

6. Electricity

- ◆ Working with electricity can bring a serious accident like an electrical shock and fire. Learn danger of electricity and practice safe work habits.
- ◆ Do NOT lay cables on the floor. If you have to do, put insulated covers on them so as to prevent a breaking down of a wire and a stumbling hazard.
- ◆ Use power strips wisely; never overload power strips or wall outlets. Check plugs to find and clean off any dust so as to prevent a tracking phenomenon.
- ◆ Put insulated covers on parts charged by a high voltage or carrying large electric current in the apparatus. Set up a fence around the installation charged by a high voltage or carrying large electric current. Grounding (earthing) should also be ensured.
- ◆ Working on an electrical panel and wiring electrical cables are NOT permitted except for a qualified, licensed electrician. If necessary, contact an electrician or a licensed person.

Electrical shock

Inferior electrical work, inappropriate usage of electrical apparatuses, or unexpected contact with a charged part of an apparatus causes electrical shock and can make a fatal accident.

Be sure to the following safety tips:

1. To avoid exposure to parts charged by a high voltage or carrying large electric current in the apparatus, put insulated covers on them, or set up a fence around them with a hazard tag.
2. When you work on the circuits in an apparatus, turn off the power to the apparatus, and be sure to test the circuits by an electroscope before you touch them to make sure that the power has been turned off and the circuits are not charged. Use safety work equipment (safety cap, helmet, rubber gloves, rubber shoes etc.). Grounding (earthing) and a hazard tag should be used if necessary.
3. Electrical apparatus should be surely grounded and use a green wire for grounding as a rule.
4. When you work on a capacitor, be sure to discharge it by using a resistance.
5. Do NOT cancel interlock system. (e.g. a door of the installation)
6. Turn off the power to the circuit that you plan to work on by switching off the circuit breaker in the electrical panel, and tag it out.

7. Removing oil or dust from the apparatus and keeping it clean to prevent hazardous leakage currents.
8. Do NOT work alone with high voltage or large electrical current.
9. Keep working locations clean. It is necessary to avoid injury following an electrical shock.

Electrical Fire Safety

Inferior electrical work or maintenance, which induces a leak of electricity, an electrical contact failure, or a short circuit, causes electrical fires. Deteriorated electrical parts, inappropriate usage of electrical apparatuses, or an overload also leads electrical fires and can make a fatal accident.

Be sure to the following safety tips and prevent electrical fires:

1. Use applicable electrical wires and cables taking account of an electrical current, voltage, heat, and radioactivity, etc.
2. Do NOT lay cables on the floor permanently. If you have to set temporary cables on the floor, put covers on them so as to prevent a breaking down of a wire and a stumbling hazard.
3. Never overload most of wall outlets and power strips over 1500W (100V × 15A). A sequential use of power strips needs further caution. Use power strips equipped with leakage circuit interrupters as possible. Applicable electric current for general use cables is shown in the following table.
※Never overload outlets at a place over 15A.
4. Never overload a cable reel. Do NOT use it with a cable reeled in. Let workers use a cable reel equipped with circuit interrupters for their tools.
5. A periodical inspection on electrical apparatuses and installations must be performed. Check plugs and outlets to find and clean off any dust. Examine terminals and plugs for defects (loosen, damaged, or overheated etc.).

Table: Permissible electrical current for a cord and a cabtyre cable.

Core size (mm ²)	Number/Diameter of strands (No. / mm)	Current for a cord (A)		Current for a cabtyre cable (A)	
		vinyl (not vinyl acetate), rubber sheath	Heat resisting vinyl, polychloroprene sheath	vinyl (not vinyl acetate), rubber sheath	
				2core	3core
0.75	30 / 0.18	7	8	12	10
1.25	50 / 0.18	12	14	16	14
2.0	37 / 0.26	17	20	22	19
3.5	45 / 0.32	23	28	32	28
5.5	70 / 0.32	35	42	41	36

Permissible works on electricity

The electrician's license is required to perform electrical works such as wiring, installation of a circuit breaker etc. However, the following several works are permitted to do without the electrician's license.

1. Connecting cords or cabtyre cables to the following electrical devices that are used in a lower voltage than 600V: an attachment plug, a screw coupler, a socket, a rosette, other couplers, a knife switch, a cutout switch, a snap switch, or other switches.
2. Screwing up electrical wires (cords, cabtyre cables, or cables) on terminals of an electrical apparatus (not wiring devices) or a battery that is used in a lower voltage than 600V.
3. Installing or removing of an electric meter, an amp circuit breaker, or a fuse.
4. Wiring a secondary circuit of an electric bell, an interphone, a fire alarm sensor, a bulb lamp, or a transformer that provides a secondary circuit voltage lower than equal to 36V.
5. Placing or replacing a pole, a crosspiece, or a similar stuff for electrical wires.
6. Placing or replacing a culvert or a pipe for underground wiring.

If you do these works, you must have finished Special Education Pertaining to the Work of Installation, Etc. of Low Voltage Live Circuits, which is based on Industrial Safety and Health law, before the work.

Electrical panel

Most of works and operations in an electrical panel don't require the electrician's license. To do these works or operations, however, you must have finished Special Education Pertaining to the Work of Installation, Etc. of Low Voltage Live Circuits. Electrical panels are locked and managed by administrators. If necessary, contact an administrator of electricity.

Warning

1. Turn on a red rotary warning light when a device that produces high voltage, large current, or a strong magnetic field is in operation.
2. Do NOT work around an operating electromagnet or a permanent magnet, or stop the operation.