



MICRO TRAXION EXPERIENCE



- This «Product Experience» document is a supplement to the Instructions For Use, which provides feedback from field experience and tips for using your product.
- It is inseparable from the Instructions for use.



IMPORTANT / REMEMBER



FAILURE TO
HEED ANY OF
THESE WARNINGS
MAY RESULT IN SEVERE
INJURY OR DEATH.

- Read the instructions for use carefully before looking at the following techniques.
- You must have already read and understood the information in the Instructions For Use to be able to understand this supplementary information.
- Mastering these techniques requires specific training.
- Work with a professional to confirm your ability to perform these techniques safely and independently before attempting them unsupervised.

Each piece of information is listed according to the technical level required for its application. Respect your own level when choosing your techniques.



Beginner technique

Technique usable by a trained practitioner of the activity.



Technique for a certified practitioner

Technique for a person trained and certified in the activity.



Expert technique

Technique only for experts in the activity.

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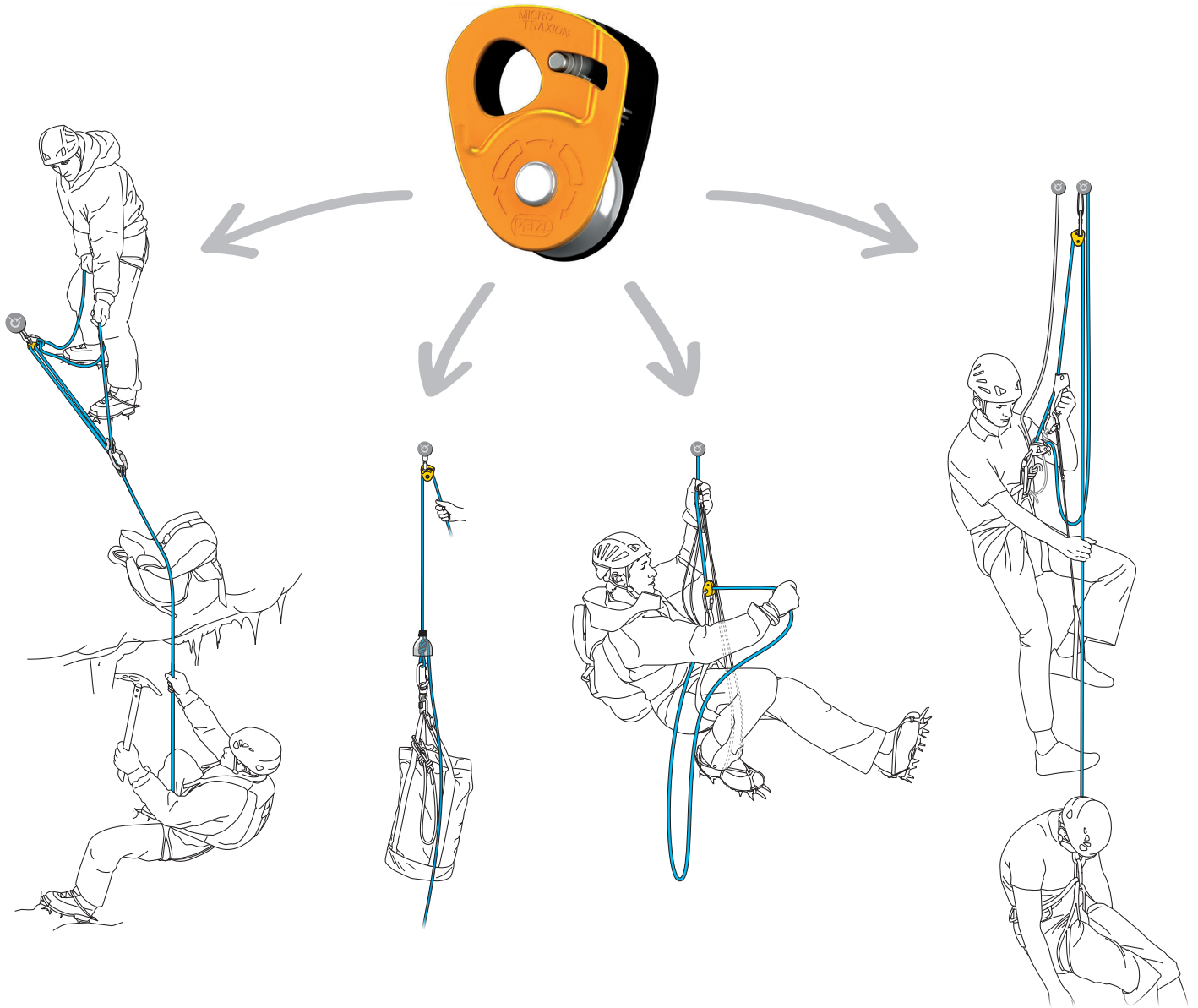
Tests on cords of diameter < 8 mm



Introduction

The MICRO TRAXION is effective in rescue situations.

Its compactness and light weight allow it to always be carried with you in most vertical activities. It has many possible uses, from self-rescue to helping a partner in difficulty.

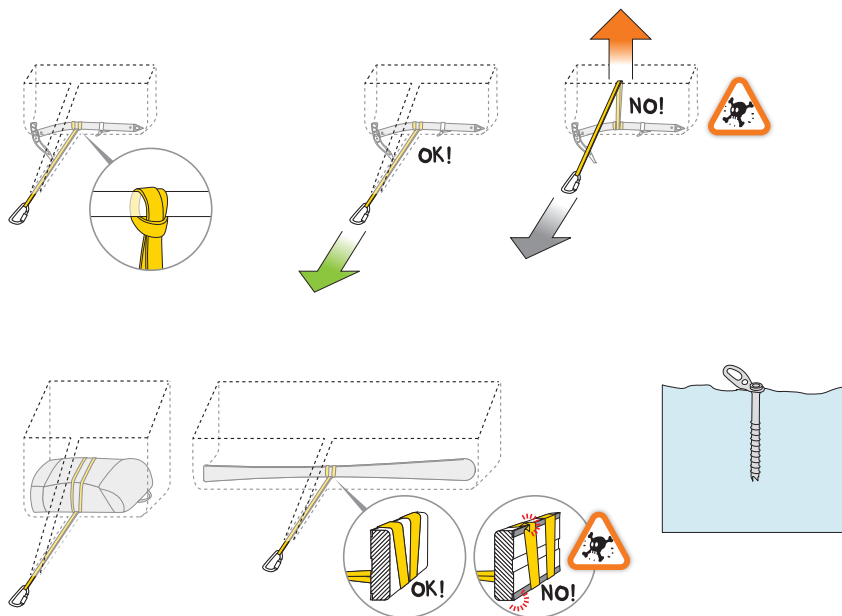


Crevasse rescue

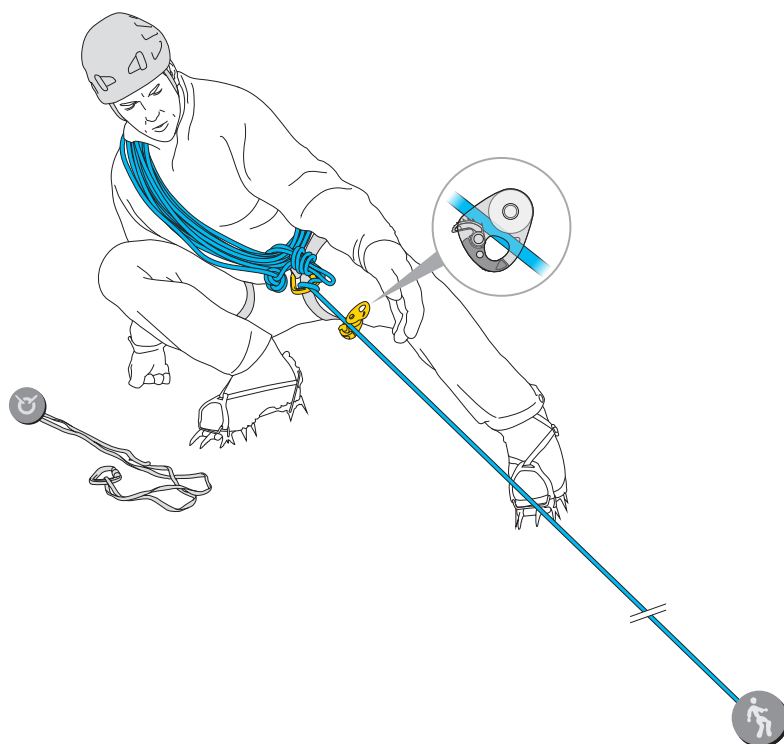
Transferring the victim's weight to an anchor

Once the fall has been arrested, the person on the surface holds the victim by acting as a counter-weight. Rapidly creating an anchor allows unloading of the victim's weight to organize the rescue.

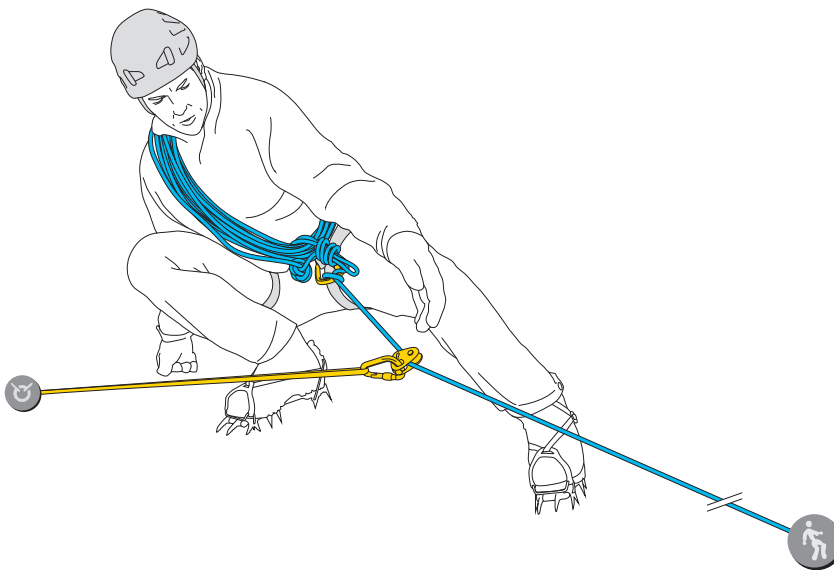
1) Creating a reliable anchor: ice axe or ski buried in the snow, or an ice screw in the ice. Connecting a sling to the anchor while respecting the direction of pull towards the victim



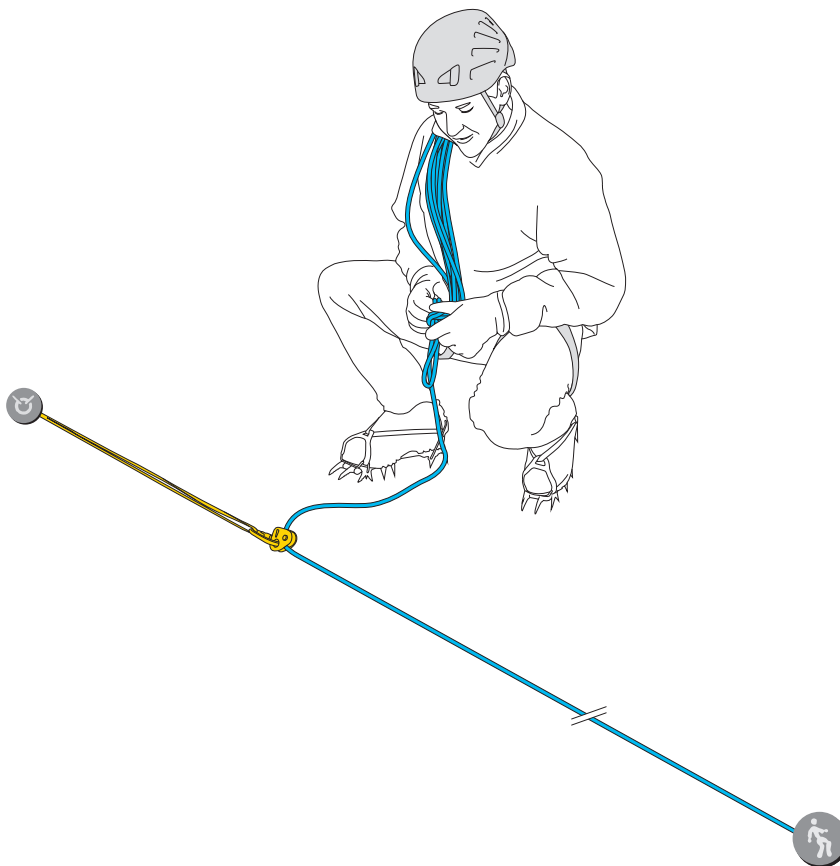
2) Install the MICRO TRAXION on the rope in the direction of hauling: it jams when pulled toward the anchor, and slides when pulled toward the victim



3) Connect the MICRO TRAXION to the anchor sling with a symmetrical locking carabiner (ATTACHE 3D). Extend the sling to its maximum length while sliding the MICRO TRAXION on the rope toward the victim



4) Gently release the tension of the rope on the harness to transfer the load to the MICRO TRAXION. Be careful to avoid jerky movements at this time, which would weaken the anchor. Verify the anchor is holding well under load. Untie the knot securing the chest loops, while remaining tied in to the end of the rope



5) The victim is now held only by the anchor, the rescuer is able to move freely

Crevasse rescue

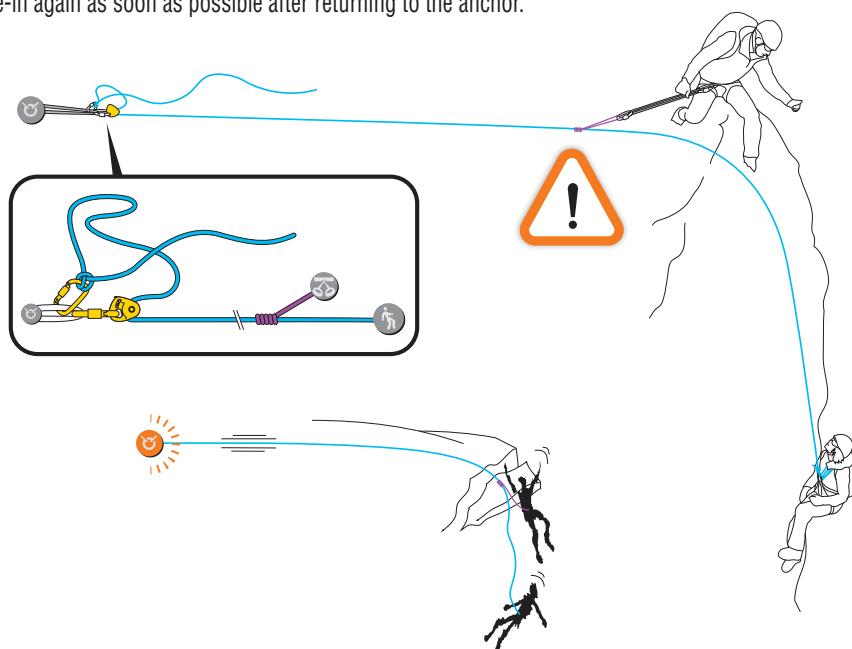
Accessing the edge of the crevasse to evaluate the situation

Once the fall has been arrested and the victim's weight transferred to the anchor, it is necessary to access the edge of the crevasse to assess the victim's condition before starting the haul.

The person on the surface, the "rescuer", must always be anchored. If creating a second anchor is not possible, the rescuer can use the same anchor as the victim. **The rescuer's movements must be done with the rope under tension to avoid a shock load in case of a fall, which could weaken the anchor.**

Moving with an autoblock knot on the victim's rope

If the "rescuer side" of the rope is too short, it is possible to move with the autoblock on the taut rope supporting the victim. The rescuer must tie-in again as soon as possible after returning to the anchor.

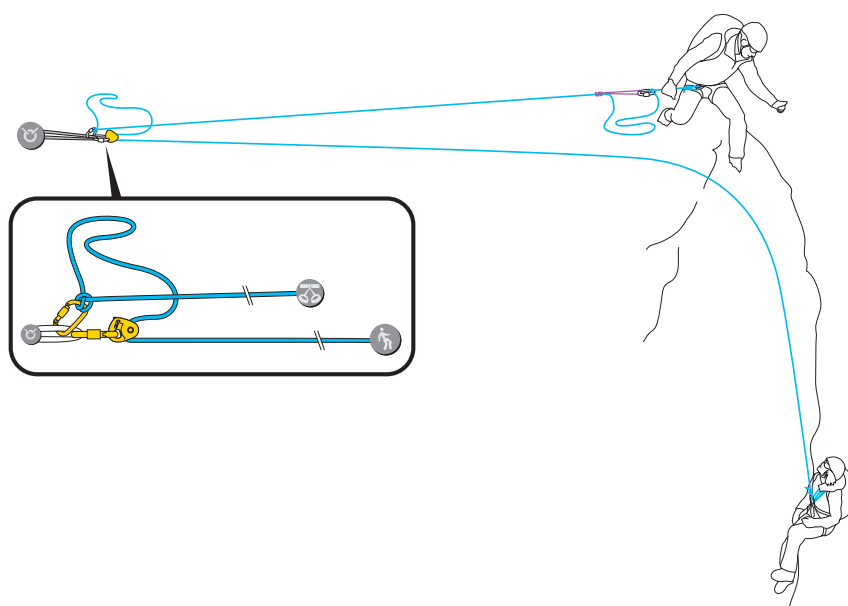


Warning: in this case, if the rescuer falls, for example if the crevasse lip collapses, both climbers will be held by the same rope. The stresses on the system will be significant (anchor + progress capture pulley).

- The anchor could fail, causing both climbers to fall
- If the anchor holds, the rope could be damaged, or cut, by the MICRO TRAXION's cam, especially if the rope is thin (See test results at the end of this document)

Moving with an autoblock knot on the rescuer's rope

The autoblock allows the length of the rescuer's belay rope to be constantly adjusted, without needing to untie from the rope.



Haul systems for crevasse rescue

Many types of haul systems exist, more or less adapted to different situations.

Here are three classic haul systems that can be done independently with minimal equipment. As with all rescue situations, training and prior knowledge of the techniques to use, are the best guarantee of success.

Simple haul system

Theoretical efficiency: 3 to 1 (victim weight divided by 3)

Advantages: minimal equipment necessary. Rapid, simple installation. Easy transition to a higher-efficiency haul system.

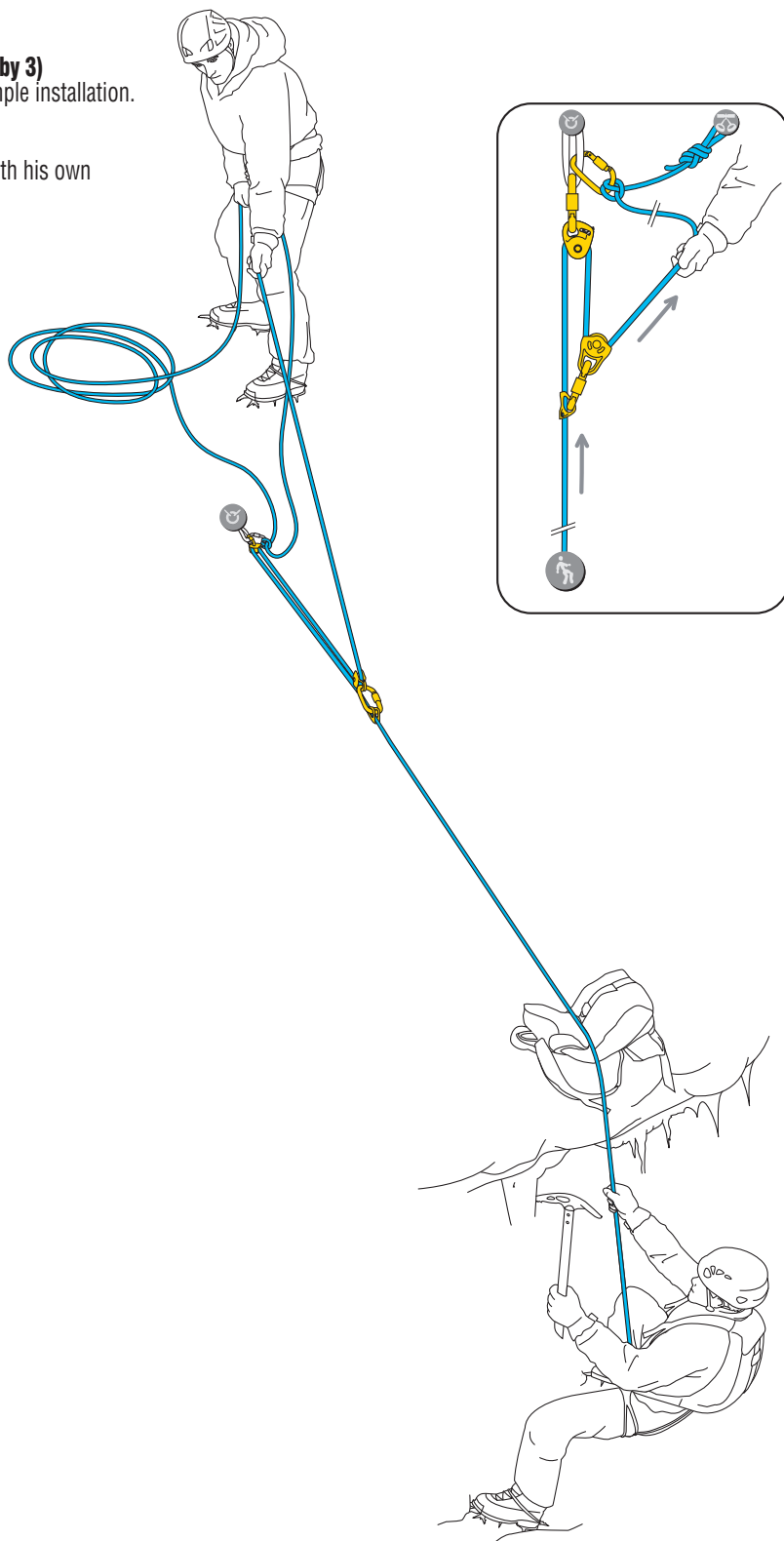
Disadvantages: average efficiency.

Suitable situation: victim who is capable of helping with his own ascent by using the wall.

Lightweight victim who the rescuer can easily haul.

WARNING:

For the entire duration of hauling maneuvers, the rope between the anchor and the victim must remain taut to limit the risk of shock loading. If the victim is active, for example when crossing the lip, the slack rope must be continuously taken up.



Double Mariner

Theoretical efficiency: 7 to 1 (victim weight divided by 7)

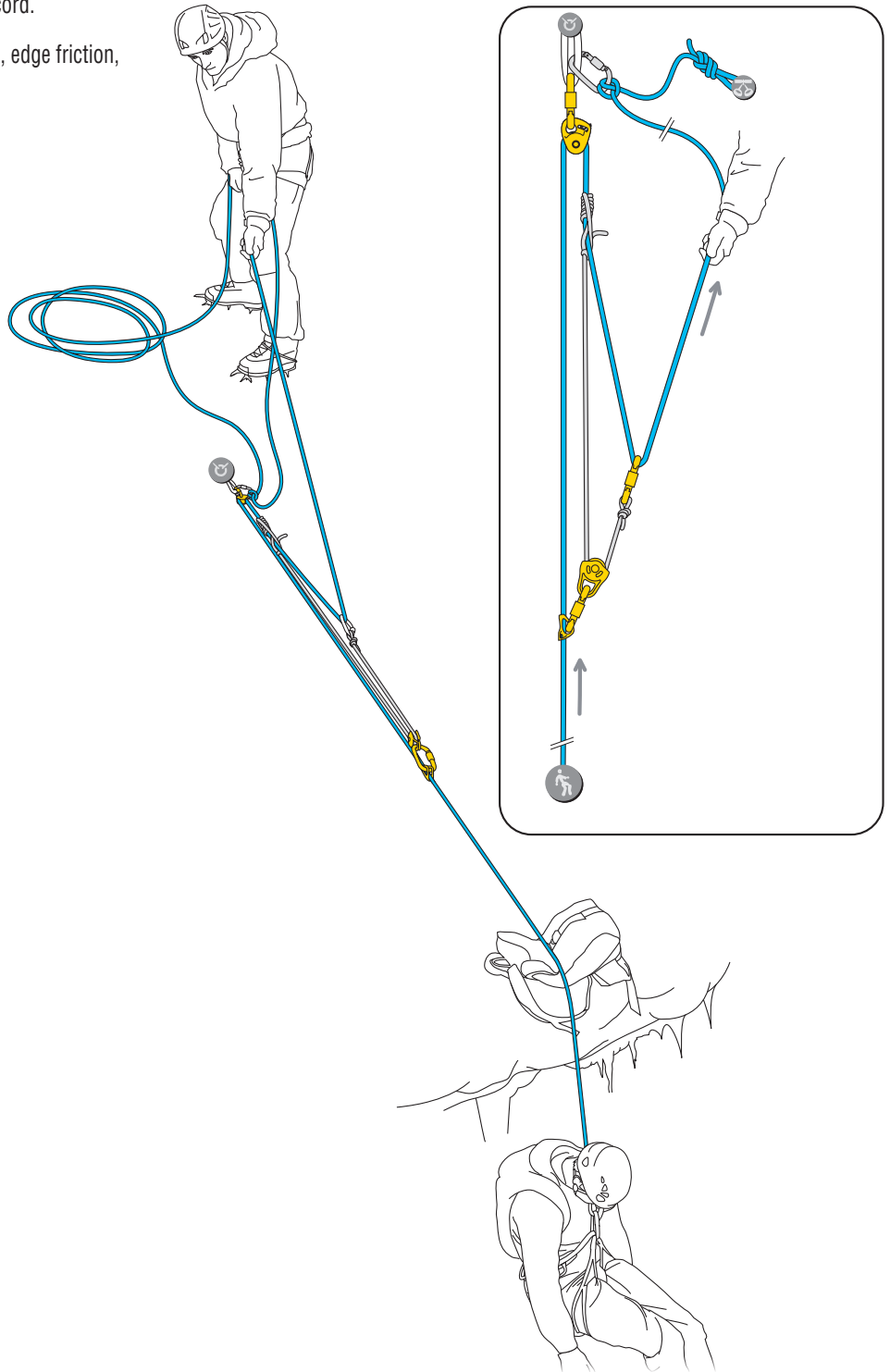
Advantages: Efficient hauling with reduced equipment.

Disadvantages: complex installation, training and memorization required. Requires a 5 m cord.

A lot of rope to take up.

Suitable situation: victim unable to help, edge friction, heavy victim and lightweight rescuer...

WARNING:
For the entire duration of hauling maneuvers, the rope between the anchor and the victim must remain taut to limit the risk of shock loading.



Loop haul

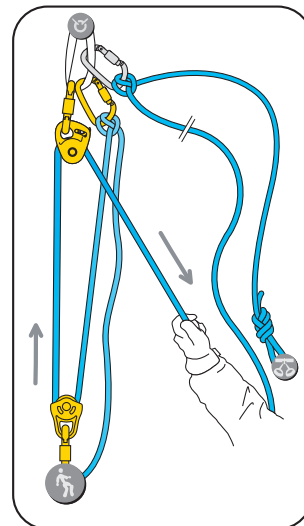
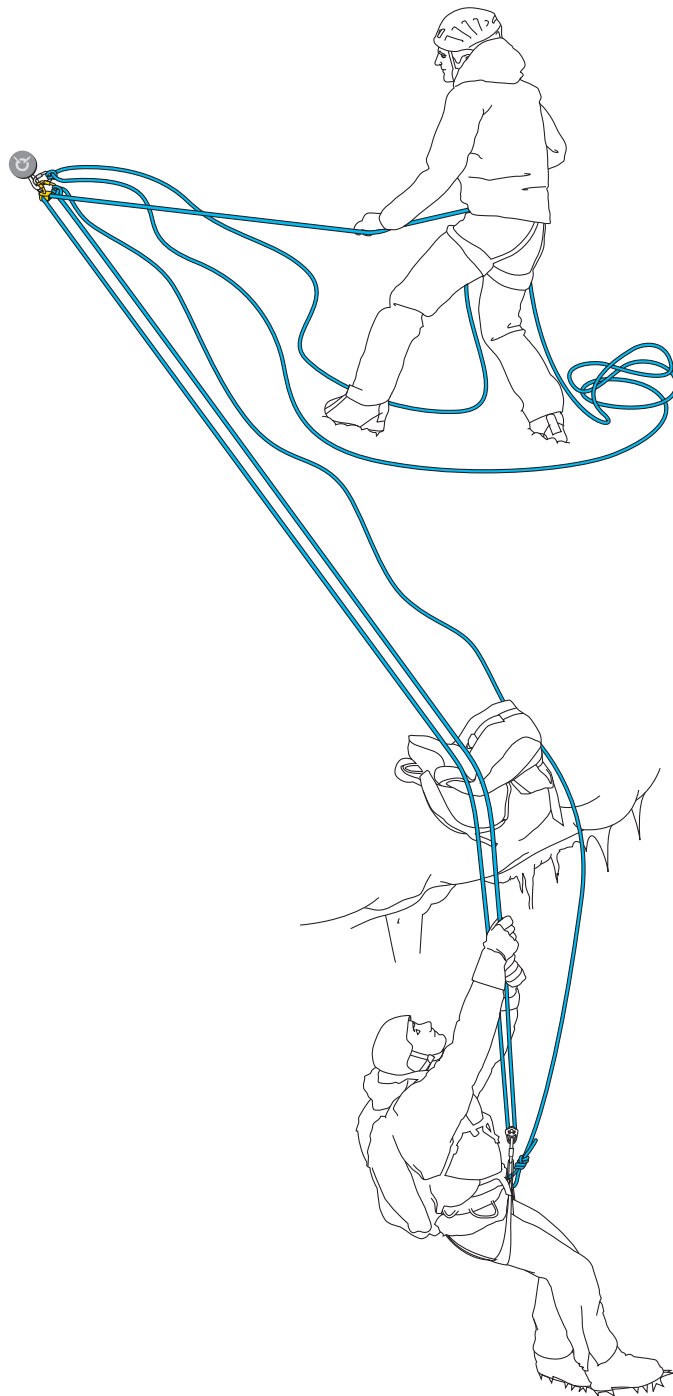
Theoretical efficiency: 2 to 1 (victim weight divided by 2)

Advantages: the victim participates fully in the haul effort.

Disadvantages: risk of jamming due to rope getting crossed while sending the pulley to the victim. Requires a lot of rope.

Suitable situation: rope team of two, tied-in mid-rope with the ends free and reserve rope stored in the packs.

Victim capable of helping in the haul, but without support against the wall (overhanging crevasse, loss of ice axe, etc.).



WARNING:

For the entire duration of hauling maneuvers, the rope between the anchor and the victim must remain taut to limit the risk of shock loading.

If the victim is active, for example when crossing the lip, the slack rope must be continuously taken up.



⚠️ Short lower of the load during hauling

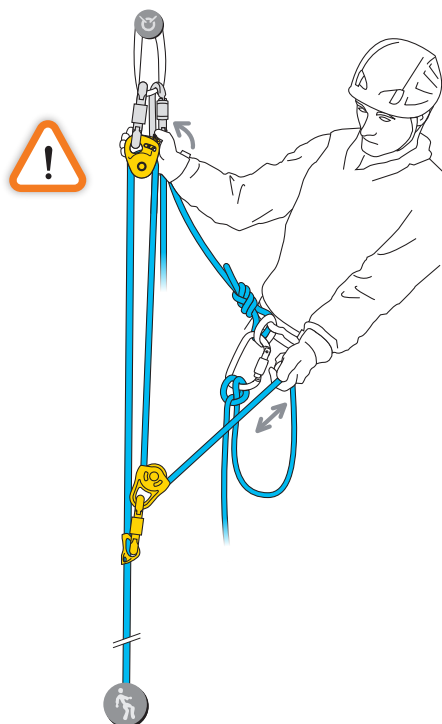
During a haul, a short lower of the victim may be required for a variety of reasons.
A short lower could be done by simply lifting the cam, without deactivating the progress capture function.

Warning: be sure that you can hold the load before lifting the cam: if it takes a lot of effort to haul, you risk not being able to control the descent. In this case, add some friction, or make a knot in the rope where it exits the haul system, to limit the risk of letting the load slip.

Do a gentle pull while simultaneously lifting the cam with the thumb.

Warning: do not push on the button to avoid accidentally deactivating the progress capture function.

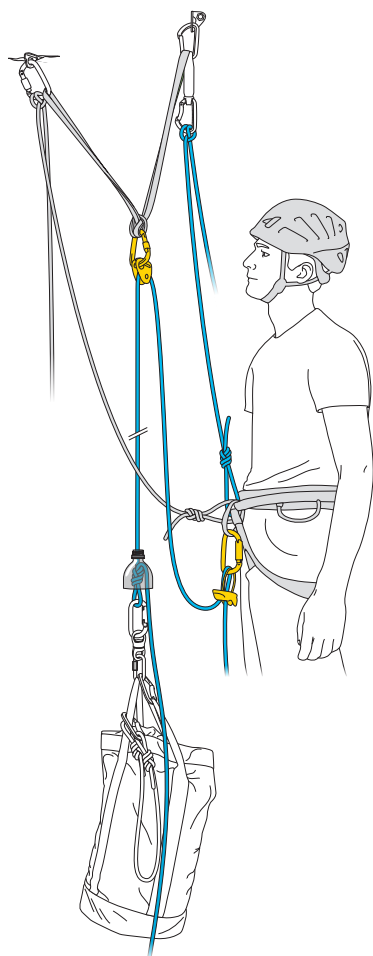
Hold the cam up with the thumb and brake the descent with the other hand.



Descending

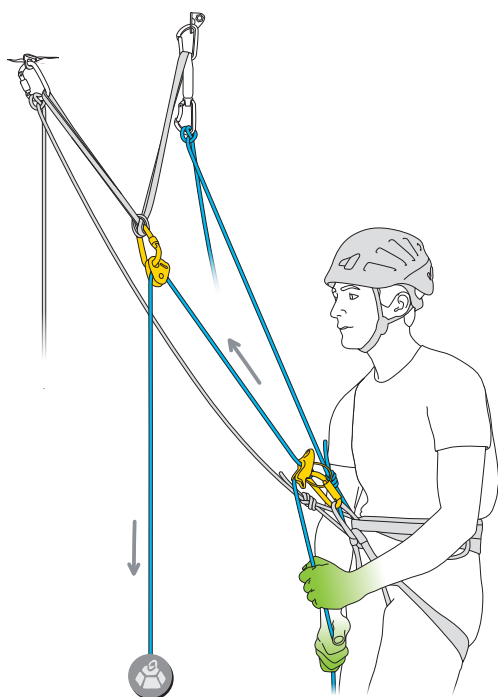
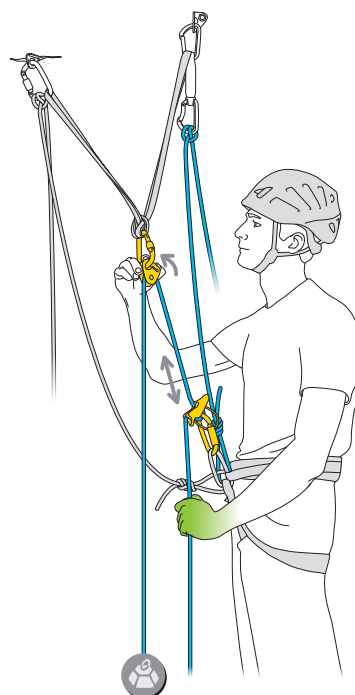
Lowering a load with the cam deactivated

Before deactivating the cam, it is necessary to install a braking system that allows you to hold the load and control the descent. With the MICRO TRAXION in "simple pulley" mode, a REVERSO on the harness is a good solution.



1) REVERSO installed on the harness

2) Belayer taking the load and deactivating the cam
When the belayer takes the load onto himself, the tension in the rope allows the MICRO TRAXION's cam to be deactivated. Push the button, then release it to hold the cam in the raised position.



3) Lowering the load
The descent speed must be moderate, to limit the shock load in case the cam re-activates itself. This can happen in case of vibrations, the cam pressing against the rock or equipment, or due to rope movements.

Warning: the pulley at the redirect point significantly reduces friction (about half the friction of a carabiner). In case of jerks during the lower, the belayer can be pulled toward the pulley, especially if his stance is unstable.



⚠️ Belaying the second while climbing: danger!

The MICRO TRAXION is not a belay device.

Petzl has noted that some leaders use it to belay their second, mostly for comfort. Warning, this very delicate operation requires great vigilance.

The advantages generally mentioned are ease of taking in slack for the leader, instant fall arrest for the second, even if the leader isn't paying attention (!!!), and ease of aiding the second with a haul system if necessary.

For Petzl, the sum of these advantages does not justify using the MICRO TRAXION for belaying the second, especially considering the additional risks and drawbacks of this method.

Warning



- Risk of damaging or cutting the rope in case of a factor 1 fall (or higher)
A factor 1 fall presents a risk for the second: traverses, too much slack, missed unclipping a point of protection...
- Icy or dirty rope can inhibit the functioning of the cam: risk of ineffective jamming in a fall, or when taking a rest
- If the second must descend, the MICRO TRAXION's cam must be disengaged: risk of a fall A supplementary belay device must be installed on the rope before disengaging the cam.

		<p>Tests done at the Petzl test tower: Case of a fall during a traverse close to the belay. Factor 1 fall of 2 m in length onto 2 m of rope, with an 80 kg mannequin On 9.1 mm single rope = Impact force < 6 kN, damaged or broken sheath</p>	
		<p>Tests done at the Petzl test tower: Case of a fall during a traverse close to the belay. Factor 1 fall of 2 m in length onto 2 m of rope, with an 80 kg mannequin On 8.1 mm half rope (1 strand) = Impact force < 6 kN, rope heavily damaged or cut</p>	

Conclusion:

Petzl does not recommend using the MICRO TRAXION to belay the second.

Progress capture pulleys are not belay devices.

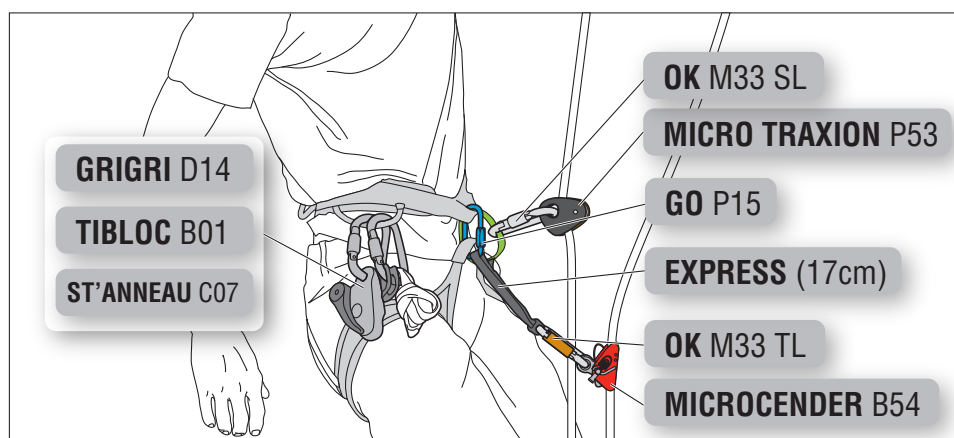
The REVERSO is the device created for belaying the leader and second in all situations, on single or half rope. See detailed solutions for belaying the second in the REVERSO Instructions for Use at www.petzl.com



Climbing / Progressing

Self-belaying

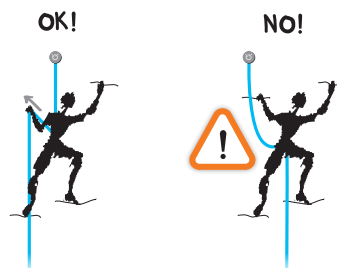
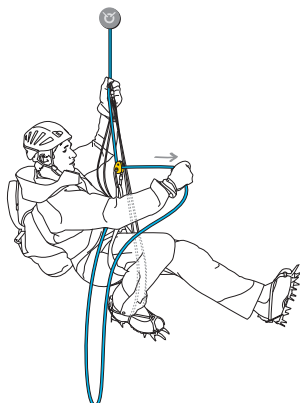
The MICRO TRAXION can be used as part of a complete system for self-belayed climbing on one or two ropes. See the pages on self-belaying at www.petzl.com



Ascending the rope in self-rescue: take care when approaching the anchor

When ascending rope, it is common to climb the wall instead of the rope when approaching the anchor. At this moment, even if it is possible to make some climbing moves, the rope must always remain taut between the anchor and the ascenders to limit the potential fall height.

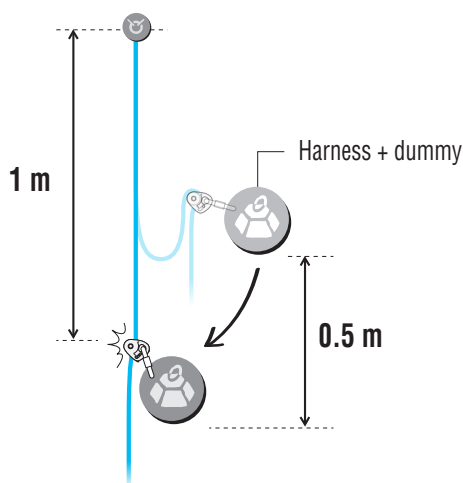
If the climber neglects taking up slack, just a single step can significantly increase the fall factor. The consequences of a slip can be severe, as arriving at the anchor is a time when the climber feels rather "out of the woods."



Fall tests in a self-rescue situation (ascending rope) close to the anchor.

Warning: second ascender and/or self-belay not shown.

Fall at 0.5 m from the anchor



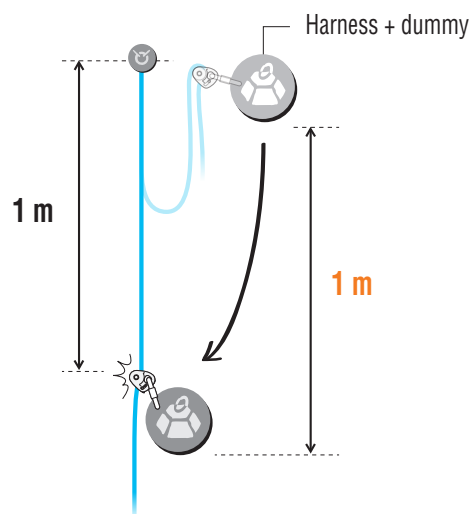
Dynamic test - fall factor 0.5
80-kilo dummy

Rope	Impact force
8 mm semi-static	4.3 kN
8.1 mm dynamic	3.4 kN

Dynamic test - fall factor 0.5
100-kilo dummy

Rope	Impact force
10.5 mm semi-static	4.3 kN

Fall of 1 m at anchor level



Dynamic test - fall factor 1
80-kilo dummy

Rope	Impact force
8 mm semi-static	5.4 kN
8.1 mm dynamic	4.2 kN



Dynamic test - fall factor 1
100-kilo dummy

Rope	Impact force
10.5 mm semi-static	5.5 kN

Be careful when approaching the belay anchor, one step is enough to worsen the consequences of a fall. In this example, 50 cm makes the difference between an "average" and a "severe" fall.

Supplementary information

Static test

The following tests were done in labs; they were done on new ropes and devices, but it is impossible to recreate every scenario. Warning: we did not test every rope on the market; the results of these tests could be different with other types of rope.

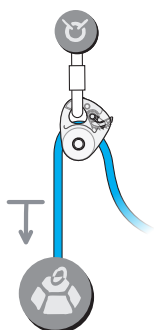
The test values are given for information, to give an idea of the loads involved in such situations.

Values recorded during tests with new ropes, certified to current European standards (EN 1891 semi-static ropes, EN 892 dynamic ropes).

Warning: older ropes are generally weaker.

Testing done with slow pulls, until the first signs of rope damage appear. (Maximum load tested = 5 kN)

Warning: the rope-damage values, recorded during the dynamic tests (falls/shock loads) are generally lower than with slow-pull: the frame-loaded ascenders are not designed to hold shock loads.



**Static test - slow pull
EN 1891 Type A semi-static rope**

Rope diameter	Beginning of sheath damage
8 mm	4.6 kN
8.5 mm	4.9 kN
9 mm	4.6 kN to 4.8 kN
10 mm	> 5 kN
10.5 mm	> 5 kN
11 mm	> 5 kN

**Static test - slow pull
EN 892 dynamic rope**

Rope diameter	Beginning of sheath damage
8 mm	4.5 kN
9 mm	> 5 kN

The ropes used with the MICRO TRAXION can be damaged at loads between 4 kN and 5 kN (or more) depending on their diameter.

Supplementary information

Tests on Dyneema cord of diameter < 8 mm

The ropes compatible with the MICRO TRAXION have a diameter between 8 and 11 mm.

Petzl has noted an increasing use of Dyneema cord of less than 8 mm in diameter: hauling, rescuing, or suspending people on Dyneema cord held by the MICRO TRAXION is not authorized.

Petzl however made a series of informative tests to know the limits of compatibility between Dyneema cords and the MICRO TRAXION.

Warning: during tests with the MICRO TRAXION, the strength of Dyneema cords is highly variable and can be quite low.

With certain brands and models of cord, breakage occurred before 200 kg.

Certain large diameter cords were weaker than others of smaller diameter.

Slow pull tests

5 mm Dyneema cords: breakage between 1.8 kN and 4.6 kN

5.5 mm Dyneema cords: breakage at 5 kN or more

7.3 mm Dyneema cords: breakage at 3.5 kN

8 mm Dyneema cords: breakage at 4.3 kN

The hauling of lightweight (non-living) loads can be considered, provided that the user does a favorable risk analysis in the field.

