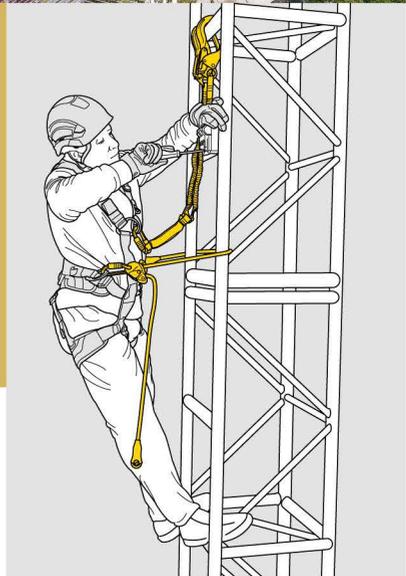




WORKING ON TOWERS AND ANTENNAS

ACCESSBOOK PRO n°1



Access
the
inaccessible®





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Accessing the inaccessible is a routine requirement for many of the professionals who use our products. The ACCESS BOOKS have been created to share our knowledge on techniques related to the use of our products, to allow you to progress safely and more efficiently in your daily work as rope access workers, arborists, rescuers, tower climbers...

Do you work on electrical or communication towers? This booklet is for you. From tower access to setting up a workstation, to rescue situations, this ACCESS BOOK will provide you with useful techniques for your work.

Warnings:

- You must have understood and retained the information from your products' Instructions for Use
- Learning appropriate techniques and methods of protection is your own responsibility. The Petzl solutions provided here are given only as examples, and others may exist. The relevance of the technical solutions depends on the situation: you must always carry out your own risk analysis in the field
- Mastering the techniques presented here requires specific training and practice. Work with a specialized organization for all of your training activities

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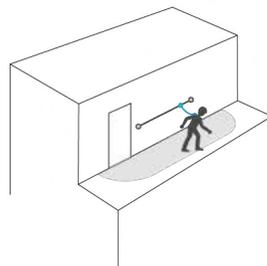
GENERAL PRINCIPLES FOR WORK AT HEIGHT

The three main work situations and the regulatory framework of the associated equipment

The regulatory framework for personal protective equipment associated with various work situations depends on the current legislation in your country. Here we provide only some examples of product standards related to these uses.

- Restraint

A restraint system limits the work zone, keeping the worker from entering an area that may present a fall risk. This system is not designed to arrest a fall from height.



- Positioning

A work positioning system supports the user and allows them to be precisely positioned with the weight on their feet. This system is not designed to arrest a fall; the user must keep their body weight on the positioning system.

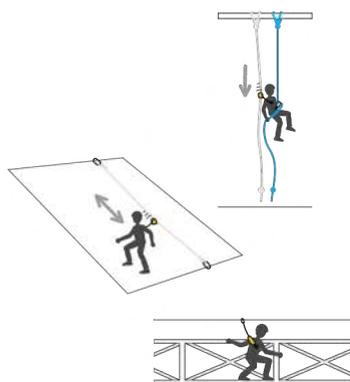
The work positioning system must be used together with a fall arrest system.



- Fall arrest

The fall arrest system is a belay system that is independent of the means of progression or work positioning.

The fall arrest system prevents the user from falling to the ground in the event of a fall. Its role is to arrest the fall while limiting the impact force experienced by the user. It must therefore be used with enough clearance to allow for a free fall.



GENERAL PRINCIPLES FOR WORK AT HEIGHT

General information on falls

The risk of falling is a key concept to master when working at height. The severity of a fall depends on independent factors:



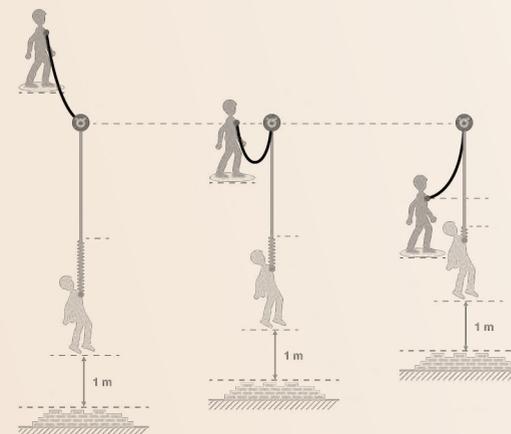
The weight of the user, including equipment:

The greater the weight, the more energy there is to be dissipated during the fall.



The length of the fall:

The longer the fall, the more energy to be dissipated during the fall. The risk of hitting an obstacle is also greater.

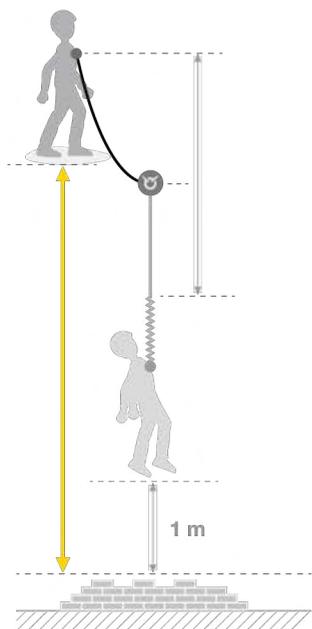


The position relative to the anchor:

When the worker moves above his/her anchor, the severity of the potential fall increases. The fall factor concept is sometimes used to describe the worker's position relative to the anchor and the severity of the fall.

GENERAL PRINCIPLES FOR WORK AT HEIGHT

Clearance

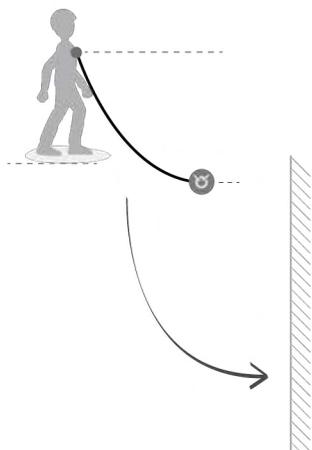


Clearance is the amount of clear space required below the user's feet to avoid hitting an obstacle in a fall.

The amount of clearance is given in the Instructions for Use for each fall arrest device, such as the lanyard with energy absorber and mobile fall arrester.



Note that for a given product, the clearance depends on the user's weight and on his/her position relative to the anchor.



Information: the risk of a pendulum is just as important to consider as the risk of hitting the ground or an obstacle. It is essential to consider clearance from a multidirectional perspective. During a fall, the worker can pendulum: there is a risk of their hitting the structure, and the lanyard can rub along a bar or platform edge.

TOWER ACCESS TECHNIQUES

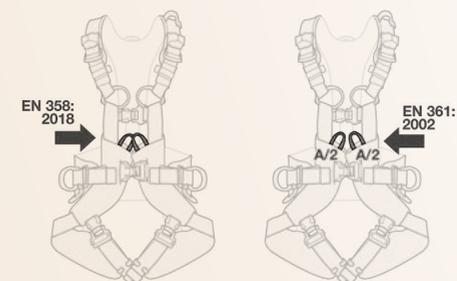
Depending on the tower, ease of access can vary and require different techniques. For example, there may be a lifeline along a ladder, or access may be possible using energy-absorbing Y-lanyards. Absent another access route, the worker must use techniques similar to rock climbing in order to reach the top of the tower.

1. Presence of a lifeline or rail along a ladder



Harnesses with a LADDER CLIMB attachment point are especially suited to this situation; they allow the trolley to be connected to the ventral attachment point of the harness.

VOLT / VOLT WIND



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Technical tips
Conseils techniques

Using the LADDER CLIMB attachment point on the VOLT harness

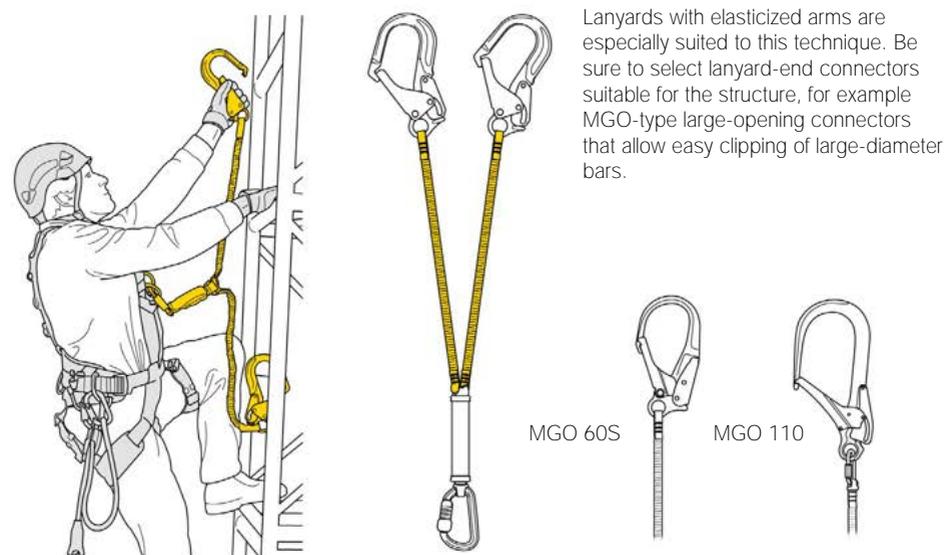


TOWER ACCESS TECHNIQUES

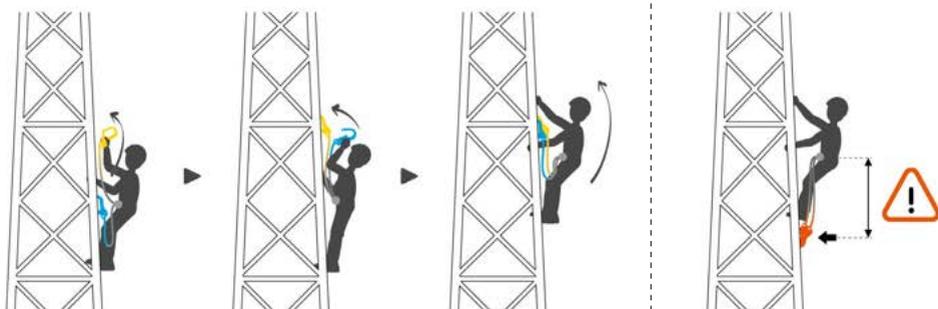
2. Presence of an access route that can be taken using energy-absorbing Y-lanyards

Energy-absorbing lanyards can be used if there is a ladder or bars spaced close enough to allow easy progression.

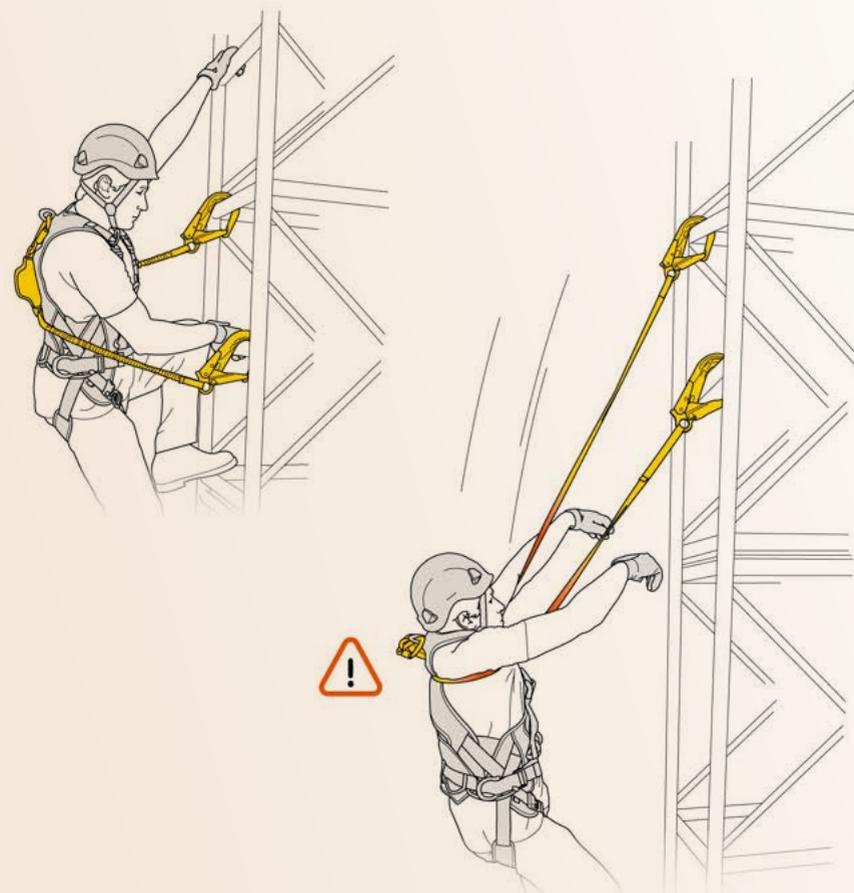
Warning: make sure that the bars are strong enough (6 kN minimum in the event of a fall).



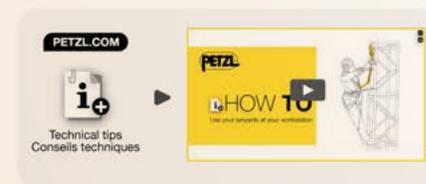
Be sure to always keep a lanyard arm clipped to the structure, favoring connection points above the waist to reduce the fall height, in order to avoid striking the structure in the event of a fall.



With a Y-lanyard attached to the dorsal point, if the lanyard legs pass under the user's arms, the energy absorber may not function properly.



Avoid connections that could result in cantilever loading of the lanyard-end connectors.

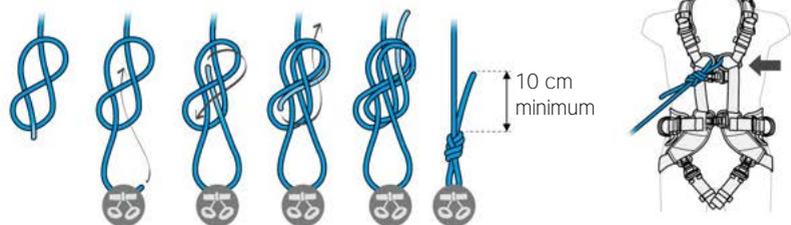


TOWER ACCESS TECHNIQUES

3. No other access route on the tower

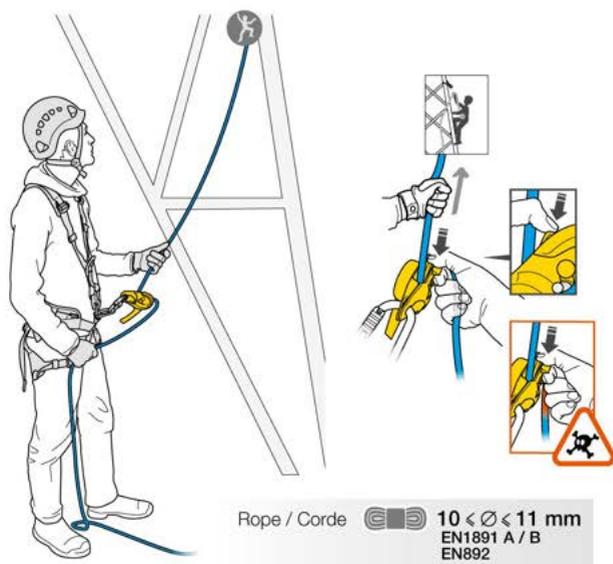
Access from below using techniques similar to rock climbing

This is the most complex situation; two climbing techniques are presented here. For both techniques, it's preferable for the climber to tie in to the sternal point to avoid the risk of inversion in the event of a fall.



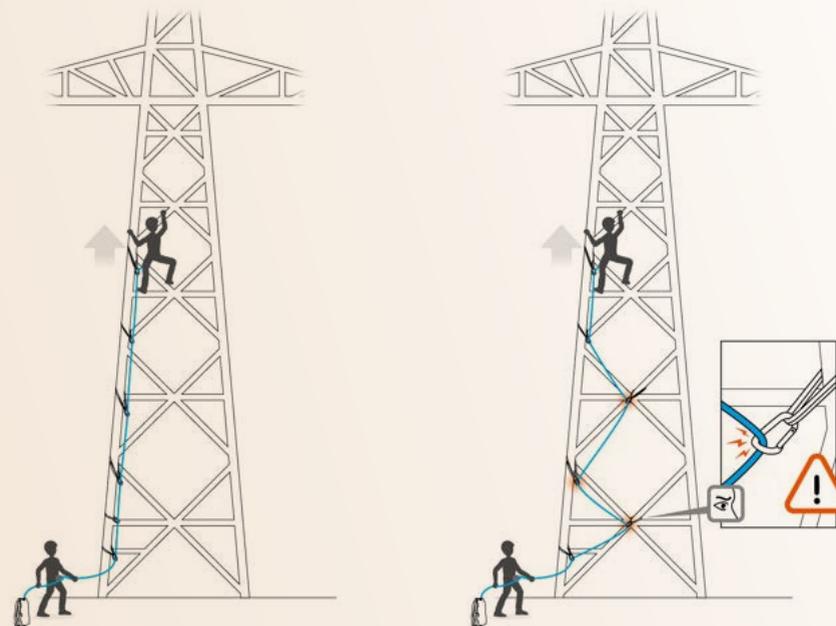
Technique 1: Belaying from the harness

I'D S (marketed since 2019) is especially suited to this technique for belaying from the harness



Beware of ground fall risk. For the first few meters of the climb, the intermediate anchor points must be sufficiently close together to prevent the climber from hitting the ground in the event of a fall. When there are obstacles below the climber, increase the number of intermediate anchor points to reduce the fall distance.

The belayer must be vigilant and anticipate the climber's movements. **Always hold the brake side of the rope.**



If the rope path is too crooked, friction at the intermediate anchor points can limit the rope's capacity to absorb the energy of a fall. Absent another solution, place pulleys at the most offset points.

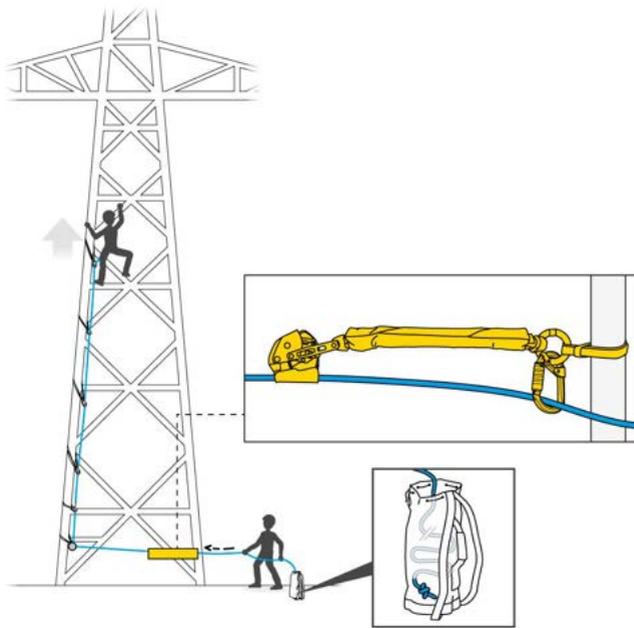
Advantages of belaying from the harness:

- The belayer can move to respond to the climber's movements
- In a fall, belayer displacement can reduce the impact force on the climber

Disadvantages of belaying from the harness:

- The belayer has limited freedom of movement, for example if s/he needs to call for rescue
- If the climber falls, the belayer can be yanked around
- The stopping distance is longer than with a fixed point; the climber is more likely to hit an obstacle while falling

Technique 2: Belaying from a fixed point with the ASAP LOCK



The operator does not handle the ASAP LOCK: s/he ensures that the rope runs properly. The operator must not hold the rope between the ASAP LOCK and the climber. In the event of a fall, the climber is stopped by the ASAP LOCK, without operator intervention.

Beware of ground fall risk. For the first few meters of the climb, the intermediate anchor points must be sufficiently close together to prevent the climber from hitting the ground in the event of a fall. When there are obstacles below the climber, increase the number of intermediate anchor points to reduce the fall distance.

Warning: to be able to carry out a rescue operation if necessary, the total rope length must be at least twice the amount of rope that will be deployed during the work operation (see rescue techniques).

Advantages:

- The belayer is free to move around if s/he needs to call for rescue
- In the event of a fall, the belayer doesn't move and avoids the risk of hitting the structure

Disadvantages:

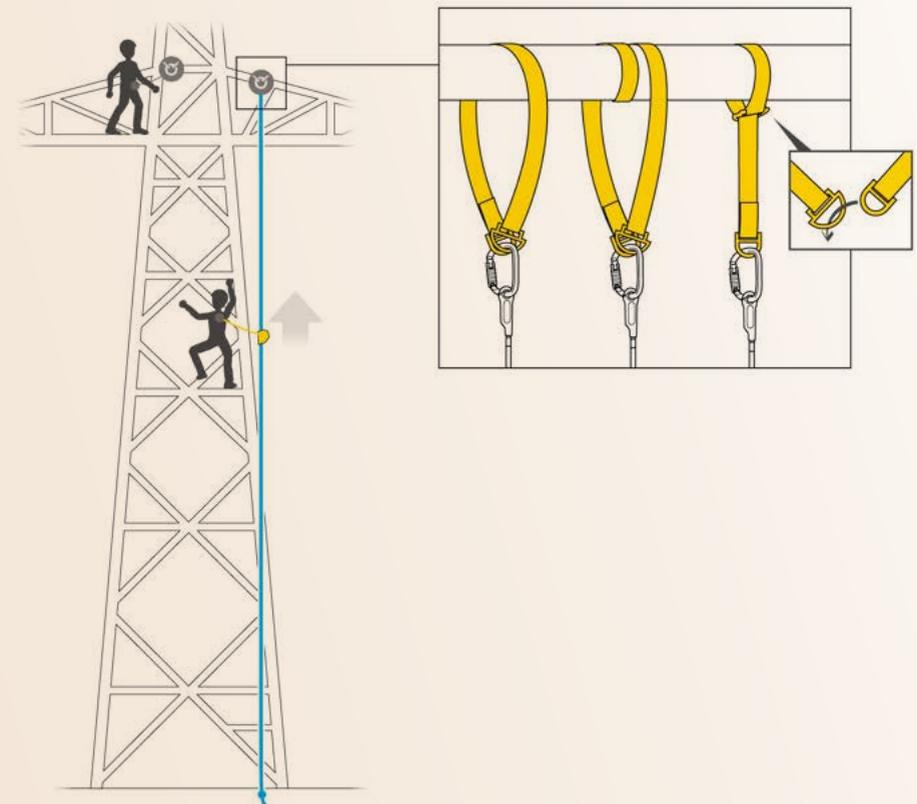
- The need to have twice the length of rope used for accessing the workstation, in case of rescue

TOWER ACCESS TECHNIQUES

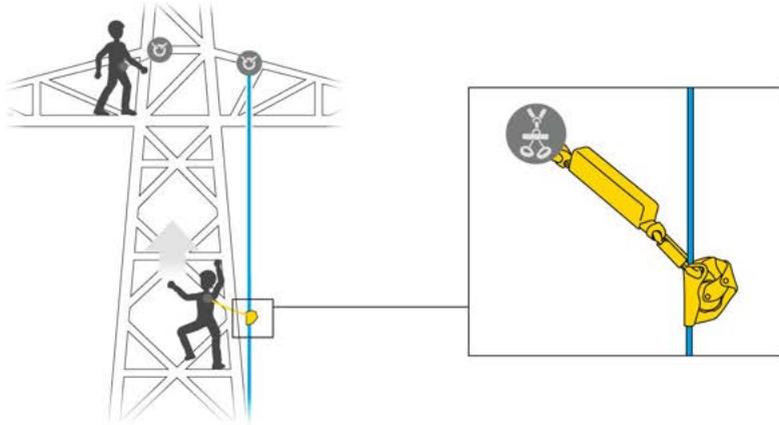
4. Access via a fixed rope, installed by a coworker who has already reached the top of the tower

The coworker who climbed first, for example by using any of the previous techniques, installs the access rope for the other coworkers.

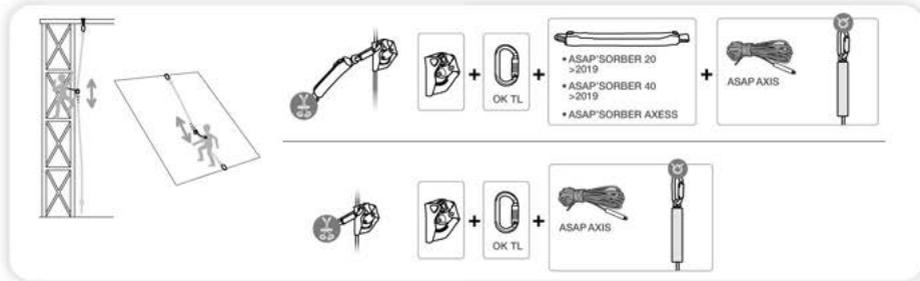
Example of installing the rope for a coworker.



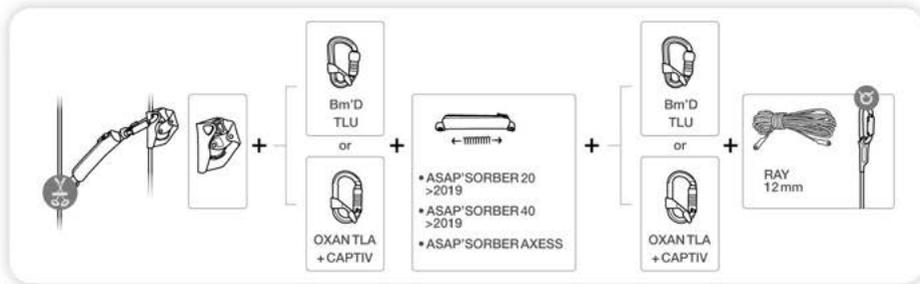
The ASAP is installed on a safety rope and connected to attachment point A (fall arrest) of the harness. Its role is to arrest the fall; it should not be used for work positioning.



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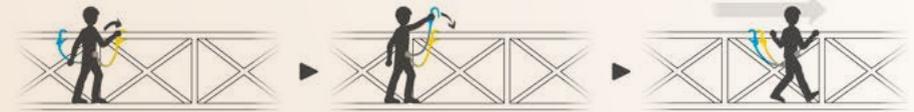
ANSI Z359.15 USAGE



ACCESSING AND SETTING UP THE WORKSTATION

5. Accessing and setting up the workstation

The worker generally uses energy-absorbing Y-lanyards to reach the workstation, e.g. for horizontal travel.



In addition, s/he may also use a GRILLON lanyard for a more comfortable setup.

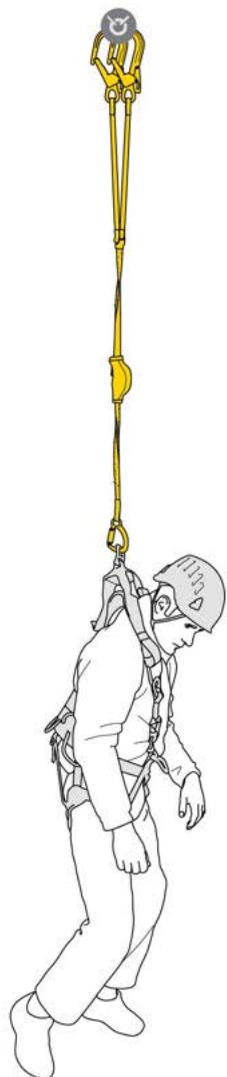


Place the energy-absorbing lanyards sufficiently above your waist.

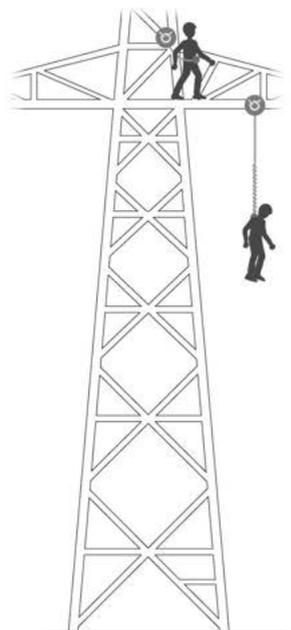
RESCUE TECHNIQUES

As with any site, it is necessary to have previously organized an evacuation plan and to have been trained in rescue techniques. There are multiple configurations and it is impossible to describe them all. Here we provide some examples of relatively simple rescue scenarios.

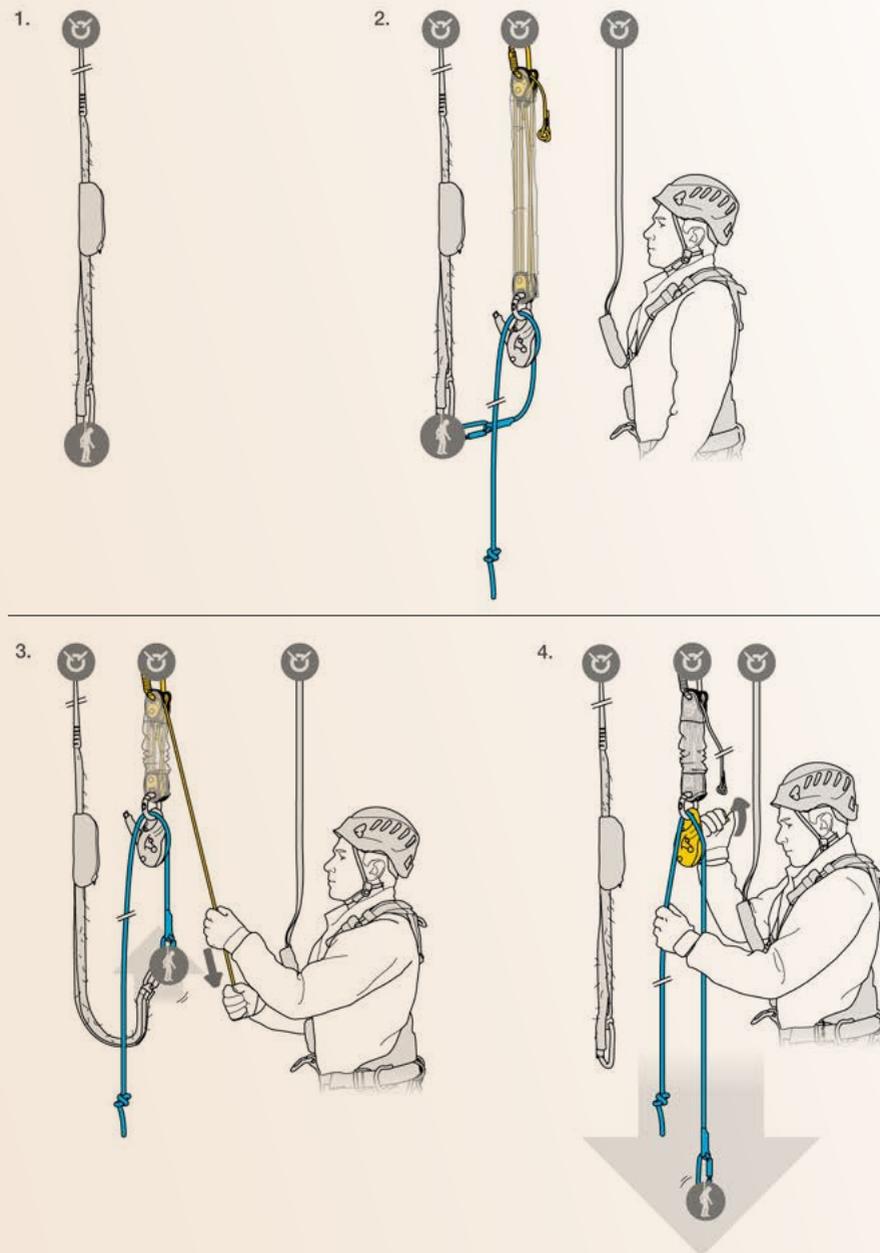
Rescue of a conscious person suspended on ABSORBICA lanyards after a fall: use of the JAG RESCUE KIT



To rescue the person, a coworker must set up a load transfer and evacuation system, for example based on the JAG SYSTEM. Once this system is attached to a suitable anchor, the difficulty is in accessing the victim.



The ideal situation is to be able to attach the evacuation system directly to the victim's harness. The manual operations are easier, and setup is cleaner with less equipment. Direct connection to the harness also allows the victim to be raised more efficiently if an obstacle must be passed during evacuation.

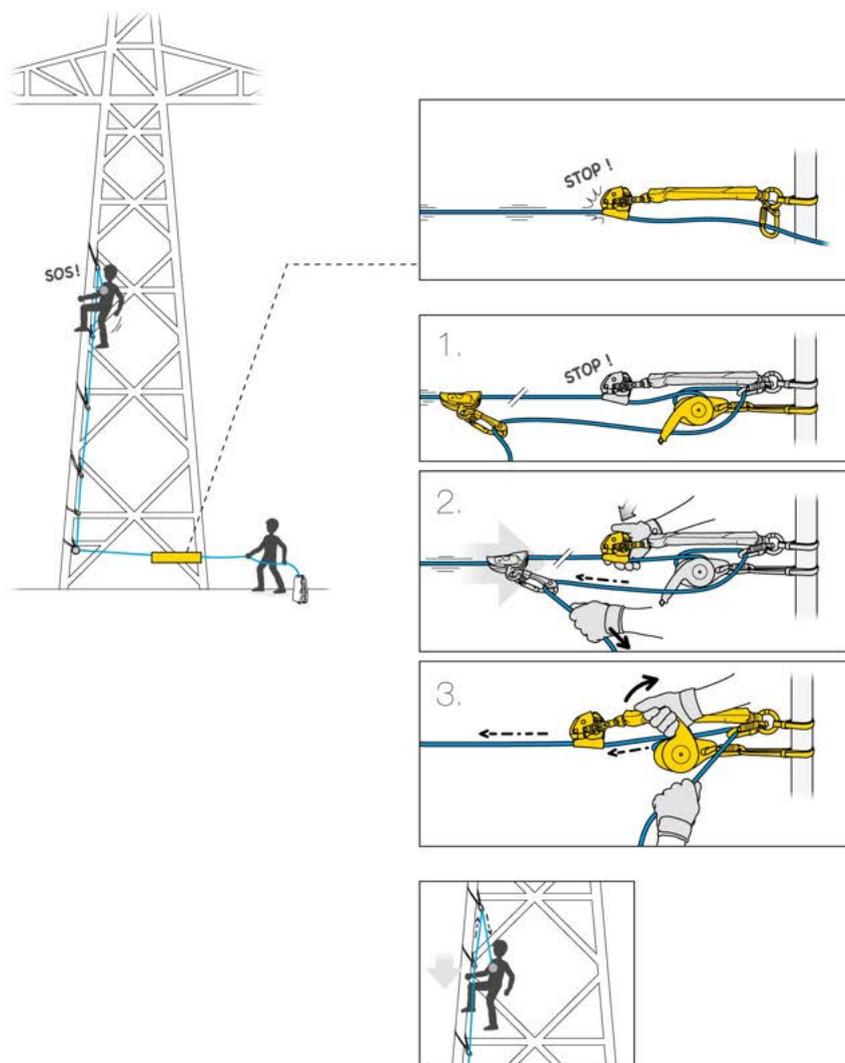


If the victim is unconscious, use an accompanied descent technique, available at Petzl.com.

RESCUE TECHNIQUES

Rescuing a conscious person after a fall on a fixed-point belay system such as ASAP LOCK

Be sure to keep the brake rope in the directional carabiner.



FOR MORE INFORMATION...



Explore more Petzl Products at www.rescueresponse.com/brand/petzl/



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The information contained in this brochure is non-exhaustive. See the Instructions for Use for the products, and their related technical advice. Training is essential. You are responsible for your own actions, decisions and safety.

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