

Engineering System Integrity
Engineering Instruction
Electrical Distribution Unit

EI D 24-04

Pole Climbing

This Engineering Instruction includes urgent engineering information. Adherence to the information in this Instruction is **MANDATORY**.

Date in Force: 18 June 2024

Date of Review: 18 June 2025

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Audience:

- Authorised Persons Mains
- Accredited Overhead Worker
- Accredited Aerial Line Workers
- Line Managers of Electrical staff
- Electrical Trainers
- SEQR Advisors and Managers

Main Points:

- When climbing poles persons must only do so using attached climbing with two pole straps
- Persons must always be restrained from falls, utilising the pole – not a cross-arm
- Where practical use an EWP instead of climbing

Primary Affected Document: PR D 78109 Pole Top Rescue

Scope

This instruction refines the procedures for climbing poles supporting aerial lines, refer to [PR D 78109 Pole Top Rescue](#) and [PR07 Working at Heights](#).

Background

An electrical worker employed by a network operator external to Sydney Trains suffered a fatal fall while climbing a pole. Initial advice from the investigation identified the following concerns:

- The methods used to climb the pole
- Fall restraint system in place
- Personnel attachment points used.

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This initiated a risk review of the Sydney Trains procedures for climbing poles and rescue. The risk review was conducted with EDU, ESI - Electrical, Major Works, Network Maintenance, SEQR and Union representatives.

This risk review process has identified three key opportunities for safety improvements to help reduce the risk of an incident of a similar nature occurring in Sydney Trains. Each of these are detailed within this Instruction.

The three key risk control methods identified to mitigate this risk are:

- Use Elevated Work Platforms (EWP) wherever practicable instead of climbing poles
- Always use the pole as the primary restraint. **Never rely on a cross-arm**
- Always use the attached climbing technique with two pole straps (described in [D2013/80861 Pole straps \(Physical Restraint Systems\)](#)). This method is to be described in the associated SWMS. The use of a single strap and fall restraint lanyard is not acceptable for climbing poles.



Figure 1 – Attached Climbing with two pole straps

Only persons accredited in the following certifications are authorised to climb poles or fulfil the role of Accompanying Person (as they are competent to perform pole top rescue) as specified in [SP D 79055 Electrical-Competency-Specific-Certifications](#)

- MEL56 Accredited Aerial Line (HV and LV) Worker
- AES04 Overhead Worker
- AES15 Authorised Overhead Traction Worker
- AES16 Authorised Traction Operator

Action required

1. Use Elevated Work Platforms wherever possible

An EWP should be used wherever possible. When working from an EWP a fall arrest (lanyard) must be used.

For some poles an EWP may be either unsafe or impractical due to factors such as a steep slope, unstable ground, or lack of physical access, in which case an approved pole climbing method will be used.

NOTE: An EWP can only be used by suitably trained and competent operators.

2. Pole Climbing

Where an EWP cannot be used the pole may be climbed by trained and accredited persons using Sydney Trains' approved methods, while observing the following constraints:

a. Assess the risk

A risk assessment must be conducted, confirming:

- The pole is safe to be climbed, including a sound test and visual assessment of its condition, and
- Placement of pole strap during climbing and work, and
- The need to manage tails of pole straps, and other equipment to prevent entanglement or inadvertent contact with conductors, and
- The need to manage tools and equipment.
- Manual handling of equipment when working aloft, and

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- Drop zones; and
- Changing direction and magnitude of loads on the structure, and
- Climbing equipment has been checked to ensure it is complete and in good condition, certified, and suitable for the task, and
- Personnel have been trained in the attached climbing procedure and equipment; and
- Personnel are fit to climb.

b. Work Method

The method for climbing must utilise attached climbing and physical restraint per [D2013/80861 Pole straps \(Physical Restraint Systems\)](#).

NOTE: Using a combination of one pole-strap and fall arrest lanyard is not acceptable.

Use a pole platform in preference to work from a ladder or pole steps when appropriate to aid in the reduction of fatigue and ergonomic stress.

c. Fall restraint

The pole shall be used to secure a fall restraint, work platform or rescue support.

NOTE: Crossarms, standoff insulators or Earth raisers must not be used as a fall restraint attachment point, or work platform. Always use the pole.

3. Rescue from height

- Prior to work:
 - The rescue plan shall be reviewed, by the person in charge of the work on site refer [SMS Working at Heights rescue plan](#);
 - The rescue equipment shall be inspected, in accordance with [PR D 78109](#) Section 13.4
 - Rescuers shall confirm they are Authorised to Work at Heights and are in fit to perform a rescue.
 - Persons working on a pole are not to be alone. A Support worker trained in pole top rescue shall be on the ground in the vicinity at all times, when workers are aloft.
- Pole Rescue rope installation
 - The yellow rescue rope shall be placed over a pole step, around the pole, over a second pole step on the opposite side of the pole and the tail of the safety rope looped over the first pole step, as shown in Figure 2.



Figure 2 – securing a rescue rope

NOTE: Crossarms, standoff insulators or pole raisers must not be used as the primary anchor point for the rescue rope. Always use the pole.

Line Managers shall review and confirm that the Safe Work Method Statements for work involving pole climbing, comply with the requirements addressed in this Engineering Instruction. Training Providers shall review and confirm training materials to assure that they comply with the requirements addressed in this Engineering Instruction.

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Contact

If you have any questions please contact your Line Manager, SEQR Advisor, or the EDU team via email at RailElectricalSafety@transport.nsw.gov.au

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**Engineering System Integrity
Electrical Network Safety Rules**

**Engineering Procedure
Electrical Distribution Unit**

One Method of Safe Working

**PR D 78109
Pole Top Rescue**

Version 1.3

Date in Force: 12 July 2022

Approved by: Associate Director
 Electrical Distribution Unit
 Engineering System Integrity

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Document control

Version	Date	Author/ Prin. Eng.	Summary of change
1.0	16 May 2016	Chris Leung	First issue as a Sydney Trains document, rebranded from previous RailCorp SMS-06-EN-0558 V1.2.
1.1	19 February 2019	Nick Loveday	Updated PR D 78109 "Approved by" to Associate Director Electrical Distribution Unit.
1.2	1 February 2022	ENSR Project Team	Reviewed as part of the ENSR Project.
1.3	1 st June 2022	Wayne Halls	Transfer of ownership of the Specification for Pole Top Rescue Kits

Summary of changes from previous version

Summary of change	Section
Doc title change	Title
Doc focus altered, reference to new spec SP D 79040	Various

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1 Purpose and Scope

To describe the Pole Top Rescue procedure and the use, inspection and care of Pole Top Rescue Kits.

2 Definitions

Refer to the **Electrical Safety Definitions** page available on the **RailSafe** site.

3 Work Requiring a Pole Top Rescue Kit

When persons are working aloft it is essential that a rescue plan and resources are available. Pole top rescue kits are required to rescue workers who are trapped aloft on a pole or structure. A worker competent in using the rescue kit and working at heights must be available to perform the rescue for all works involving working aloft.

If the worker will be required to work on or pass between live low voltage conductors a Pole Top Rescue Kit must be prepared ready for immediate use.

Whenever a worker will be working aloft near or on/within live low voltage conductors, a pole top rescue kit and person trained in its use shall be available on site and the kit laid out in an appropriate manner.

It is sufficient that a Pole Top Rescue Kit is available within sight and easy reach from the pole or structure. The kit may be on a vehicle provided the kit is positioned for fast retrieval in the event of an incident.

WARNING

If the proposed work requires the worker to work on or pass through exposed live low voltage conductors that are more than four (4) pole steps above the top of a portable ladder, such work shall NOT be conducted.

For such proposed work to be completed, the work shall be completed:

- **from an Elevated Work Platform (EWP), or**
- **from a 'longer' ladder that when placed against the pole has the top of the ladder within four (4) poles steps of the proposed work.**

Refer to *PR D 78403 Work on Live Low Voltage* Section 6.4 Passing between conductors, for safety requirements before passing through exposed live LV electrical conductors.

4 Hazards

The hazards associated with a Pole Top Rescue are as follows:

- The rescuer may come in contact with the hazard which caused injury to the victim. In particular, the victim may still be caught up in live electrical conductors.
- Loose material, tools or equipment associated with the work that the victim was carrying out.
- Live electrical equipment on the pole or structure.
- Projections, ropes, cables and the like that might snag or entangle the rescuer during the rescue effort.
- The rescuer and/or the victim falls, due to equipment failure or incorrect operation.

5 Responsibility

On a site where an electrical hazard may require a worker to be rescued from a pole top, the Team Leader in charge is responsible for ensuring that:

1. A rescue plan is in place and personnel are fully trained to implement the plan.
2. A pole top rescue kit is available and laid out ready for use when required.
3. A trained rescuer is in attendance with the rescue kit and is in harness at all times the worker is aloft.
4. The rescuer has the relevant competencies and has re-qualified within the past 12 months, and if working near electrical hazards, the rescuer is also to be competent in resuscitation techniques.
5. Proper communications between the ground and worker working aloft are established and maintained throughout any working aloft operations.
6. Depending on the location and type of work, any necessary additional equipment is provided, e.g. Attached Climbing Systems components.

6 Pole Top Rescue Kit Components

The requirements for Pole Top Rescue Kits are set out in the *SP D 79040 Pole Top Rescue Kits*. The Pole Top Rescue Kit consists of the following components:

- orange weather resistant kit bag
- list of kit components
- resuscitation chart for electrical shock victims
- yellow rescue rope with a large gate alloy hook attached
- pair of electrical insulation gloves stored in a suitable non-conducting bag made of a material which can 'breathe', such as canvas bag
- pair of protective gloves for the insulation gloves stored in a suitable non-conducting bag made of a material which can 'breathe', such as a canvas bag
- sharp knife in a suitable sheath with an elastic spiral lanyard attached to the knife and sheath
- orange line worker pole strap with integral webbing loop for attachment of the hook of the yellow rescue rope.

The contents of the Pole Top Rescue Kit shall not be used for any purpose other than rescue.

7 Communications

Communication from the top of the pole relies on a person on the ground, who shall have an unobstructed view and be within earshot of the person working aloft.

If working remotely or out of earshot of other work groups, a reliable means of communication shall be available at the base of the pole.

8 Pre-work inspection of pole top rescue kit

Each time work involves working aloft on a pole or structure a pre work inspection of the rescue kit shall be carried out in accordance with Section 13 of this document.

WARNING

If defective components are identified, work shall not commence until the defective components are replaced.

9 Accompanying Person

When working on or passing through live low voltage conductors, an Accompanying Person shall be wearing a safety harness at all times when a worker is aloft.



Figure 1: Accompany Person at the base of pole

When work is being performed aloft, an Accompanying Person at the base of the pole shall have a safety harness readily available for use at all times when a worker is aloft.

The Accompanying Person shall be competent:

- in the particular task being undertaken, and
- to implement control measures in an emergency, and
- able to use communication equipment in case of an emergency, and
- located on the ground in the vicinity of the worker aloft, with an unobstructed view and be within earshot, in order to be able to provide assistance in a timely manner.

In addition, when a worker is required to work near exposed high voltage equipment or live low voltage aerial lines, the Accompanying Person shall be competent to release a worker from live electrical equipment.

10 Pole Top Rescue Kit Pre-work Set Up

The pre-work set up for pole top rescue depends on the work to be undertaken as follows:

- When working on or passing through live low voltage conductors, a Pole Top Rescue Kit shall be available and opened, inspected and ready for use at the base of the pole or structure.



Figure 2: Pole Top Rescue Kit at bottom of pole

- When the work does not require a worker to climb through or pass live low voltage conductors, a Pole Top Rescue Kit shall be available within sight and easy reach from the pole or structure. The kit may be on a vehicle provided the kit is positioned for fast retrieval in the event of an incident.

10.1 When a Worker is Working On or Passing Through Live Low Voltage Equipment

1. Check that communication equipment is functioning correctly from the worksite.
2. Place the communication equipment in a secure location in easy reach of the Accompanying Person.

Place the rescue kit in a convenient position adjacent to the pole or structure and inspect the kit components as described in Section 8 and prepare the kit as follows:

- a. Arrange the knife sheath on the webbing outrigger of the orange line worker pole strap for right hand or left hand to suit the Accompanying Person, then
- b. Attach the large alloy hook with the rescue rope attached to the webbing loop on the orange line worker pole strap to suit the Accompanying Person, then
- c. Position the orange line worker pole strap assembly on the top of the kit bag in a position where the outrigger snap hook can readily be picked up and attached to the side D ring of the safety harness, then
- d. Remove the electrical insulation gloves and the protective gloves storage bags from the back pocket of the rescue kit bag, then
- e. Place the electrical insulation gloves on each hand and fit the protective gloves over the electrical insulation gloves, then
- f. Remove the electrical insulation gloves with the protective gloves from each hand and place gloves on the top of the kit bag and pole strap.

10.2 When Working Aloft with No Live Low Voltage Equipment

1. Check that communication equipment is functioning correctly from the worksite.
2. Place the communication equipment in a secure location in easy reach of the Accompanying Person.
3. The rescue kit shall be in a readily accessible position or on a vehicle in a readily accessible position near the worksite. In this instance, the Pole Rescue Kit Pre-work Set Up mentioned in Section 10.1 may be omitted.

11 Rescue Procedure

The following procedure shall be followed by a worker to perform a rescue following an incident involving live low voltage equipment.

1. The Accompanying Person shall retrieve the communication equipment and contact ICON Electrical on 1800 060 015 or (02) 9379 4911 or internal no. 94911 and advise of the emergency and request assistance.

Upon ICON Electrical answering the phone, you should:

- a. First say “Emergency, Emergency, Emergency”.

Then state:

- b. Identification and location
- c. The nature of the emergency
- d. The type of assistance required.

If other persons are nearby, they shall communicate and request assistance while the rescue is initiated.

2. Proceed to the Pole Top Rescue Kit and pick up the orange line worker’s pole strap and attach the pole strap to the side D ring on the safety harness.
3. Put on both of the electrical insulation gloves and the protective gloves.

WARNING

Stop, look and think.

How did the casualty get injured?

How can I approach safely?



Figure 3: Accompanying Person observing with pole top rescue kit ready for use

4. Ascend the ladder and on reaching the pole ascend the pole using an approved attached climbing method.



Figure 4: Accompanying Person ascending pole for rescue

5. Climb to a position just below the casualty.
6. Check for electrical hazards.
7. Place the orange pole strap around the pole and connect the free end to the safety harness D-ring.
8. If necessary and safe to do so, position yourself clear of the drop area of the casualty and free the casualty from the live low voltage equipment.
9. Check that the casualty's airway is clear and that the casualty is breathing. If the casualty is not breathing give the casualty five quick breathes.
10. Unhook the large alloy hook of the yellow rescue rope from the pole strap retaining loop on the pole strap outrigger.
11. Place the large alloy hook and rescue rope over the crossarm approximately 0.5m out from the pole, then one full turn around the tail of the safety rope.

WARNING

This will require you to climb past the casualty.

Check first for hazards.

12. If there is no crossarm immediately above the casualty, the yellow rescue rope can be placed over a pole step, around the pole, over a second pole step on the opposite side of the pole and the tail of the safety rope looped over the first pole step. Refer to Figure 5 and Figure 6 below.



Figure 5: Rescue rope over cross arm with tail one turn around fall of rope



Figure 6: Rescue rope over pole step, around pole with the tail looped over first pole step

13. Attach the large alloy hook to a suitable rescue point on the casualty's safety harness. The front rescue points are preferred as the casualty will lie back and their airway will open. If these cannot be reached use any other available attachment points or harness webbing.
14. Remove as much slack as possible from the rescue rope.
15. Remove the knife from the sheath and take a firm grip on the tail of the yellow rescue rope. Be prepared for a sudden load on the tail of the rescue rope when the casualty is cut away from the pole.



16. Cut through the casualty's pole strap to detach the casualty from the pole or structure.

17. Place your foot against the yellow rescue rope and push it away from the pole or structure. This will help to prevent the casualty from striking pole steps or other objects attached to the pole while being lowered to the ground.



18. Carefully lower the casualty to the ground.
19. Descend the pole.
20. Persons trained in first aid should follow first aid steps DRSABCD (Danger, Response, Send for help, Airway, Breathing, CPR and Defibrillation). Others should follow the instructions given by the ambulance call line operator.

Consideration may also need to be given to significant trauma such as cervical spine injury.

Treat burns.

- a. The injured person(s) shall be transported to the nearest hospital.
- b. The injured person(s) is not to be left alone or allowed to drive to the hospital as heart problems can occur up to several hours following an electric shock.
- c. In the first preference, the injured person(s) shall be transported by ambulance.
- d. Should ambulance transport not be possible a Team Leader, next senior work party member, or Line Manager shall arrange:
 - i. for alternative transport e.g. taxi or vehicle and driver, and
 - ii. to have another person, where possible a qualified first aider and preferably one knowing the details of the incident, to:
 - accompany the injured person(s) in the alternative transport to the nearest hospital, and
 - wait until all tests are completed.

21. Complete subsequent steps regarding:

- a. Initial treatment
- b. After assessment
- c. Continuing treatment
- d. Incident reporting and
- e. Statutory notification

as detailed in *D2013/80869 Electric Shock Protocol*.

12 Storage of Equipment

Pole Top Rescue Kits shall be kept in a suitable labelled position in each vehicle that carries them to facilitate quick deployment if required.

13 Inspection of Equipment – General

13.1 Records

Managers and Supervisors identified as being responsible for the inspection and testing of equipment for access and safety at heights shall maintain record systems for all items covered by this document. These records shall be kept until the item is permanently removed from service.

These systems shall record:

- item and number
- date of Routine Check/Test/Inspection (other than user inspections).

13.2 Inspection Schedule

The scheduled inspections and tests shall be undertaken irrespective of any other inspection or test carried out on the equipment as described in Section 13.4 of this document.

The recommended program for inspection and/or testing of safety critical equipment is:

Table 1: Inspection/test program

Test	Month
Six monthly	January and July

If it is necessary to adopt a different program for inspection of equipment for access and safety at heights in a particular location, it is recommended that a consistent schedule be adopted for all safety equipment at that location.

If the responsibility for an item of equipment is changed, care shall be taken to ensure that the intervals between periodic inspections for that item do not exceed those set out in this document.

13.3 Segregation of Defective Items

If in the course of inspections an item is found to be defective, it shall immediately be removed from service. The person removing the item from service shall affix a “DANGER – DO NOT USE” tag to the item. The tag shall describe the defect of concern.

The Supervisor shall then decide if the item is to be repaired or destroyed and is responsible to ensure replacement of the defective item to address:

- a. complete rescue kit is in service
- b. available for all situations detailed in this document
- c. meet the Safe Working Requirements under the WHS and associated legislation.

WARNING

The DANGER – DO NOT USE tag shall not be removed until one or other of these actions has been completed.

13.4 Inspection of Pole Top Rescue Kits

13.4.1 Pre-work Inspection of Pole Top Rescue Kit

Table 2: Pre-work Inspection of Pole Top Rescue Kit

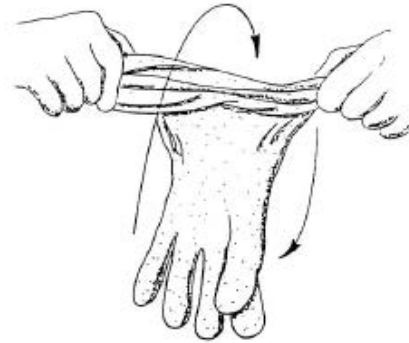
Component	Inspection
Orange weather resistant kit bag	Check the bag for rips and holes and contamination by oil or chemicals. Clean if necessary.
List of kit components	Remove the kit component list from behind the resuscitation chart and check that each item on the list is in the kit. Replace the list.
Resuscitation chart for electrical shock victim	Check the chart is in the clear pocket and clearly legible.
Yellow rescue rope C/W large gate alloy hook	If there is evidence that the kit bag has been contaminated or damaged inspect the rope for defects. Inspect the gate of the large alloy hook for free movement
Pair of electrical insulation gloves	Remove the electrical insulation gloves from the storage bag and perform inspection and air leak test at Section 13.4.2 of this document.
Pair of protective gloves	Remove the protective gloves from the storage bag and inspect for: <ul style="list-style-type: none"> • Any damage or cuts that may expose the electrical insulation gloves to damage. • Metal slithers that may penetrate the electrical insulation gloves. Contamination by acids, alkalis, grease, oil, creosote, petrol or turpentine. • Any contaminated protective gloves shall be immediately removed from the kit and replaced.
Knife with sheath and spiral lanyard	Ensure the knife is sharp and firmly attached to the sheath by the spiral lanyard.
Orange line worker pole strap	Inspect webbing for signs of degradation. Inspect snap hooks for damage and correct operation of double acting latches or defects. Inspect webbing loop for attachment of large alloy hook on the webbing outrigger for cuts or fraying. Check that knife sheath is firmly attached to webbing outrigger.

13.4.2 Inspect and Air Leak Test Gloves

1. Visually inspect for any damage, discolouration or perishing or contamination by acids, alkalis, grease, oil, creosote, petrol or turpentine.
2. Carry out air leak test as explained and shown in the diagram below:



Step 1. Hold Glove Downward and Grasp Cuff.



Step 2. Twirl Glove Towards Your Body to Trap Air Inside. Squeeze Glove To Look For Damage.



Step 3. Hold Glove To Face and Feel. Listen For Escaping Air or Immerse In Water and Watch For Bubbles.

Any gloves found to be defective or contaminated shall immediately be removed from the kit and replaced.

13.4.3 Six-monthly Inspection

Inspect in accordance with Table 2.

In addition, the full length of the yellow rescue rope shall be taken out of the bag and inspected for degradation. Refer to *D2013/80859 Physical Restraint Systems (Inspection and Maintenance)* for guidance.

The mobility of any moving parts shall be tested and correct operation confirmed. The gloves shall be strength tested by:

1. Firmly grasping the cuff and fingers and stretching the gloves as much as possible.
2. Then stretching each finger and thumb as much as possible.

The gloves shall be air leak tested in accordance with Section 13.4.2.

The results of the inspection shall be recorded.

13.4.4 After Use Inspection

A complete inspection and if necessary, test of any components used in an actual rescue shall be conducted on completion of a rescue. Any component that appears to be stretched, strained or damaged shall be replaced.

Inspect the Pole Top Rescue Kit in accordance with Table 2.

Rescue ropes that have been used must be discarded and replaced. This does not apply to a rope designated for use in simulated or practice rescues. Such a rope shall be clearly marked "For Training Purposes only".

14 Reference Documents

SP D 79040 Pole Top Rescue Kits

D2013/80859 Physical Restraint Systems (Inspection and Maintenance)

D2013/80869 Electric Shock Protocol

PR D 78403 Work on Live Low Voltage