



TECH-INFO possible  
to remove and use  
separately.

# singing rock

## TECH-INFO



# SAFETY FIRST

Basic safety rules pro working at height are based on EU and Czech Republic laws and directives with regard to many years of experience of the SINGING ROCK members. Everything we do we do for you.



Workers at height are in permanent danger of falling through or collapsing. That is why their safety should always come first. Workers' safety be achieved using various methods for setting up a personal safety chain. The structure of the safety chain should always correspond with the type of activity considering high efficiency of work along with maximal possible safety.

**Basic skills and knowledge of workers at height include:**

**Work restraint:**

Technique of using PPE to prevent from motion to areas with the risk of fall: This technique enables workers at height to move freely to areas without the risk of fall, falling-through or collapse. Moving into higher-risk areas is restricted by appropriate PPE used.

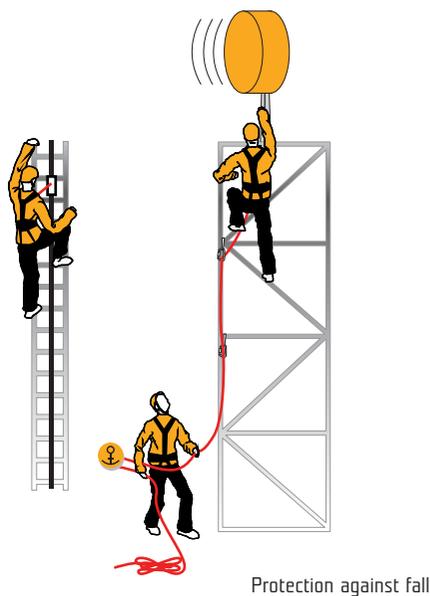
**Work positioning:**

Technique where the worker will be using the Personal Protective Equipment to access and process the work. This technique is based on the equipment which will protect a worker against any hazard from the workplace (fall from the heights).

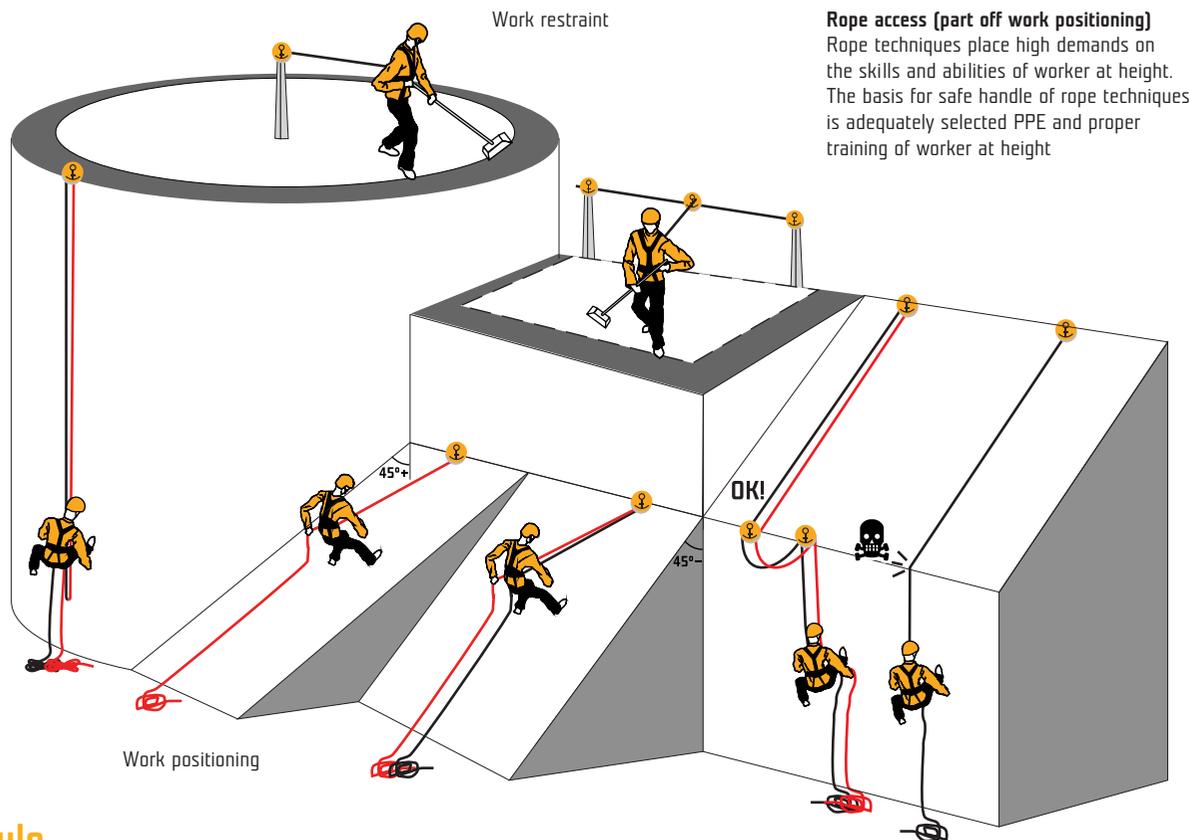
Choice of appropriate working position is essential for efficient working at height. It shall encourage the worker to concentrate on his job and thus it shall be safe, sure-footed and comfortable.

**Fall arrest:**

In case of risk of fall, even for a short period of time, it is necessary to take measures to avoid fall. Fall can be prevented or the impact force can be lowered to an acceptable level (6 kN) using a suitable fall absorber. Technique of using PPE to prevent from motion to areas with the risk of fall



Protection against fall

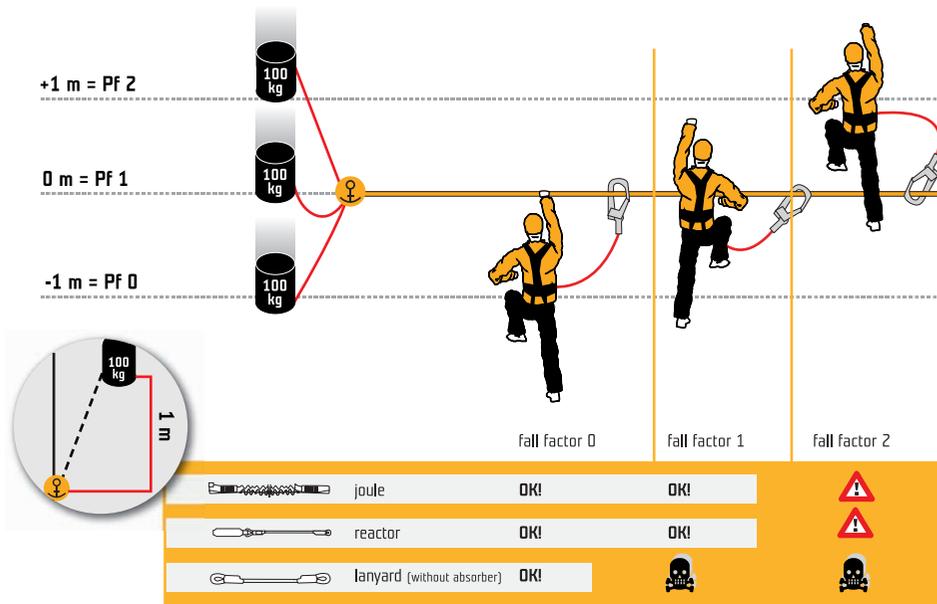


**Rope access (part off work positioning)**

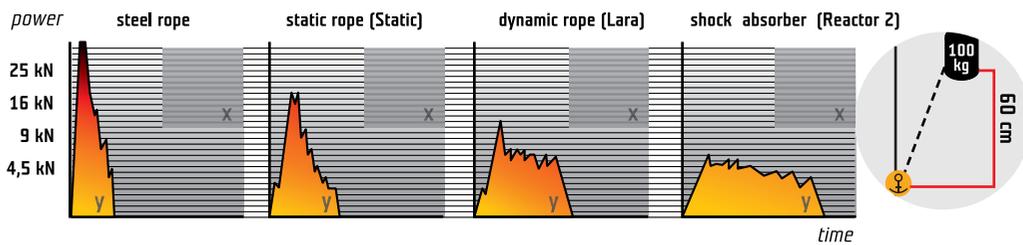
Rope techniques place high demands on the skills and abilities of worker at height. The basis for safe handle of rope techniques is adequately selected PPE and proper training of worker at height

### General rule

**Every worker at height must be properly trained for work at height and must use proper equipment and gear.**

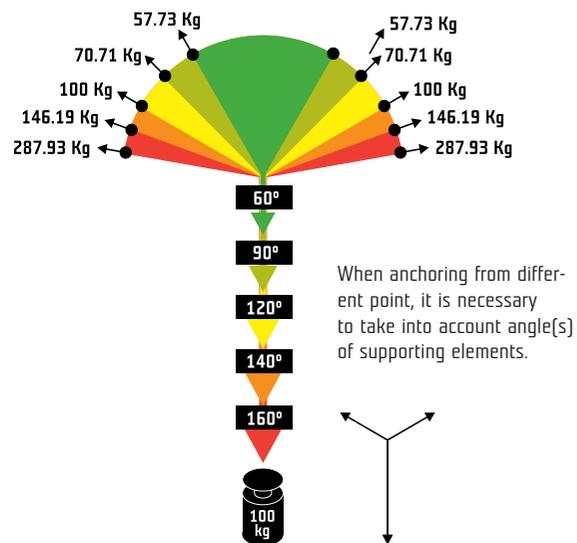
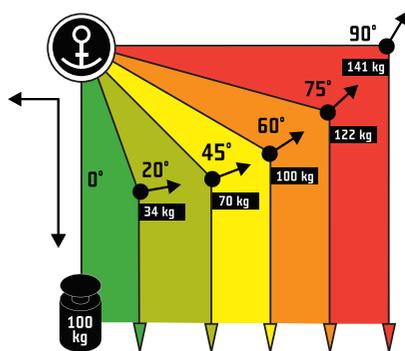


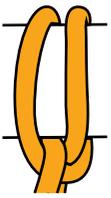
When safeguarding an ascent using a fall arrest type „Y“ it is necessary to move at the level FF1 and lower. It means that the connectors (EN362) connected to the fall absorber (EN355) during the ascent do not „fall“ below the connection point of the harness (EN361) in which the absorber is connected to the harness.



The impact force (IF) determines the maximum value of force generated during fall arrest of the object by the safety chain. The value of IP has a direct impact on the safety of worker at height. Ideally, we avoid IP if we reduce it to the lowest level possible (max 6kN)

Load of continuous anchoring point. An example is creating a deviation using rope techniques.

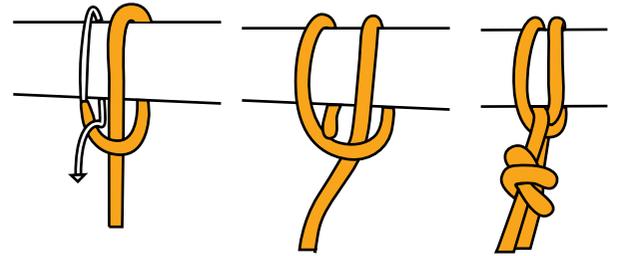
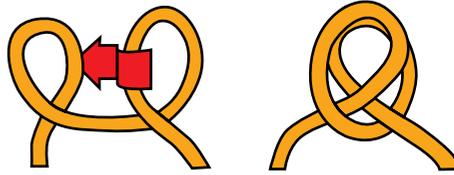




**Clove hitch**

Reduces the strength of rope in lab. conditions by approx. 12 %

**Use:** anchoring



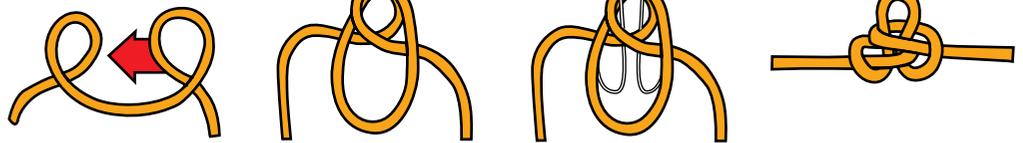
Due to the character of this knot is essential to tie a backup knot, double fisherman's knot.



**Alpine butterfly**

Reduces the strength of rope in lab. conditions by approx. 39 %

**Use:** anchoring; anchoring from separate points, inter-anchoring  
Given the properties of the knot, it is necessary to end it with a securing nod, see double fisherman knot

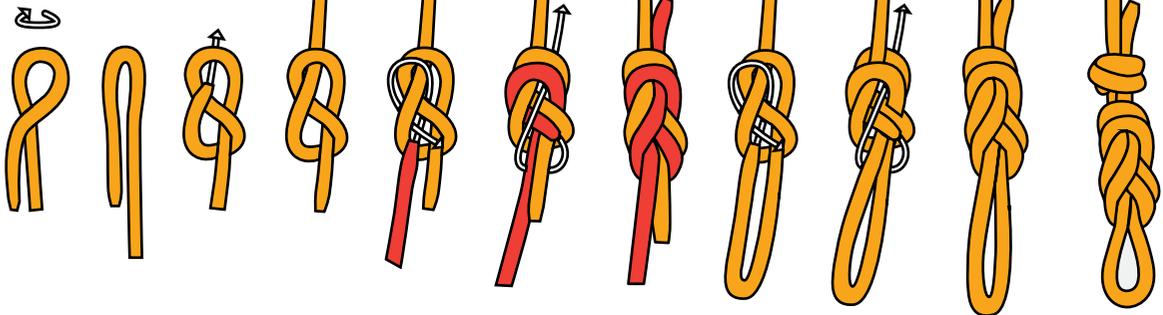


**Eight knot**

Connection of two ropes using an eight knot

■ Reduces the strength of rope in lab. conditions by approx. 46 %

■ used to connect two roped of the same type and same diameter; connection of ends of a rope loop



Connection of two ropes using an eight knot

Connection of ends of one rope loop

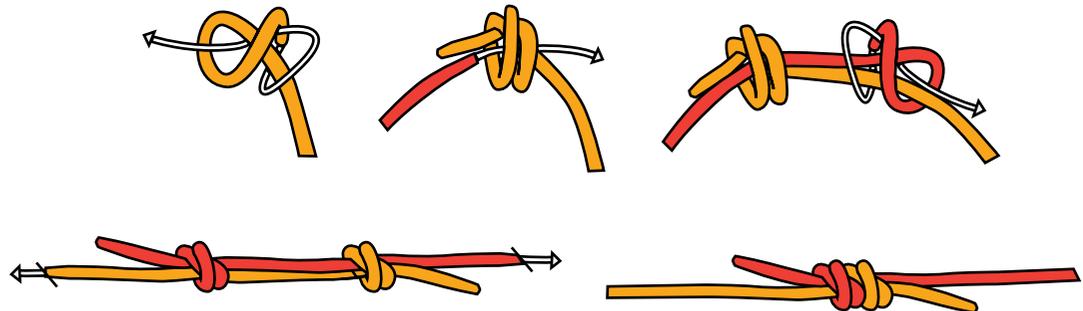


**Double fisherman knot**

Connection of two ropes using a double fisherman knot

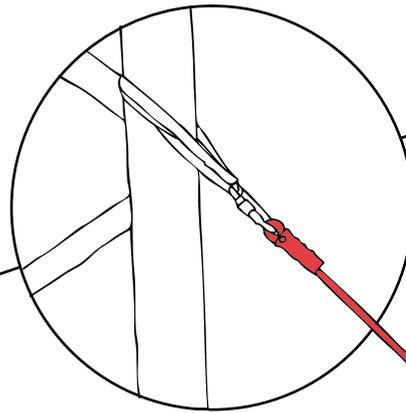
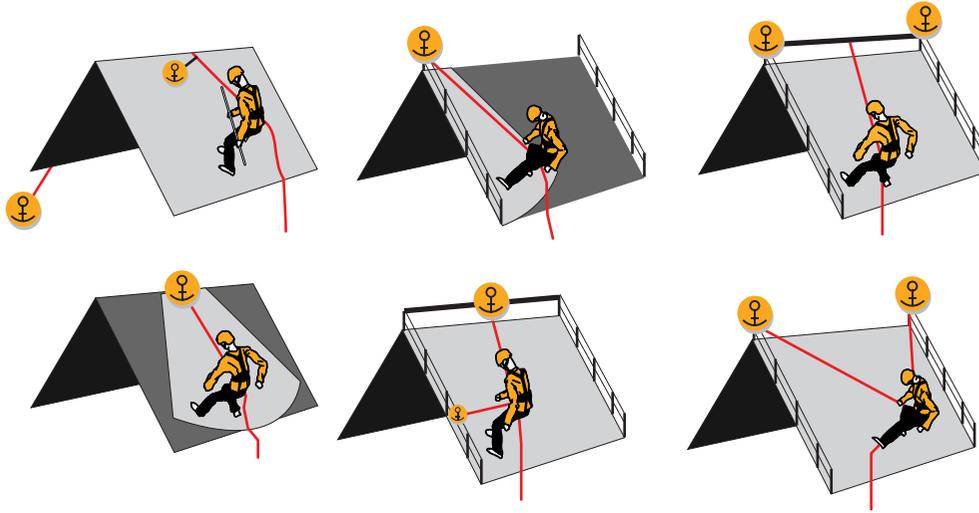
■ Reduces the strength of rope in lab. conditions by approx. 32 %

■ connection of two ropes (rope loops) of different type or diameter

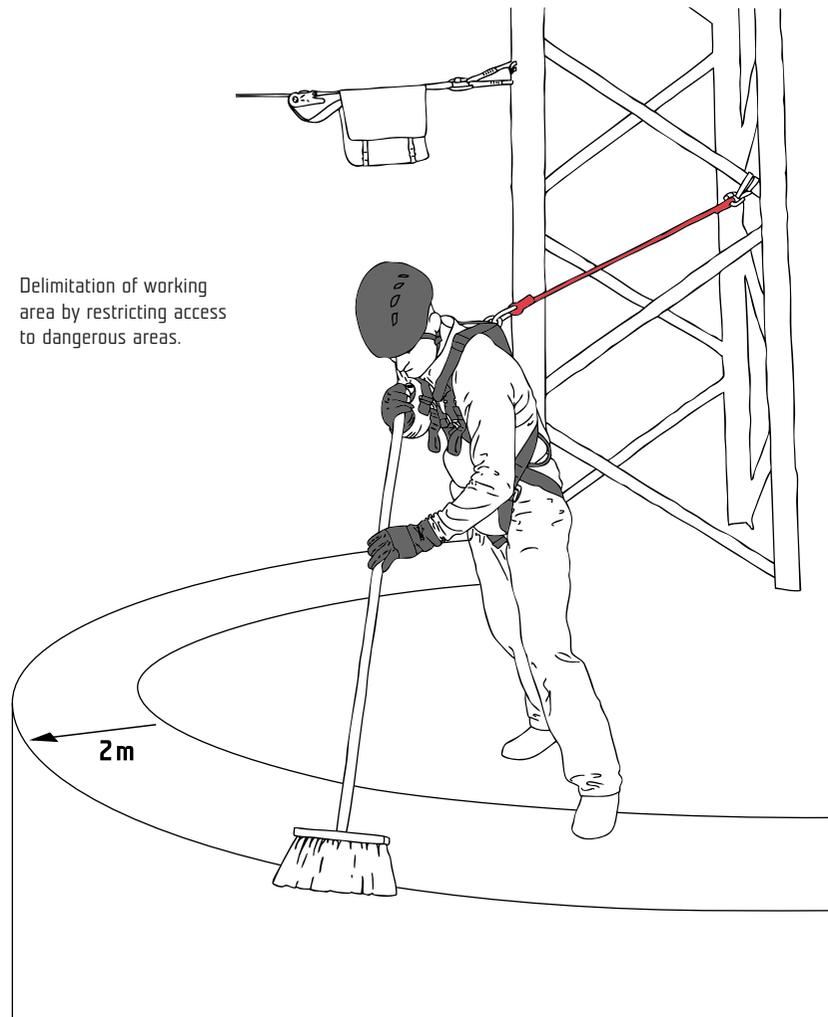
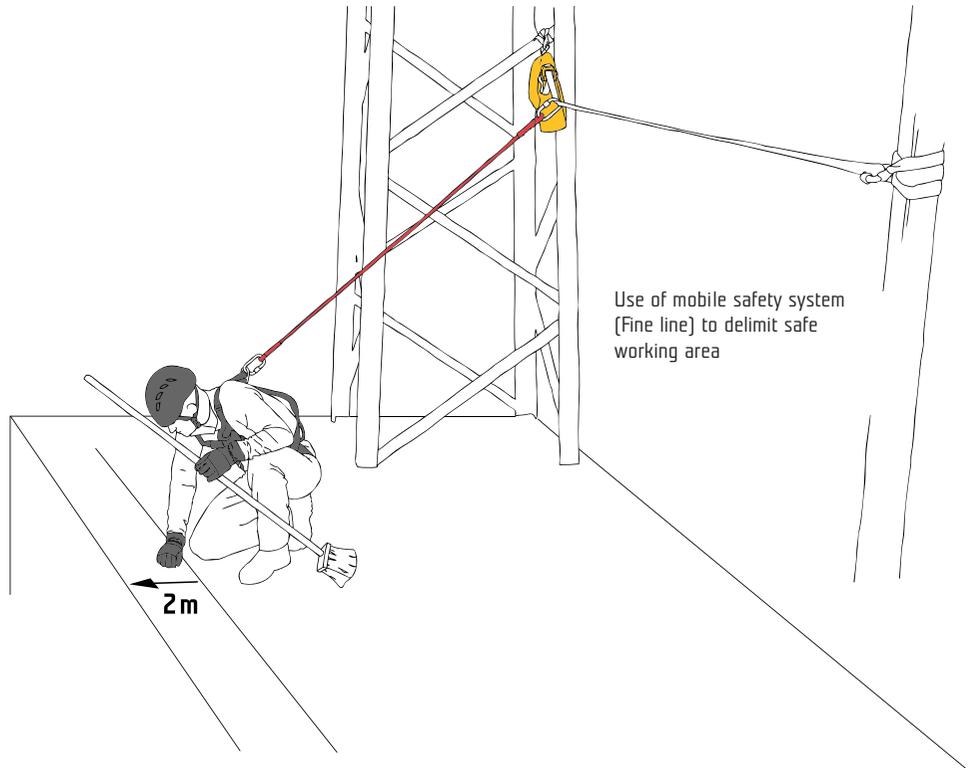
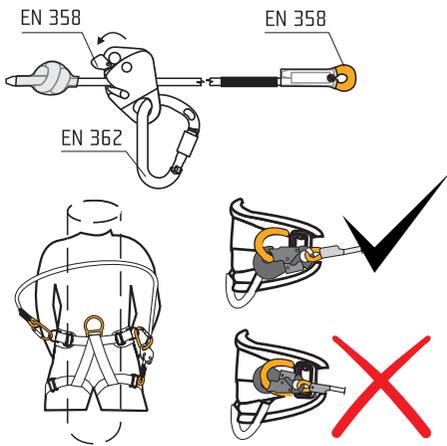


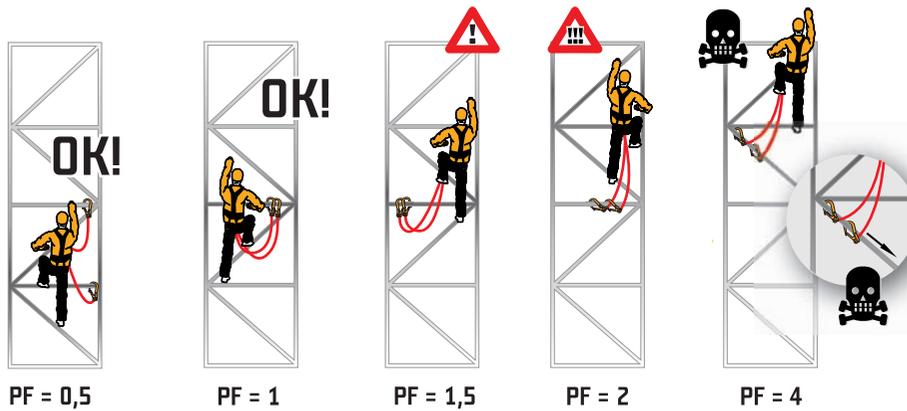
Without proper understanding of knotting techniques and their practical mastery, use of knots is dangerous and may lead to serious accidents!

SLOPES



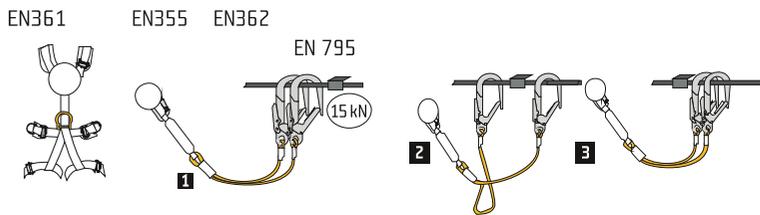
When moving on slopes, there is always the risk of fall-through or slip followed by a fall. To eliminate this risk, it is necessary to set up sufficiently strong anchor point and to use proper PPE. If there is no sufficiently strong anchor point, it is necessary to use more anchor points together. The anchorage must be placed above user to prevent him from fall. In case a fall is probable, it is necessary to incorporate a fall absorber into the safety chain. Pay attention to the horizontal distance from the vertical of the anchor point. The bigger it is the more dangerous possible fall will be.





### Some basic principles of using ropes and lanyards:

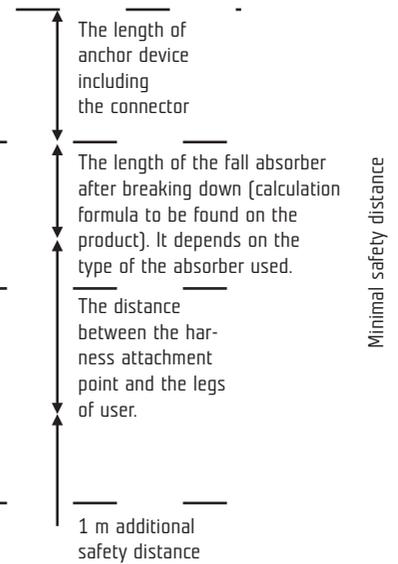
Keep your rope out of any sharp edges, rough surfaces and chemicals. Especially on slopes anticipate potential direction of fall and the strain of your rope. When working on constructions, pay attention to the direction of leading your rope and anticipate its possible strain. When using lanyards either to climb the construction or to positioning, take heed to reduce potential fall to minimum! Therefore always place the anchor point above the worker.



Example of minimum safety distance calculation for fall absorber

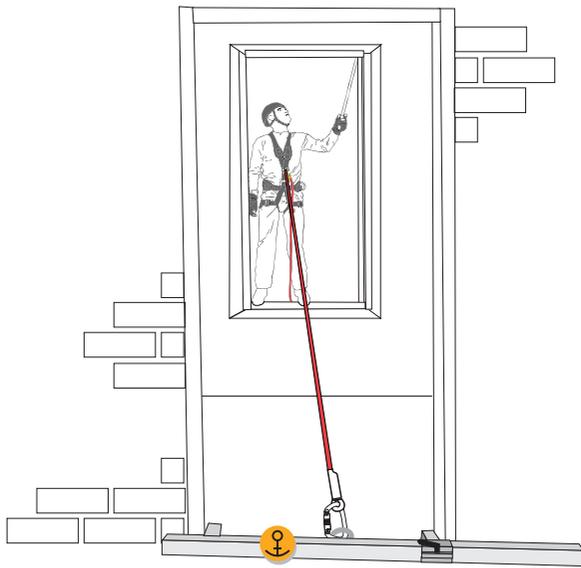


min. 2 person on the workplace



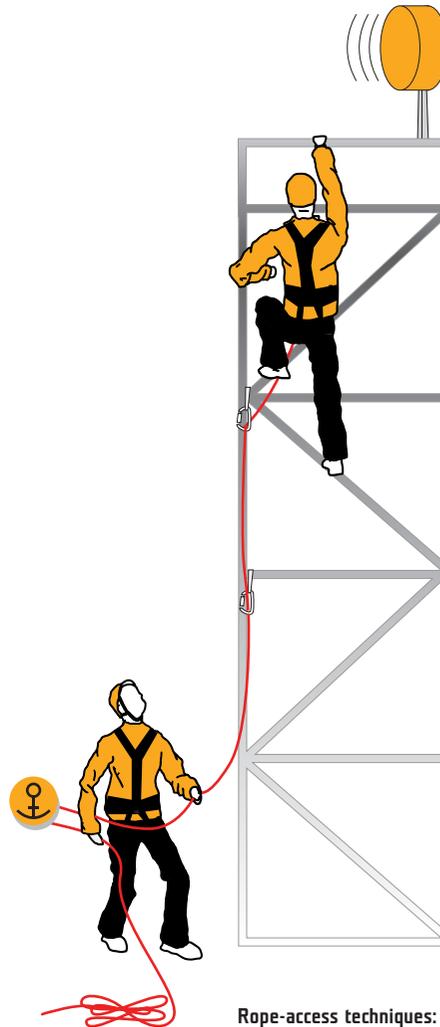
### Fall absorbers:

When using a fall absorber, the elongation of the fall absorber during breaking action shall be considered. As there are different types of fall absorbers on the market, safe use of this product requires careful reading and understanding of instructions for use, where the method of calculation maximal possible elongation of fall absorber is stated. For your safety we recommend to add another 0.5 m to the calculated distance.



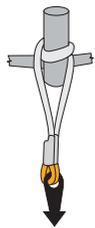
### Rope-access techniques:

If reaching the working place using the rope from above, the risk of a worker falling is minimal. If it is necessary to ascend to use the working place, then it is necessary to set up sufficiently solid (min 10 kN) anchor points in proper distance, to make possible worker's fall was as short as possible. Work at height must be carried out only by properly trained workers!



### Rope-access techniques:

If reaching the working place using the rope from above, the risk of a worker falling is minimal. If it is necessary to ascend to use the working place, then it is necessary to set up sufficiently solid anchor points in proper distance, to make possible worker's fall was as short as possible. Work at height must be practised only by properly trained workers! When using climbing techniques the first climber is safeguarded indirectly. The locking device is incorporated in a sufficiently solid anchor point outside the body of the safe guarder. An advantage is the possibility of providing first aid to the first climber in a relatively short time.



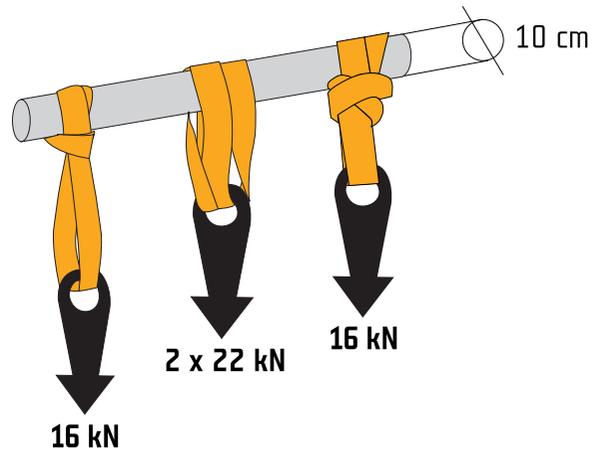
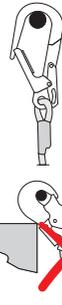
cca 2 x 22 kN



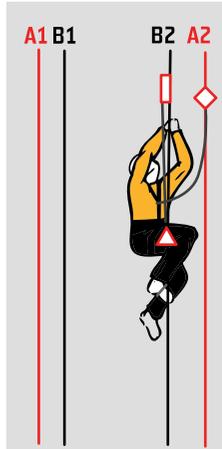
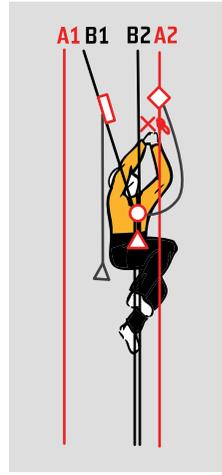
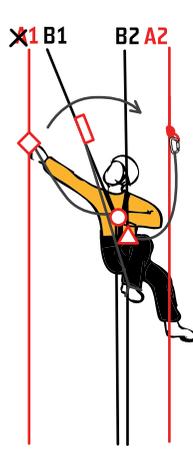
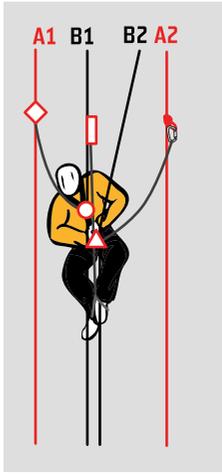
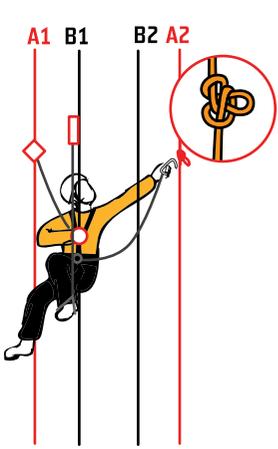
cca 4 x 22 kN



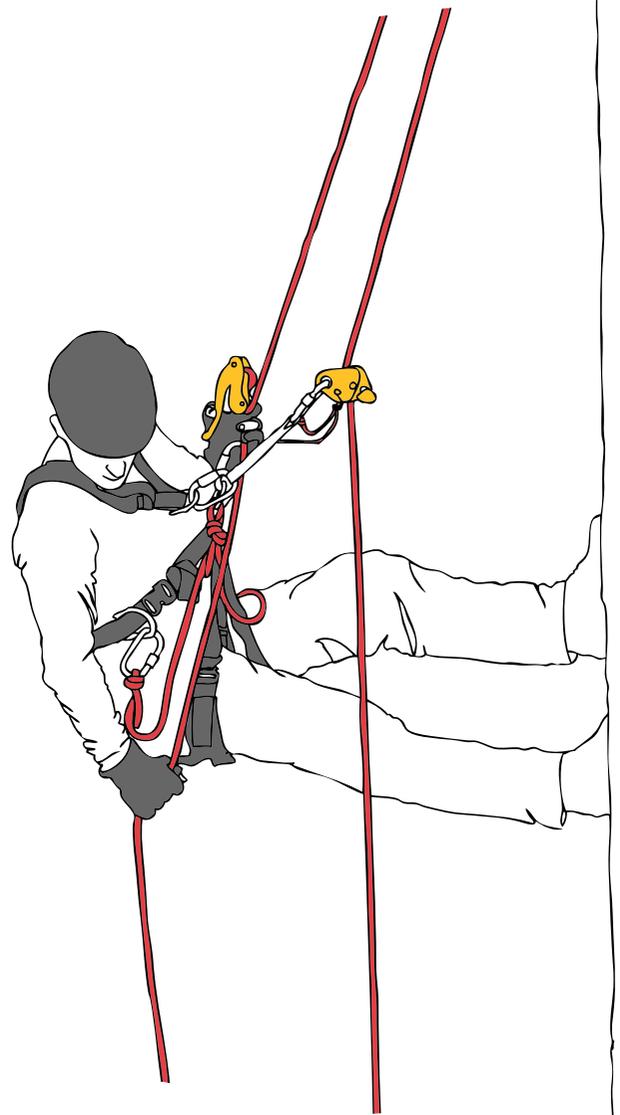
cca 30 kN



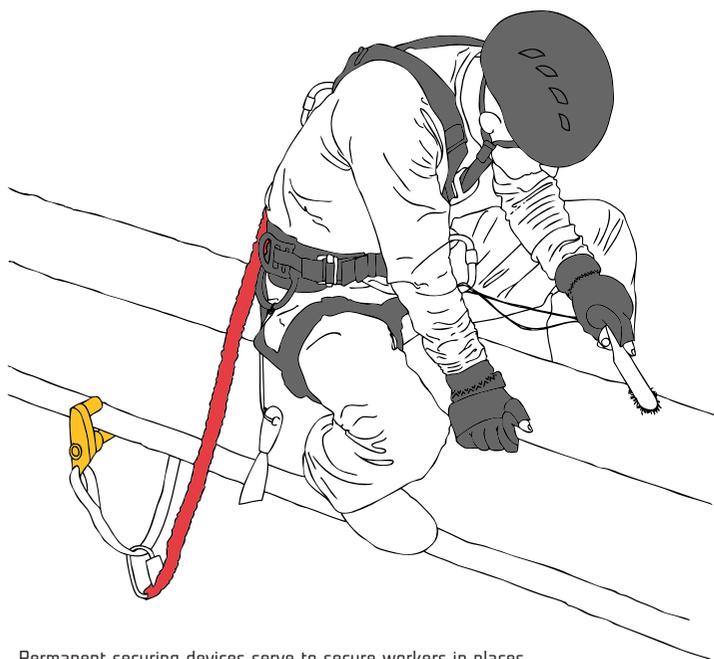
Rope transfer    ✗ off-belay    △ braking device    □ hand ascender    ○ chest ascender    ◇ locker



rope ascend

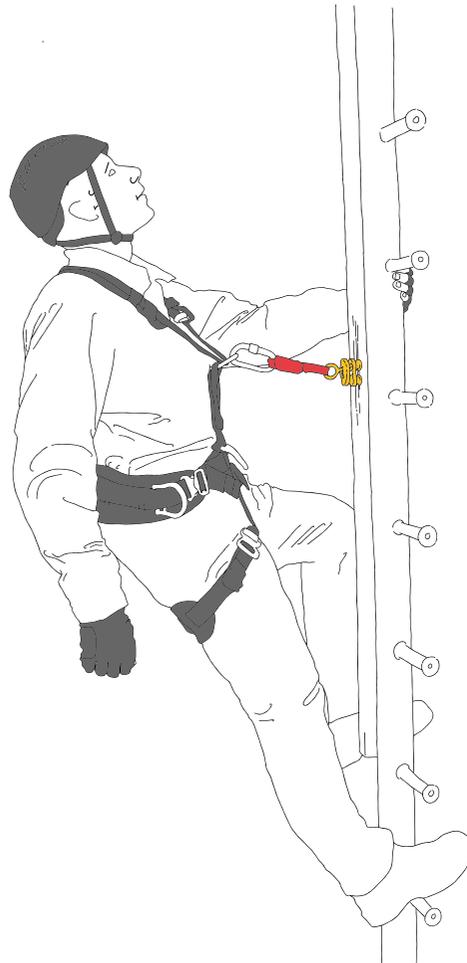
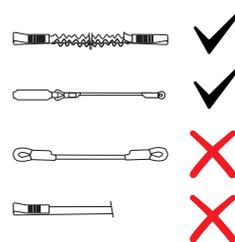


rope descend

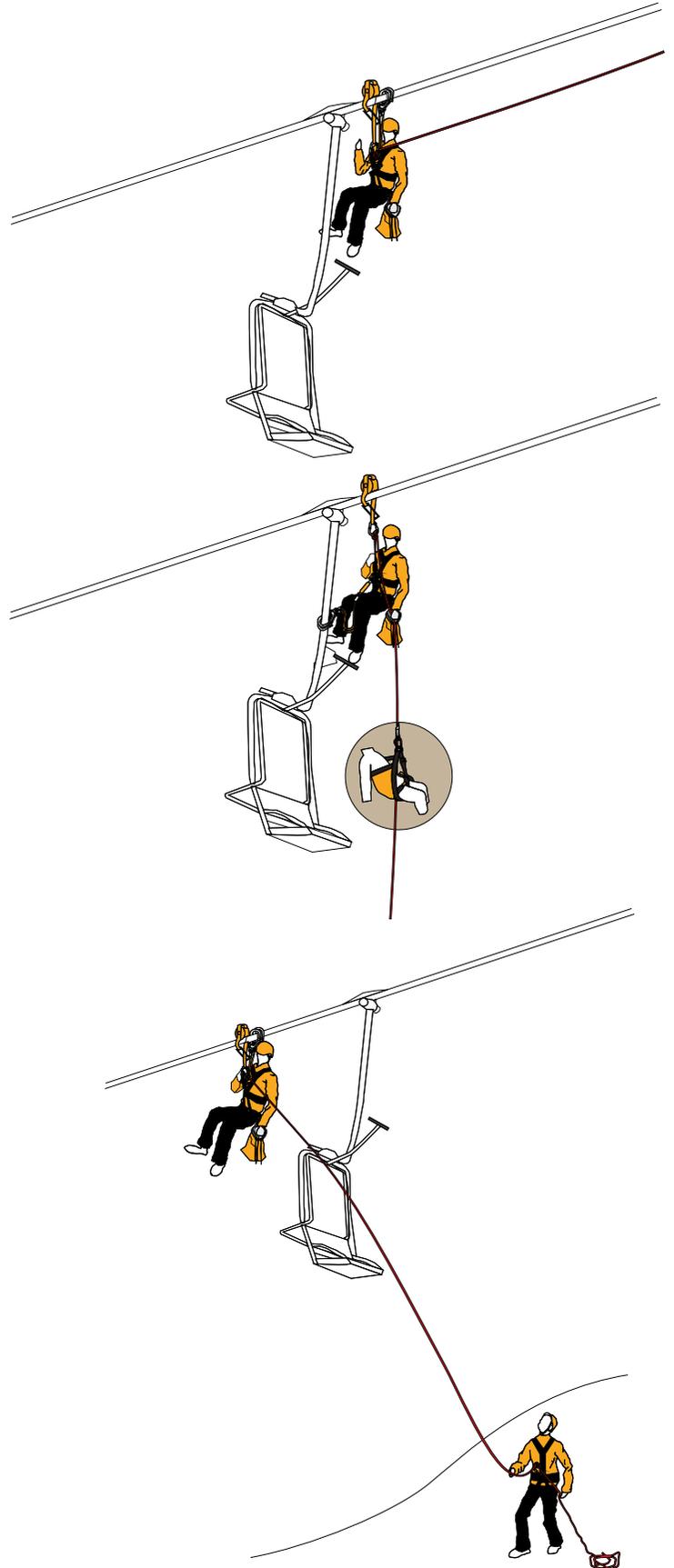
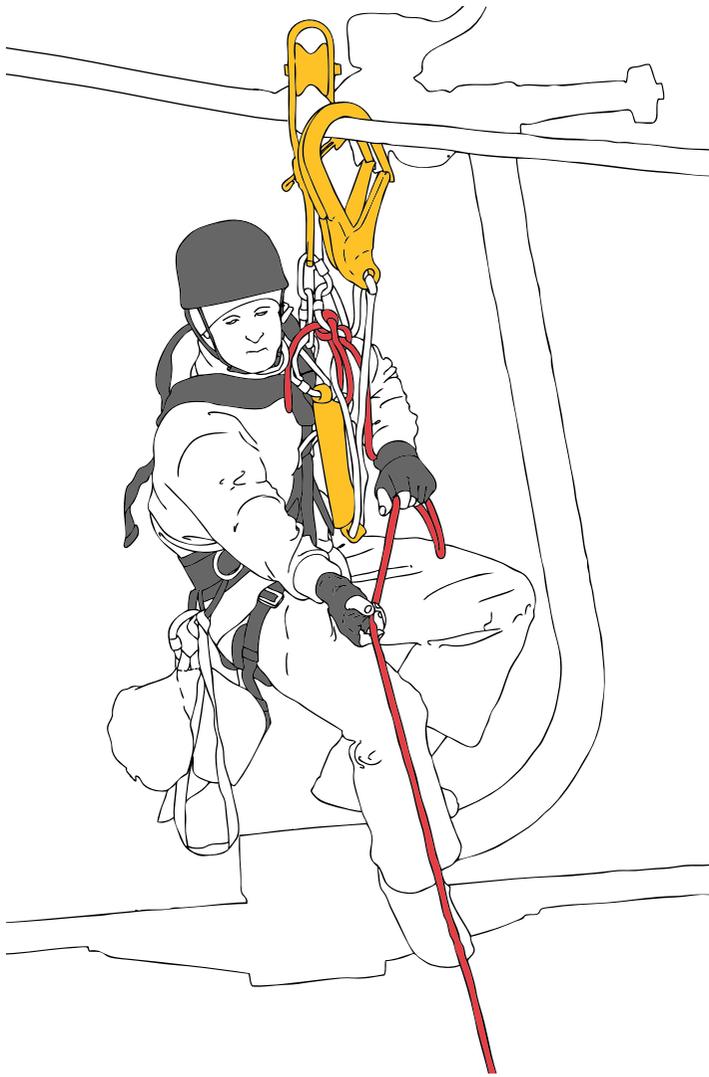


Permanent securing devices serve to secure workers in places where it is possible to set up fixed anchor point in the working place or near it. These are then interconnected by steel rope or a rail. For moving and securing, the worker uses connectors (EN 362) or special slider made for this purpose and supplied by the system manufacturer. The advantage of PSD is their long operating life and variability of use.

Fall arrest systems form an important element of the safety chain. When used correctly, they ensure sufficient absorption of fall energy, thus preventing the worker's body from being damaged. If the worker faints during or after fall, it is necessary to transport him to a safe place. The long hanging of unconscious body may have fatal consequences (trauma caused by hanging). Therefore keep in mind that fall arrest systems should be only used by trained workers. In case of need they should be able to aid each other at rescue and recovery action.

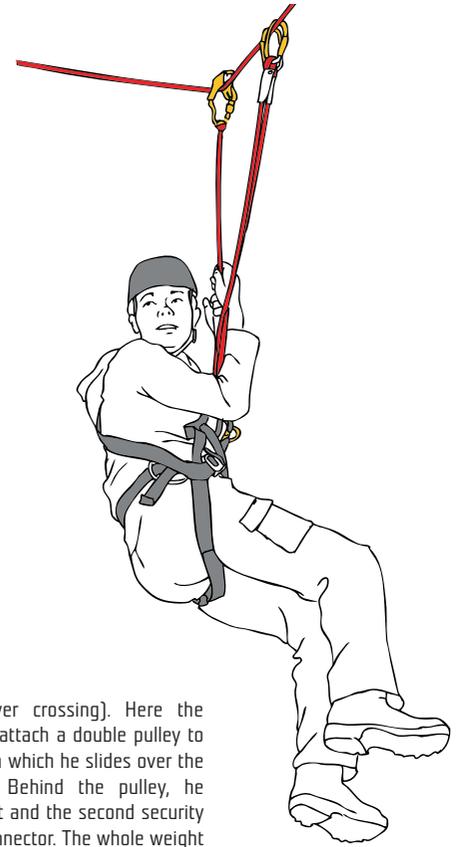


Rescue activities are unique in many ways when speaking about working at height and above depth. First of all it is an activity when people's lives are saved, therefore the rescuers must work fast, accurately and efficiently to keep themselves safe. That is why rescuers use the simplest methods possible. One of the activities is evacuation of persons from a funicular. Below is presented a complex system of funicular evacuation, prepared by Singing Rock in cooperation with the Czech Republic Mountain Rescue organization. Our experts will be happy to explain you everything necessary.

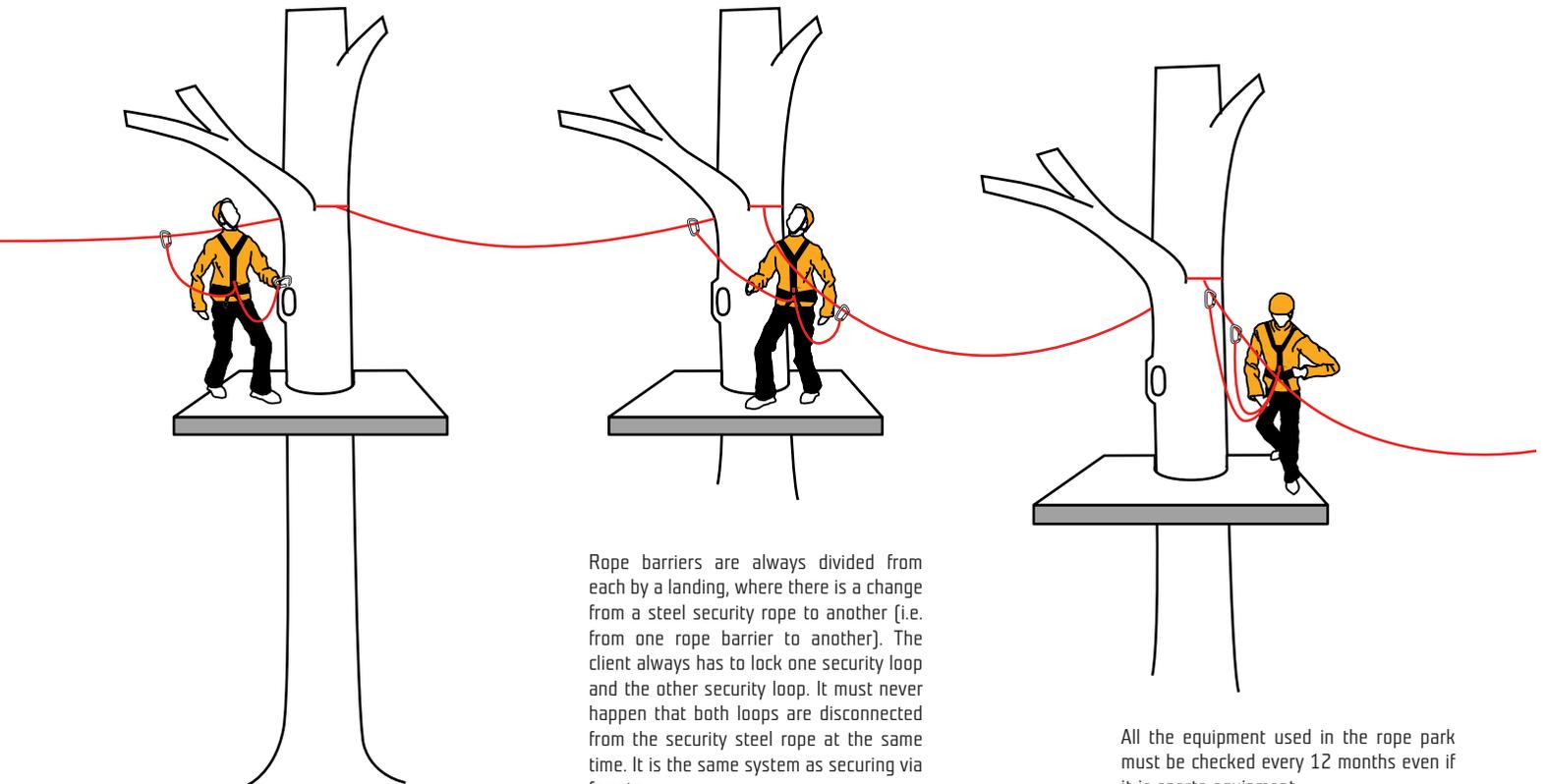




Rope parks are a combination of working and sports climbing. It is a leisure-time activity mainly carried out by people who are gaining experience with climbing. This activity combines working as well as sports equipment. The person (client) is ideally dressed in a whole-body harness. To connect to the steel security rope there are two connectors and these are connected to the harness by a fabric loop. In addition, the client is equipped with a double pulley, which is connected to the harness fabric loop

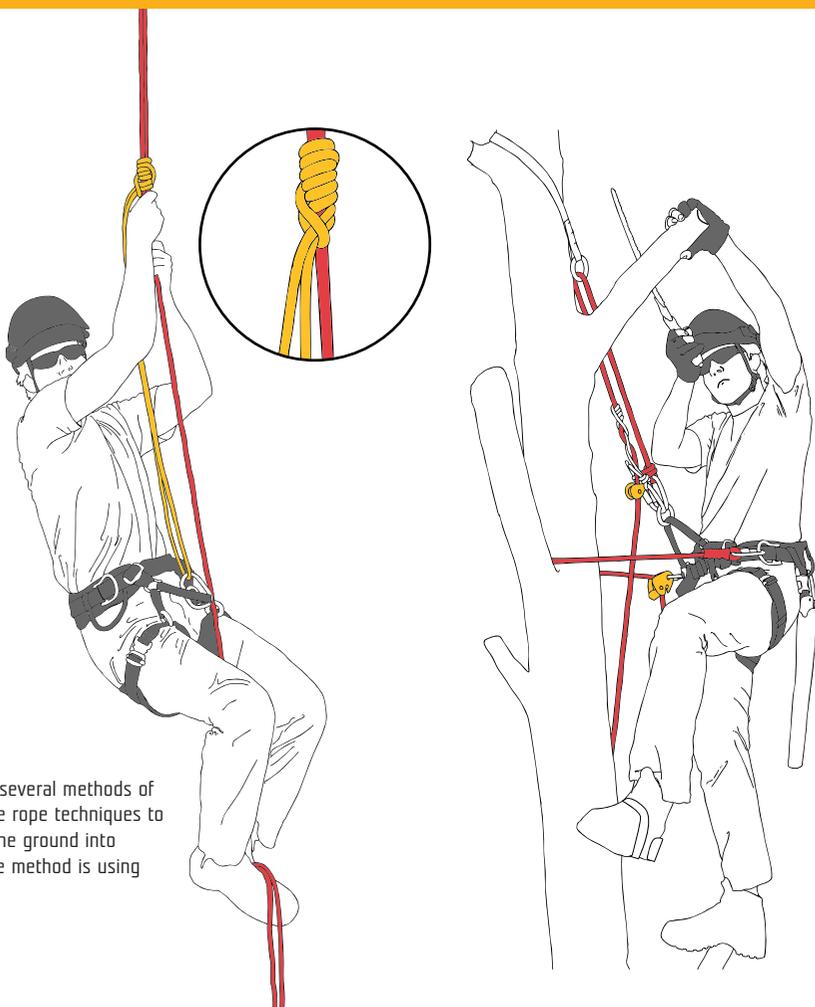


Funicular (fly-over crossing). Here the client must first attach a double pulley to the steel rope on which he slides over the distance given. Behind the pulley, he attaches the first and the second security loop with the connector. The whole weight of client is in the pulley. Security loops move freely behind the pulley.



Rope barriers are always divided from each by a landing, where there is a change from a steel security rope to another (i.e. from one rope barrier to another). The client always has to lock one security loop and the other security loop. It must never happen that both loops are disconnected from the security steel rope at the same time. It is the same system as securing via ferrata.

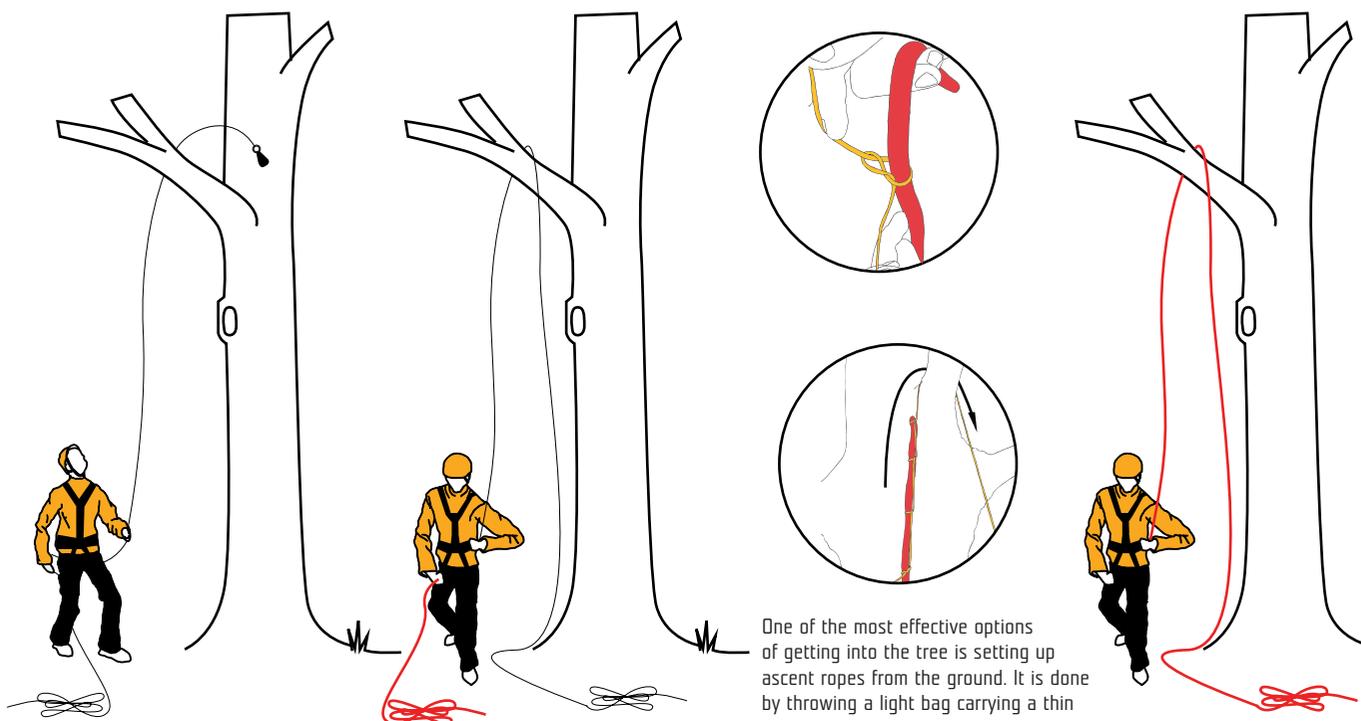
All the equipment used in the rope park must be checked every 12 months even if it is sports equipment.



There are several methods of how to use rope techniques to get from the ground into a tree. One method is using a footlock.

Arborist is an expert who looks after trees in public green areas with the intention to keep them healthy and in a state of operational safety. He proposes solutions for treatment based on arboristic knowledge while taking into account the interests of nature and environment conservation as well as regulations affecting work safety. This profession is inherently connected with moving in the tree using rope techniques, where the arborist installed an ascent rope from the ground by throwing a bag. In the tree he can then choose a suitable anchor point where he places a cambium protector and then places his working rope into it. After reaching the working place and before starting the actual work, the arborist must be in a comfortable and safe position. This is ensured by adjustable positioning devices.

Prior to starting work, the arborist in the tree must always have two independent adjustable positioning devices.



One of the most effective options of getting into the tree is setting up ascent ropes from the ground. It is done by throwing a light bag carrying a thin rope over the required anchor point. The ascent system is then pulled by this light rope.



**112** Emergency  
**911** Emergency  
**999** Emergency

**When to call?**

Always when there is damage to health, an injury or an accident with serious consequences. Most commonly it is the following: pressure or pain in chest, difficulty breathing, altered consciousness, serious injury, poisoning by drugs or chemicals.

**How to call?**

The emergency line can be reached from any phone network in the Czech Republic. The call is always free of charge.

**What to say?**

Try to remain calm and answer the questions factually. The biggest delay before the ambulance crew's setting off may be caused by miscommunication with the dispatcher.

**The usual set of question**

**What exactly happened** - this information is necessary to determine what kind of help should be sent.

**Exact place of the reported accident** - it is very important to accurately describe the place where the accident happened.

This information is necessary if the ambulance crew is to intervene rapidly.

**Information about the injured:** sex, approximate age, number of injured persons. External signs of injury.

**Information about the caller:** Name of the caller, number of the telephone you are using to call (so that you can be called back if there are difficulties finding the place or in case of other problems).

**Specification of the place of the accident**

**In a flat, at work or in another indoor space:**

address and house number (as detailed as possible), floor and the name of the flat owner, how to find the house (especially in housing estates).

**On a public road or other open space:**

brief and concise description of the place of the accident (e.g. a typical building nearby, park, crossroads, last village, turnoff, mileage sign, road number, etc.)



**Find out the state of consciousness** of the injured. If irresponsive to verbal or painful stimulus, focus on the presence of **basic life functions:**



**Breath:** If not breathing, tilt the injured person's head back and check and release oral cavity.



**Pulse:** If impalpable, initiate cardiac massage. Put backs of hands of your crossed arms with elbows stretched on the breast-bone in the intersection of the line between the nipples and the centre of chest. For 30 compressions of chest breathe in twice. Compress the heart approximately 100x/min.



**Artificial respiration:** We press the nose with thumb and forefinger, open the injured person's mouth with our lips and breathe in.



After stabilization of basic life functions we place the injured person in the **recovery position**.

**RELIEF POSITIONS**



*anti-shock*



*chest injury*



*autotransfusion*

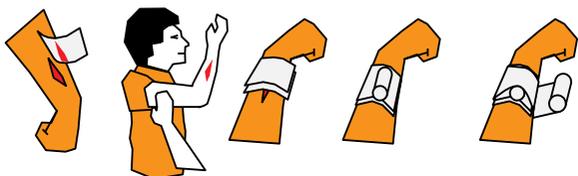


*pelvic injury*



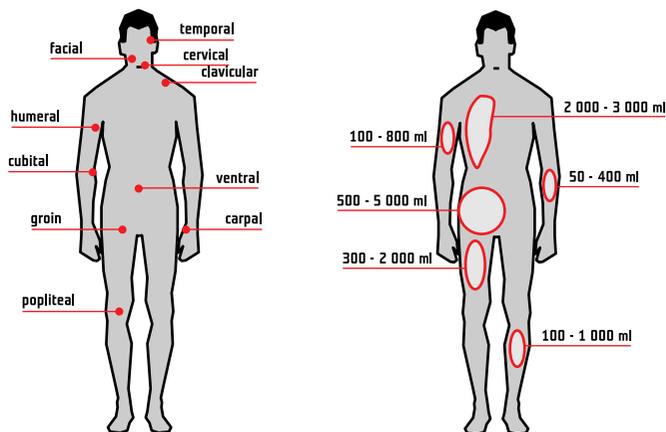
*abdominal injury*

**FIRST AID FOR BLEEDING**



Perform wound toilet and wipe edges with disinfection. If it is a massive haemorrhage, create a pressure bandage. If blood splashes in a pulse rhythm, raise the limb above heart level. Press the pressure point and attach a sterile cover. Fix the pressure layer by a bandage and tighten the whole bandage under moderate pressure = **PRESSURE BANDAGE**

**PRESSURE POINTS**



**BURNS**



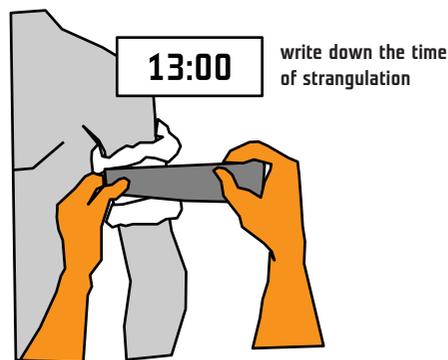
1<sup>st</sup> degree

2<sup>nd</sup> degree

3<sup>rd</sup> degree

Systematically cool down the affected part  
Remove jewels and metal objects

**STRANGULATION**



**The most important is the prevention**

It is important when working at height to work in a team at least two people. Always be physically well prepared and to have a charged mobile phone and first aid kit.



**SINGING ROCK TECH-INFO 2012**  
SINGING ROCK - All rights reserved. Technical specifications may change without notice.  
Printed in Czech Republic.

Singing Rock  
Poniklá 317  
CZ-512 42 Poniklá  
e-mail: [info@singingrock.com](mailto:info@singingrock.com)  
tel.: +420 481 585 007  
fax: +420 481 540 040

[www.singingrock.com](http://www.singingrock.com)

**Warning:**

Activities at height such as climbing, via ferrata, caving, rappelling, ski-touring, rescue, work at height and exploration are dangerous activities, which may lead to severe injury or even death. This Tech-Info includes basic safety rules for working at height based on EU and Czech Republic laws and does not replace the instructions for use. Thus the following is essential before use: careful reading and understanding of the instructions for use, acquaintance with the possibilities and limitations of the product, adequate apprenticeship in appropriate techniques and methods of use, understanding and acceptance of the risk involved. In case of doubt or problem of understanding, contact SINGING ROCK.