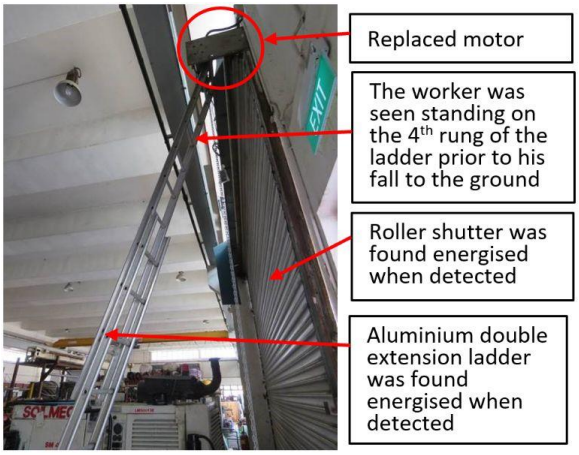
WSH Alert

25 March 2020, Ref: 1920114

Accident Advisory: Worker electrocuted and fell from height

Ref: 1920067 WSH Alert Accident Notification dated 22 November 2019

On 7 November 2019 around 9:30am, a worker was on a ladder replacing the motor of a roller shutter when he suffered an electrical shock and fell about 5 metres to the ground. He was conveyed to the hospital where he succumbed to his injuries.



Figures 1: Overview of the accident scene.

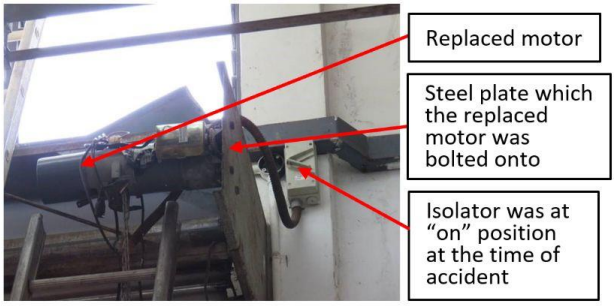


Figure 2: Closeup of replaced motor.

Recommendations

An electrical shock is received when electrical current passes through the body. Current will pass through the body in a variety of situations. The danger from electrical shock depends on the:

- amount of electrical current passing through the body;
- duration of the electrical current passing through the body; and
- path which the electrical current passes through the body.

Occupiers, contractors, employers and workers in control of similar workplaces, and undertaking similar work involving exposure to electrical and fall-from-height hazards, are advised to consider the following risk control measures to prevent similar accidents:

Isolation of hazardous energy sources

- Identify and label all potentially hazardous energy sources (e.g. electrical power source).

- Establish and implement proper Lockout and Tagout (LOTO) to ensure that all potentially hazardous power sources are suitably isolated and locked out before carrying out any work such as maintenance, repair or installation of electrical equipment. Where possible, de-energise the equipment prior to working with it.

Equipment maintenance, repair or installation by competent personnel

- Ensure that electrical equipment is in good working condition and placed on a preventive maintenance programme in accordance with manufacturers' recommendations.
- Ensure that electrical works are carried out only by personnel who are authorised, trained and competent.
- Put in place measures to ensure that electrical equipment is not tampered with or modified by untrained personnel.
- Specialised electrical safety training must be provided to maintenance workers who need to work with, or around live, or exposed electrical components. The training should include, but not limited to:

  - basic electrical theory;
  - hazard awareness and identification;
  - safe work procedure (including LOTO procedure);
  - use of personal protective equipment;
  - rescue procedure; and
  - first aid.

Safe work practice for electrical workers

- Do not work in wet areas or under wet conditions (e.g. wet weather for outdoor works).
- Use the necessary personal protective equipment e.g. electrical work gloves and rubber-soled footwear.
- Work on top of a dry rubber insulating mat where practicable.
- Use only tools fitted with a non-electrically conducting handle.
- Refrain from using contact-based electrical test pen. To minimise the risk of electric shock, use a non-contact based voltage detector instead.

Permit-to-Work (PTW) for hazardous work at height

- In all workplaces that are factories, the PTW is a mandatory requirement for all work at height situations where a person could fall from a height of more than 3 metres.
- The PTW should include the following information and checks:

  - Particulars of the personnel assigned to the work;
  - Description and location of the equipment or installation;
  - Description of the work to be carried out;
  - Measures taken to ensure that the equipment or installation has been made safe; and
  - Fall prevention measures such as the use of suitably guarded work platform and a personal fall arrest system anchored to a vertical lifeline.

Risk Assessment

Conduct a thorough Risk Assessment (RA) for all work activities to control any foreseeable risk that may arise during electrical works. The RA should cover, but not limited to, the following areas:

- Presence of live or exposed electrical wires/ connectors/ terminals;
- Method to check for electrical leakage prior to work commencement;
- Working at height while carrying out electrical work; and
- The need for implementing a PTW system for electrical work.

Further Information

1. Workplace Safety and Health Act
2. Workplace Safety and Health (Risk Management) Regulations
3. Workplace Safety and Health (General Provisions) Regulations
4. Workplace Safety and Health (Work at Heights) Regulations 2013
5. Code of Practice on Workplace Safety and Health Risk Management
6. Code of Practice for Working Safely at Heights
7. Electricity Act
8. Electricity (Electrical Workers) Regulations
9. SS 571: 2011 Code of Practice for Energy Lockout and Tag-out
10. SS 97: 2016 Residual Current Operated Circuit-Breakers without Integral Overcurrent Protection for Household and Similar Uses (RCCBs) – General Rules
11. SS 480: 2016 - Residual Current Operated Circuit-Breakers with Integral Overcurrent Protection for Household and Similar Uses (RCBOs) - General Rules
12. Energy Market Authority's Electrical Accident Case Studies & Lessons Learnt
13. UK Health and Safety Executive's "Electricity at Work – Safe Working Practices"
14. WSH Council's Activity Based Checklist for Safe Electrical Maintenance Work

Information on the accident is based on preliminary investigations by the Ministry of Manpower as at 12 March 2020. This may be subject to change as investigations are still on-going. Please also note that the recommendations provided here are not exhaustive and they are meant to enhance workplace safety and health so that a recurrence may be prevented. The information and recommendations provided are not to be construed as implying liability on any party nor should it be taken to encapsulate all the responsibilities and obligations under the law.

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