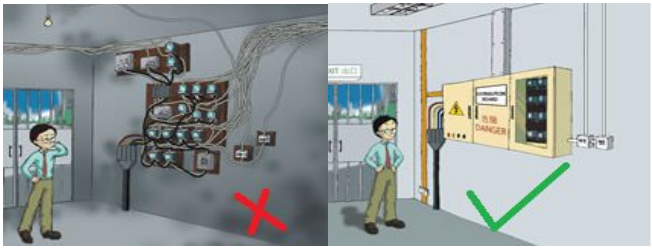
7.2 Avoid touching any socket outlet or switch with wet hands.

7.3 Each socket outlet should only be inserted with one adaptor or one extension unit to prevent circuit overload.

7.4 To ensure safety, arrange a registered electrical contractor to inspect and test an electrical installation periodically even though its approved loading does not exceed 100A.

7.5 When a blackout occurs, major electrical appliances should be switched off to prevent, the occurrence of momentary circuit overload and hence a blackout again while resuming power supply.

8. Defects Commonly Found in Electrical Installations



8.1 Untidy, ageing and worn-out electrical wiring arising from lack of maintenance and repair.

8.2 Electrical wiring with conductive part exposed.

8.3 Unused or abandoned wiring not removed.

8.4 Electrical installation not effectively earthed because of ageing or lack of maintenance and repair.

8.5 Illegal additions to or alterations of electrical installations leading to overload.

8.6 Lack of identification labels and warning notices.

8.7 Switch rooms being used as storerooms.

8.8 Obstructions while accessing switches or distribution boards

Fire Extinguishers:

Co_2 and DRY Chemical Powder Fire Extinguishers can be kept in Meter room to fight the small fire situations & to Avoid the spreading of Fire.Training for Operation of these fire extinguishers is required to be done regularly.

Smoke detectors can be provided in Meter rooms to Alert the Watchman in the Society by Providing alarm in watchman's chowky.

Flurocent indicative tapes can be fixed on the floor to guide the person entering the Meter room in case of Supply Failure & under dark Conditions.One D.C.Emergency light can be placed in the Meter room.

9 Safety of Commercial consumers

In areas like Malls, Theatres, Hospitals, Clubs, Educational Institutes, large number of visitors are always present. Due to this, in case of any incidence, the risk of loss of life and property increases many folds. Hence in efforts to control such risks, electrical safety of their premises is of prime importance.

10 General Suggestions-Electrical safety and precautions to be taken for plant / office safety.

10.1 Use good quality electrical switches & accessories and replace immediately in case of any fault or worn out situation.

10.2 Install Earth Leakage Circuit Breakers (ELCBs) as it will restrict any short circuit or electric shock and will prevent any accident. The other benefit is that it will detect small amount of leakage current and automatically switch off the power.

10.3 Fuses and circuit breakers protect equipment, not people. Use the right sensitivity ELCBs (30mA, 100mA, 300 mA)Carry out electrical safety audit internally at least once in three months and third party audit at least once in a year.

10.4 A proper smoke detection system and siren / alarm needs to be in place and needs to be tested & checked for functionality.

10.5 The Earthing continuity should be checked as the main source cable is far away from main electric board panel.

10.6 A proper Emergency Evacuation Plan - glow in dark indication display board should be installed at all the exits with appropriate glow in dark signs indicating the evacuation route.

10.7 Single line diagram (SLD) is to be prepared and is to be displayed in the main LT distribution room, to know the exact power flow which helps in case of fault finding.

10.8 Licensed technicians and a Supervisor should manage all the operation and supervise the maintenance activities carried out either departmentally or by other agency. If any alteration is done such as erection/ replacement/modification activities, of LT main panels and LT distribution panels, obtain necessary NOC from Electrical Inspector's Office. (Ref IE Rule 3 & IE Rule 45).

10.9 Standard operating Procedures should be prepared giving details about the step by step activities such as isolating and de- energizing procedures of the H.T. and LT equipment / isolation from all the sources of energy, ensuring the 'No Volt' condition using multi meter (for LT Side) followed by procedure of discharging of equipment and safe guarding by way of effective grounding such that re-energization of power is effectively prevented while work being carried out (by application of LOTO Lock Out Tag Out).

10.10 The SOP should be prepared in support of both normal operations and operations under emergency situations such as stuck breaker condition and resuming power after power failure (Black Start).

10.11 SOPs should be prepared internally or by competent person such as LEC as applicable to the power layout. IE Rule 29.

10.12 PTW system needs to be implemented for all the activities undertaken at the earliest. Ref. I E Rule 36.

10.13 Earth Pit Resistances: earth pit resistance should be measured once in two years. The past Test results should be available with the consumer (IE Rule 61 & 65).

10.14 First Aid Boxes & CPR

b) First Aid boxes should be equipped with such contents as the State Government would specify such as,

- Disinfectant lotion (e. g. Dettol / Savlon)
- Sterile Cotton
- Gauge Cloth
- Mild Pain killer (paracetemol of low potency)
- Skin Ointment (e g. Burnol / Soframicin)
- Pair of Scissors

No medicines or scheduled L or H drugs should be placed in the First Aid box.

It is very important that adequate care should be taken to inspect that these contents are regularly checked by qualified First Aiders / Doctors and replace / replenish the contents as and when required. The employees should be trained on correct use of First Aid. First Aid boxes should be placed in clean and dry cupboards with glass shutters such that these boxes are conspicuously seen and kept away from direct sun light, heat and contamination. Ref IE Rule 43 (2)

10.15 Fire Protection:

Adequate quantity of fire extinguishers such as CO2 & DCP (Dry Chemical Powder) extinguishers to be deployed at all strategic locations and also hands on training should be imparted and documented.

All the fire extinguishing equipment to be tested regularly through a competent agency. IE Rule 43

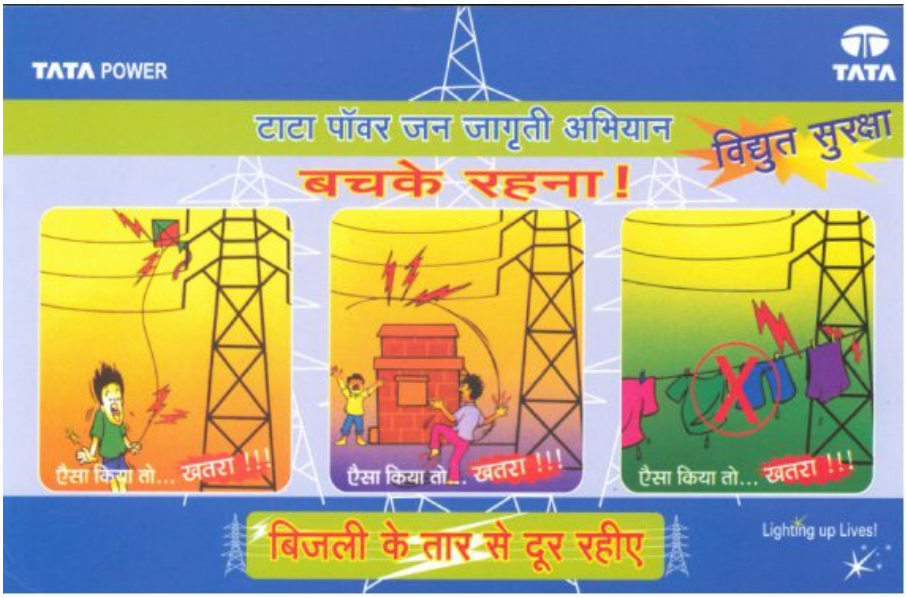
10.16 Safety Trainings:

Regular safety training should be imparted to all the employees.

a) Hands 'ON 'training with Portable Fire Extinguishers.
b) Hazards of Electricity and Prevention
c) CPR (Cardio Pulmonary Resuscitation) method during Electric Shock. IE Rule 44
d) Isolation & Safe Guarding of Equipment for the purpose of Maintenance.
e) For commercial office premises, occupants should also be trained for electrical as well as fire prevention and use of Fire Extinguishers.
f) It is suggested that a proper fire mock drill in addition to First Aid Training to be imparted to all the concerned staff / occupant and few of them to be selected as marshals / wardens and briefed about his role

11 Safety tips for public staying in vicinity of HT lines

- कोई क्रियाएँ एचटी लाइनों के आसपास के क्षेत्र के बाहर किया जाना चाहिए
- किसी भी निर्माण एचटी लाइनों के आसपास के क्षेत्र के बाहर किया जाना चाहिए.
- Scaffolds एचटी लाइनों के आसपास के क्षेत्र में खड़ा नहीं किया जाना चाहिए.
- एचटी लाइनों के प्रति किसी भी वस्तु मत फेंको. यह अनजाने में एचटी लाइनों के करीब जा सकता है.



- Activities should not be carried out under/In vicinity of HT Lines
- No construction activity should be planned or carried out under/In vicinity of HT Lines.
- Scaffolds should not be erected in vicinity of HT Lines.
- Do not throw any object towards HT Lines or in such a way that it inadvertently goes close to HT Lines.
- Do not protrude any object metallic or non metallic towards HT Lines.
- Always maintain a distance of at least 7 meters from the HT Lines.
- NOC (No Objection Certificate) should be taken from concerned utility before carrying out any construction under/in vicinity of HT Lines.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बिजली के तार से दूर रहीए


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टि.वी. केबल का तार बिजली के तार को छु जाने से आपकी जिंदगी खतरे में आ सकती है !
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सुरक्षित अंतर रखें !

12 Tips for Fire Safety at Home

12.1 When Preparing Food

- Do not leave any cooking unattended. Turn off all cooking appliances and unplug them when not in use.
- Dress appropriately when cooking Avoid clothes with long loose sleeves when working near heat sources.

12.2 When using Electrical Appliance

- Do not overload electrical outlets.
- Check the condition of the wiring (electrical appliances and decorative lights etc.) Frayed or cracked cords should be repaired by licensed technicians.

12.3 Prevent Children from Starting Fires

- Always keep matches, lighters and candles out of young children's reach and do not allow them to play with these items. Educate them on the dangers and hazards of fire.
- Children playing with sparklers must be supervised by parents/adults.

12.4 Smoke Detectors and Fire Extinguishers

- Having smoke detectors and fire extinguishers at home could save lives.
- The battery-operated detector emits a very loud, piercing alarm when smoke is detected and is useful because it gives early warning of any fire.

13 Basic Precaution for use of LPG at Home

- Retain safety cap with nylon thread attached to cylinder. Fix the cap on the valve to stop leak, if any. Fix safety cap on the valve, when cylinder is not connected.
- Check Rubber tubes regularly for cracks, if any.
- Change rubber tube at least once in two years.
- Keep cylinder in upright position.

- Always keep the gas stove on a plat form above the cylinder level.
- Self-repair is unsafe. Call distributor's mechanic.

14 Fire Prevention and Protection in High Rise buildings

14.1 Planning Stage

- Lay out should ensure adequate fire separation between buildings to minimize Fire spread possibility.
- Enough space to be provided for movement of fire fighting vehicles and ambulances.

14.2 Design Stage

- Wide staircases and lobbies to permit orderly evacuation in emergency.
- Critical areas such as refuge areas to be protected by fire proof doors.
- Fire lift for exclusive access to fire fighters.
- Electrical wiring in metal conduits.
- Emergency switches/valves at ground floor for disconnecting power and piped gas supply, floor-wise.
- In central air conditioning (A/C) system, provide automatic Fire dampers (in the common duct) for each floor or occupancy.
- Individual A/C system for each occupancy or for each floor is preferred than central A/C system.
- Openings in the cable passageways (from duct to floors) to be closed.
- Alternate power supply for staircase & corridor lighting circuits, fire lifts and stand by fire Pump.
- Fire detection & /alarm System, Hose reel, Wet Risers, Yard hydrant, automatic Sprinkler and Water reservoir and fire Pumps as per National Building Code of India , 2005.

14.3 Occupation stage

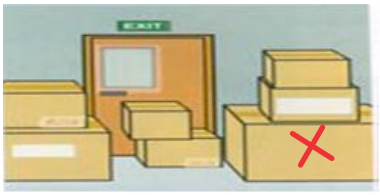
- Minimize combustible materials for furnishing. Use fire retardant material for false ceiling, partitions and upholstery.

- Develop a simple, written fire safety plan which should include precautions for Fire prevention at occupant's level, fire control by the building maintenance/security team and the emergency plan covering evacuation procedure.
- All occupants should know clearly how to identify/raise Fire alarm, call fire brigade, tackle fire, and evacuate safely. Undertake fire drills and mock exercise for evacuation.
- Do not store inflammable materials inside the building.
- Do not forget to switch-off the electrical mains and to close the window shutters before leaving the home on long tour.
- Check availability of dedicated water for firefighting periodically.

14.4 Fire safety tips

- Avoid removing any vital firefighting equipment like hose reels and fire extinguishers from where they are installed.
- Service the fire extinguishers and test the voice communication (PA system), fire alarm and other fire safety systems on a regular basis.
- Avoid stacking goods along common corridors, escape passageways or staircases. Do not lock up the exit doors when the premises are occupied/being used.





14.5 During fire emergency

- Raise the alarm and summon the Fire Brigade.
- Extinguish the fire with available suitable fire Extinguishers.
- Be Calm and do not give any room for panic.
- Keep the doors and windows shut to prevent ingress of heat and smoke. Switch off the electrical mains before fighting the fire.
- Use staircase only for evacuation; do not use the lift because smoke moves through lift shafts and lifts may get stuck between floors.
- Make sure to close the exit door while getting out of fire Zones.
- Try to reach refuge area, if provided in the building.
- Go down the staircase to the ground.
- Never return to collect any valuables.
- Walk, do not run.

- Be available for roll call at the assembly point on the ground Floor.
- In case your clothes are on fire do not run. Stop, drop and roll on the ground. Pour cold water over burns till pain subsides.

14.6 Evacuation Drill Guidelines

- In case of fire in a high-rise building safe evacuation of its occupants may present serious problems unless a plan for orderly and systematic evacuation is prepared in advance and all occupants are well drilled in the operation of such plan.
- Fire Drills shall be conducted, in accordance with the fire safety plan, at least once every three months for initial two years. Thereafter fire drills shall be conducted once every six months.
- All occupants of the building shall participate in the fire drill.
- A written record of such drills shall be kept on the premises for three years period and shall be readily available for fire brigade inspection.
- In case you need assistance or guidance call **Fire Prevention Cell through 101.**

15 Steps to follow if Fire breaks out

- Get everyone out
- Close the door to contain the fire.
- Before opening a closed door use the back of your hand to touch it.
- Don't open, if you feel hot-the fire will be on the other side.
- Turn off the gas mains if you can reach it and Call 101.(Fire Brigade)
- Fight the fire if you can, but ONLY do so without endangering yourself or others.
- Enter a safe room, preferably one that overlooks a road.
- If you have to escape through smoke, keep low by crawling on your hands and knees.
- In a fire, smoke will naturally rise leaving some fresh air about 30 cm to 60 cm off the floor. Crawling keeps your head in this safety zone, away from the smoke's toxic content.
- Shut the door behind you. Cover the gap at the bottom of the door with a blanket or rug to prevent smoke from entering the room.



- Shout for help from the window or other openings to alert passers-by. Then wait for rescue to arrive.
- Call 101 and inform the operator of your location (room number/position), floor level, what is on fire and how many persons are trapped.
- Do not attempt to jump out of the building. Help will be on the way very soon

16 Steps to follow if Clothing Catches Fire

- Stop. Do not panic and run.
- Whether indoors or outdoors, drop down immediately, covering your face with your hands.
- Roll over and over to put out the flames.
- Rolling smothers the flames by removing the oxygen.
- Covering your face with your hands will prevent the flames from burning your face and help keep fumes and smoke from reaching your lungs and eyes.

17 Fire Hydrant Maintenance

- A fire hydrant is an active fire protection measure, it is a type of rigid water piping which is built into multi-story buildings in a vertical position or bridges in a horizontal position, to which fire hoses can be connected, allowing manual application of water to the fire.
- Periodic inspections of the vicinity of all hydrants should also be done to ensure that there are no obstructions regarding accessibility.
- Hose reels should be subjected to regular inspection to ensure that the inlet valve, glands, tubing and shut off nozzle are sound and free from leaks, and also to ensure that the outlet of the nozzle is not choked.

- Once in a year the hose reels should be completely opened and subjected to operational water pressure to ensure that the hose is in good condition and that the coupling joints are watertight.
- It is essential that all defects are rectified in the shortest possible time.
- Where, due to unforeseen difficulties, it is necessary to leave an installation not available for use, the fire service should be informed immediately in order that alternative arrangements may be made to cover this deficiency if the need arises. In addition, a suitable notice to indicate that the installation is not available for use should be placed in a prominent position.

18 Lift Safety

18.1 Lift Usage Guidelines

- All lifts should confirm to IS 14665 or equivalent
- All high-rise buildings (15M) should obtain high rise clearance from Electrical inspector.
- Lift must not to be operated without a licence and it is required to be renewed regularly.
- Acquire valid Licence to use a lift, and display it in lift.
- No child below the age of 12 years should be allowed inside a lift without an adult being present.
- Do not overload and exceed elevator capacity.
- Do not use elevators in case of fire or other emergency
- Do not play in or around an elevator.
- If trapped in the elevator, press the alarm button and wait for help. Do not attempt to get out on your own.
- Do not attempt to keep doors open by placing objects or body parts in their way. Use button to open the door instead.

18.2 Lift Inspection

- The lift can be inspected and tested from five places :-
  a) From the pit
  b) From inside of lift car
  c) From top of lift car
  d) From Machine Room
  e) From each and every landing of the lift

From the pit

1 Use ladder if the depth of pit is more than 1300 M

2 Pit should be dry and clean. Do not enter in pit / lift flooded with water

3 There should be pit switch and lighting arrangement and after operating pit switch the lift should STOP.

4 Trailing cable should be properly terminated so as to avoid detachment from the termination box.

From inside Car

1 Display of no. of person and weight allowed.

2 Fan / Blower should be in working condition.

3 Provision of alarm bell and lighting arrangement.

4 No appreciable jerk should be noticed at the time of starting.

5 In case of power operated lift the door should not open while moving.

6 The floor should be correctly displayed.

From top of lift Car

1 The car top should be in good and strong condition.

2 When Maintenance switch is ON the calls from landing and from the car should not get registered while moving in either of direction

3 All metal parts in lift shall be efficiently earthed

4 Provision of switchboard on car top consisting of properly guarded light bulb and three pin socket

From Machine room

1 Machine room should be kept locked

2 There should be adequate cross ventilation

3 Separate main switches for lighting and power supply to the lift

4 Brake releasing device, Delocking key for landing gates should be provided in machine room

5 Overload preventer, Phase reversal preventer, Over-speeding governor should be provided.

From landing floors

1 Provision of de-locking gates arrangement at every floor

2 Condition of landing doors

3 The landing door should not open if the car is in motion.

18.3 When Trapped in a Lift

DO'S

- Stay calm and try to reassure anyone who shows sign of panic.
- Instil confidence and explain that you are not in danger, help can be summoned in several ways, and there is no possibility of the lift falling out of control.
- Use the alarm button or the telephone inside the lift to call for help.
- If there is no alarm system, bang on the door and shout for help.
- Once you contact someone outside, explain what has happened and ask him to get expert help at once.
- Tell your contact to dial 101 (Fire Brigade).
- Stay calm and wait, you may get hungry, thirsty and worried, but you will survive.

DON'T

- Never try to escape from the lift without help from an expert outside.
- Do not try to force the inner lift doors open.
- Do not be tempted to climb out of any hatch there may be in the lift's ceiling.