TECHNICAL BOOKLET
MULTI-PITCH ROUTES

climbing technology
GENUINE ITALIAN HARDWARE

EN

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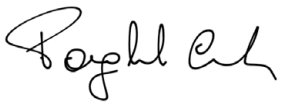
CLIMBING PASSION:
TRUE PASSION CAN ONLY GROW.

The brand Climbing Technology embraces and enhances over 30 years of passionate life and experience in the design and production of personal protective equipment. An accomplice has definitely been the territory, at the foot of the mountains between Bergamo and Lecco, where the mountaineering tradition is very strong, we settled here and set about developing our skills in metalwork and mechanics.
In these years we have breathed and developed an extensive know how and combined with the latest generation of manufacturing technology it has enabled us to design and produce devices in order to excel in the vertical disciplines: in the mountains (mountaineering and sport climbing), in a professional environment (working at height, working on a rope, rescue) and in a recreational environment (via ferrata and adventure parks). The specialised diversification and constant research of new materials and new processing techniques are essential for reaching the new goals: they allow us to create devices that meet the most advanced technical and sporting requirements.
Every day we pursue three objectives: safety, functionality and simplicity. These are objectives that cannot disregard European regulations and technical standards, products certifications and quality management systems. We know that in order to excel, we must go further, stimulating and directing the whole team, inside and outside of the company, to collaborate in the realisation and the distribution of our devices.

We have learnt that in the mountains, as well as in some work situations, we are exposed to serious dangers: in the context in which we operate there are hidden pitfalls that must be carefully examined. However that on its own is not enough: those who climb must be aware of their capabilities and their limitations. And ultimately they must equip themselves with the appropriate equipment. Our devices are born with the objective to protect and reduce the risk in case of an accident or a fall. All of us at Climbing Technology are aware and every day we feel proudly committed to give confidence and security to the users of our equipment. Always underlining the importance of the “head” of the user.

Climb safely and… have fun!
Carlo Paglioli



F. Precetti, G. Betta, Muzzerone (Italy) © K. Dell'Orto - Climbing Technology

PRACTICAL EXPLANATIONS

Objective: training
These pages are devoted to a topic that has always been close to our heart: creating a training module, illustrative and centred on the use of our products. This is not intended to be a manual nor to substitute a formal climbing course, but simply to give our customers, and friends, a summary of the main activities involved in climbing and mountaineering.

For us, safety is a constant, absolute "must". This attitude drives us to invent, produce and sell products which are safe. A safe product isn't just one which functions correctly and which meets the legal standards: a safe product is functional, logical, ergonomic, long-lasting, easy to use, error-proof, well-designed and attractive to look at. A product is safe only if all its applications and advantages are explained in details and made readily available to the user. As well as our articles, our products are sold with clear instructions which can be easily downloaded from our website. For the same reason, we have committed to providing all users of our products with some supplementary technical content, and a section of it lays now in your hands.

Focus: multi-pitch routes
The topic of this booklet is multi-pitch sport or trad climbing.
This section describes the main scenarios that you may be facing along a multi-pitch route, with our recommendations for the safe and best use of your equipment.
All manoeuvres show the use of Climbing Technology most suitable equipment for the specific context. Noticeably, you will appreciate the focus on some particular products that stand out for their innovative nature:

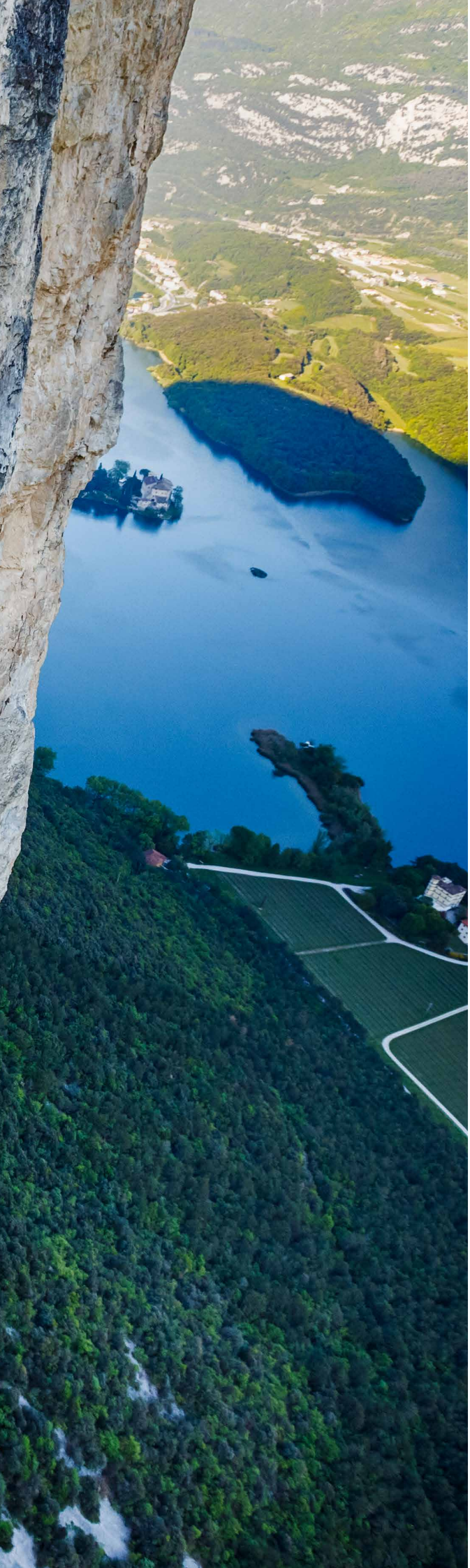
- **Alpine Up -** innovative belay / rappel device specific for multi-pitch routes;
- **Be Up -** tube-type belay / rappel device with an innovative and compact design;
- **Rollnlock -** ultralight pulley / rope clamp.



Note.
The diagrams and explanations that follow are not exhaustive and are not intended to substitute appropriate theoretical and practical training.

For this reason, before use, it is necessary:
• to have received appropriate theoretical and practical training through a recognised specialist course;
• to have read thoroughly the instructions for the device you are using;
• be aware of the risks inherent in climbing and employ techniques to reduce them to a minimum.

E. Salvaterra, G. Zaccaria, Loss Pilati, Dain, Sarche (Italy) © K. Dell'Orto - Climbing Technology



MULTI-PITCH ROUTES

Multi-pitch routes have more than one "pitch", that is, they consist of more than one rope-lengths between successive stances (belays).

There are two types of multi-pitch routes:

- **trad/"alpine".** These normally follow lines of weakness up the cliff (cracks, arêtes, corners, etc) and usually terminate at the summit of a mountain. Typically you find some pitons for protection but you need to uses nuts and Friends in addition for protection.
- **"modern"/sport.** These climb areas of the cliff where the rock is more compact (slabs, overhangs, etc) and finish where the climbing becomes easier and less interesting and are equipped with fixed expansion or glue-in bolts.

To climb each single pitch of a multi-pitch route, one climber must lead the pitch while the other, the second, belays him or her. When he reaches the end of the pitch, the leader must construct a stance and belay himself to it and then bring up the second. Then one of the two climbers will lead the next pitch belayed by the other and so on until the end of the route. At the end of the ascent, depending on the exact nature of the face and the route, you descend on foot along a footpath or you abseil back down to the base of the route.

In the following pages you will find:

1 - NECESSARY EQUIPMENT

ORION

Helmet.
Vital in a mountain setting to protect you from rocks falling from above and/or possible impact with the rock if you fall.

ALPINE UP

BE UP

Belay device.
It is useful to belay the climbing leader with one or two ropes, to belay a second and for abseiling.

WALL

ANTEA

ASCENT

Harness.
The models for multi-pitch routes are usually adjustable in order to fit over the variety of clothing used by climbers in different seasons. In addition, at the structural level, they are shaped to offer optimal lumbar support.

FLY-WEIGHT EVO LONG SET

AERIAL PRO SET

FLY-WEIGHT EVO SET

Quickdraws.
For connecting the rope to the anchor points in the rock, for holding a fall. The models with a long webbing are ideal to avoid rope rubbing and in particular to facilitate the passage over roofs, corners and traverses.

LIME SG

WARLOCK HMS

Screw-gate carabiners.
For building stances, belaying, and abseiling.

TOUR 8.3

Twin/half-ropes.
Normally two ropes are used, for increased safety in case of falling stones (if one rope is damaged, you still have the other one) and permit alternate clipping of protection points; you can also belay two seconds as they climb; you can make long abseils.

MULTI CHAIN EVO

ALP LOOP 60

Daisy chain and slings.
The daisy chain is used to belay yourself and to build a stance. The slings in rope o webbing are used to belay yourself, to extend pieces of protection or to create anchors from rock spikes or threads.

Not exhaustive information: always consult the user's instructions of each device and the technical manuals.
Attention! It is essential to possess a proper technical education.

THUNDER

EYE SHARP

ANGLE WIDE

Hammer and pitons / pegs.
Hammered into cracks and holes in the rock, pegs can be running belays (runners) or be part of the belay/stance.

ANCHOR CAMS

CARVED CHOCKS

Friends and nuts.
Placed by hand into cracks or holes in the rocks, they can be running belays (runners) or be part of the belay/stance. After use they are removed.

ROLLNLOCK

Pulley / rope clamp.
Useful to create hauling systems to lift loads (e.g. haul bag) or for rescue manoeuvres.
It can also be used to ascend a rope.

AZIMUT

MAGIC PACK

Backpack / haul bag.
The backpack allows you to carry the gear to the foot of the route and, as it does not hinder your movements while climbing, you will be able to have with you all you need for the climb (shoes, food, water, clothing, etc.). The haul bags can be also used to lift material up the wall during long multi-pitch routes (e.g. big-walls).

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F. Salvaterra, P. Rivadossi, Verdon (France) © C. Garosio - Climbing Technology

2 - CLIMBING SEQUENCE

LEADING THROUGH.

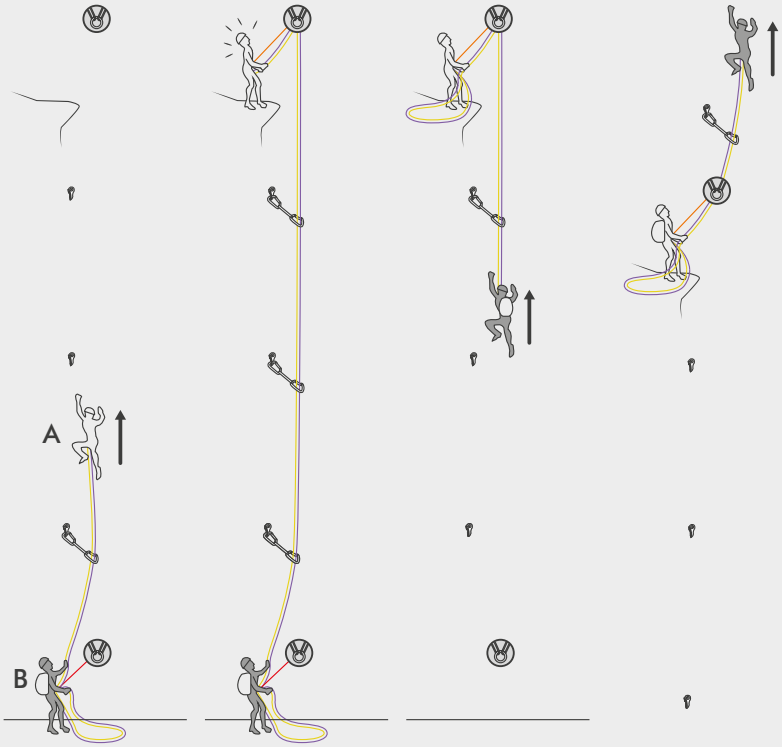
These are the successive steps in climbing a multi-pitch route:

1 - Leader climbs.
After the Buddy Check, **B** belays **A** and gradually pays out the rope to him as he climbs, placing quick-draws (or protection, if there are no fixed anchors) and clipping the rope into them

2 - Building a stance.
A has reached the end of the pitch, constructs the stance, belays himself to it, takes in the ropes and puts the rope through the belay device.

3 - Bringing up the second.
A belays as **B** climbs up to the stance. Once at the stance, **B** belays himself to it.

4 - The next pitch.
B takes over as leader and leads the next pitch while **A** belays him.



ABSEIL DESCENT.

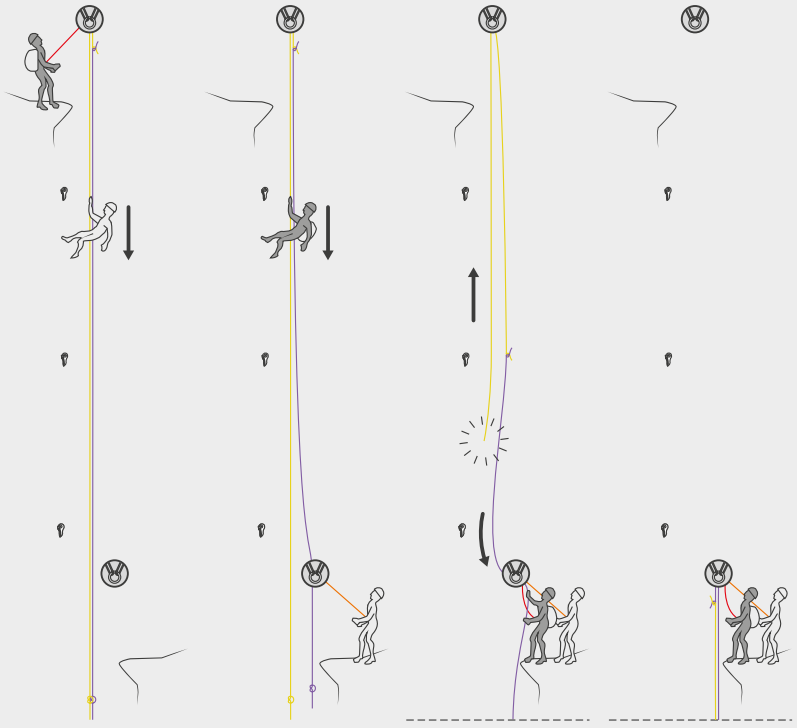
These are the phases of an abseil descent from a multi-pitch route.

1 - Leader abseils.
A and **B** have belayed themselves to the stance and arranged the ropes through the abseil point. **A** abseils down the doubled ropes, while **B** remains at the stance and belayed to it.

2 - Second abseils.
A has belayed himself to the stance and has threaded the rope to be pulled down through the abseil point. **B** abseils down the doubled ropes.

3 - Pulling the ropes down.
B, pulling on the rope previously threaded through the abseil point, pulls the ropes down.

4 - Preparation for next abseil.
A prepares himself for the next abseil while **B** remains belayed to the stance.



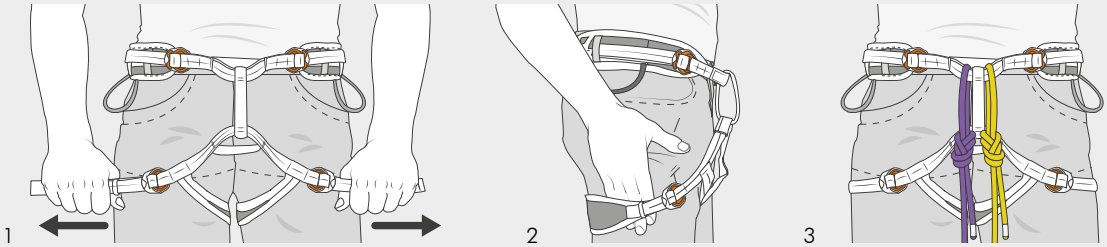
3 - BELAYING ON MULTI-PITCH SPORT ROUTES

"Modern" multi-pitch sport climbing routes tackle a face's most compact areas (slabs, overhangs, etc) and often present hard moves and higher grades. Such routes can be found at low-level or in high-mountain settings ("Big Walls"). Such routes are have fixed bolts for protection and stances equipped for abseiling off. The leader on such routes is traditionally belayed using a belay plate or commonly in Continental Europe using an "Italian" or "Munster Hitch"; in order for such belaying to work, the dead ends of the ropes must always be firmly held downwards. The belayer must pay constant attention to the leader and always be ready to hold the ropes firmly downwards in case of a fall. e in contatto visivo

We have introduced a new belay device for modern multi-pitch sports routes, the **belay/abseil device Alpine Up** (pag. 13), which when used in the **Click Up mode**, removes this need for always having to hold the ropes firmly. In the case of sudden falls and/or the belayer not paying full attention, the Alpine Up will still arrest the fall immediately provided the belayer is holding the free ends of the rope. The fall is arrested semi-statically and this requires that the anchors are able to withstand heavy loads, and for this reason the Click Up mode is advised only on sport routes with fixed bolt protection. The **Alpine Up**, when used to belay the leader in the Click Up mode, lets you pay out rope easily and fluidly and to hold the leader during resting on the rope without getting tired.

The **Alpine Up** can be used with two twin-/half-ropes (Ø 7.3÷9 mm) or with a single rope (Ø 8.6÷10.5 mm), thus covering the entire range of possibilities present and permitting the climbing team to chose the best solution.

3.1 - ADJUSTING THE ASCENT HARNESS

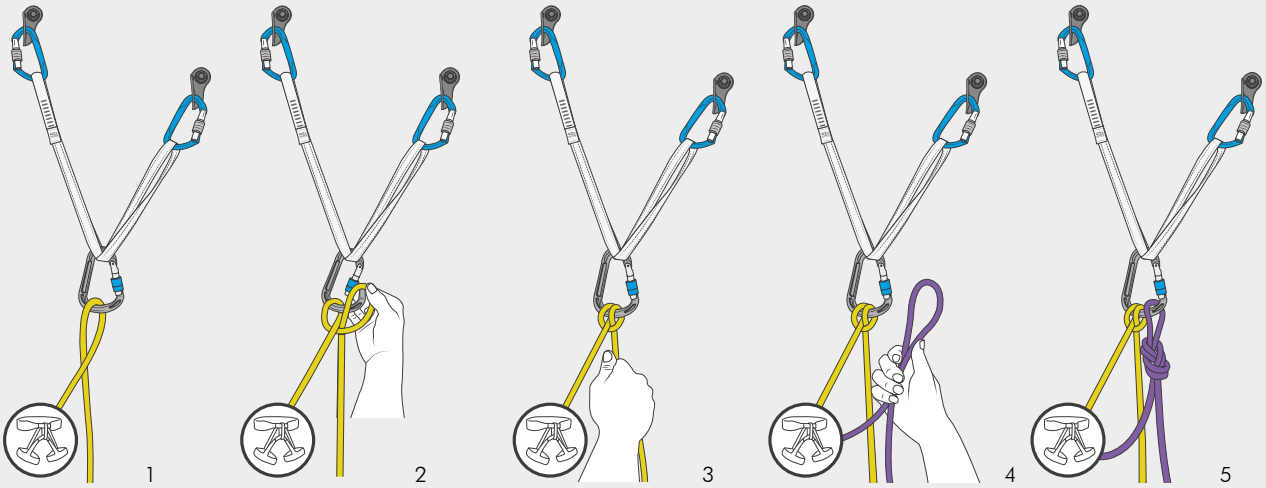


Harnesses for multi-pitch routes have three or four fastening buckles, so that they are completely adjustable and can be adapted to the climber wearing more or less clothing, according to the time of year and the route. They also provide good lumbar support which is important for long stints belaying.

Before climbing you should:

- put on correctly the waistband and leg loops;
- pull the straps through the buckles to adjust the sizes of the waistband and leg loops (Fig. 1);
- check that the harness fits snugly without being over-tight. You should be able to slide a hand between the leg loop and your thigh (Fig. 2) and the harness should sit at the correct height;
- tie both ropes to the harness with a figure of eight knot (Fig. 3).

3.2 - BELAYING AT THE STANCE.



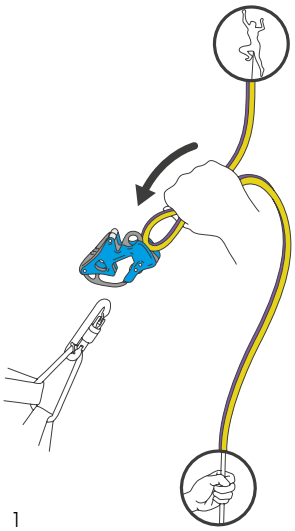
The climbing ropes are normally used to attached yourself to the belay. With one rope make a clove hitch in the karabiner at the central point of the belay (Fig. 1÷3). This knot allows easy adjustment of the distance between you and the stance.

For increased safety it is advisable to tie a figure of eight into the other rope (Fig. 4÷5) and clip this into the belay, to create a second belay point.

Not exhaustive information: always consult the user's instructions of each device and the technical manuals.
Attention! It is essential to possess a proper technical education.

3.3 - ALPINE UP - CLICK UP MODE BELAYING THE LEADER

The diagram at the side show the Alpine Up being used in the Click Up mode on a sport multi-pitch climb:
A climbs the route, placing quickdraws onto the bolts and clipping the rope into the quickdraws. **B** belays to the central point of the belay and belays **A**, paying out the rope carefully as she climbs.
Important! Before starting climbing on a new pitch, the leader's rope should be clipped into a quickdraw or carabiner clipped onto the belay, so that in case of a fall the Alpine Up is pulled upwards: if you don't do this, the Alpine Up may not arrest a leader fall.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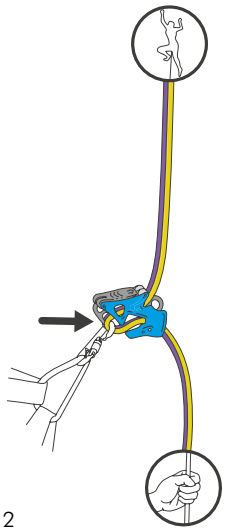
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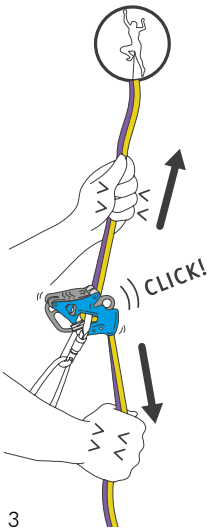
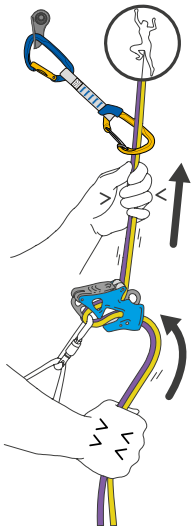


3

Installation. Clip the carabiner into your harness's belay loop. Insert the loop of rope into the Alpine Up, referring to the symbols on the device (Fig. 1). Insert the carabiner through the "Click Up Mode" hole so that the ropes are inside it (Fig. 2).
Functional check. Hold the free ends of the rope with one hand and with the other pull the climber's ropes upwards, make sue the device locks the ropes and makes a "click" (Fig. 3).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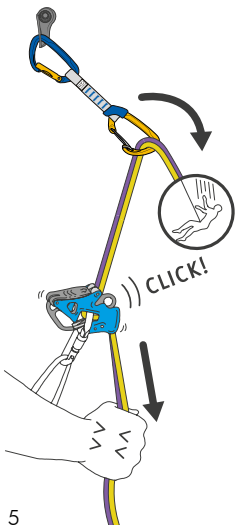

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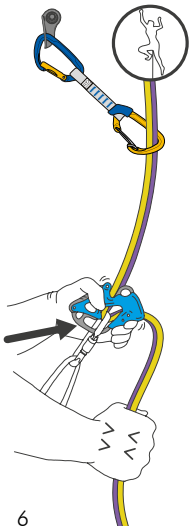
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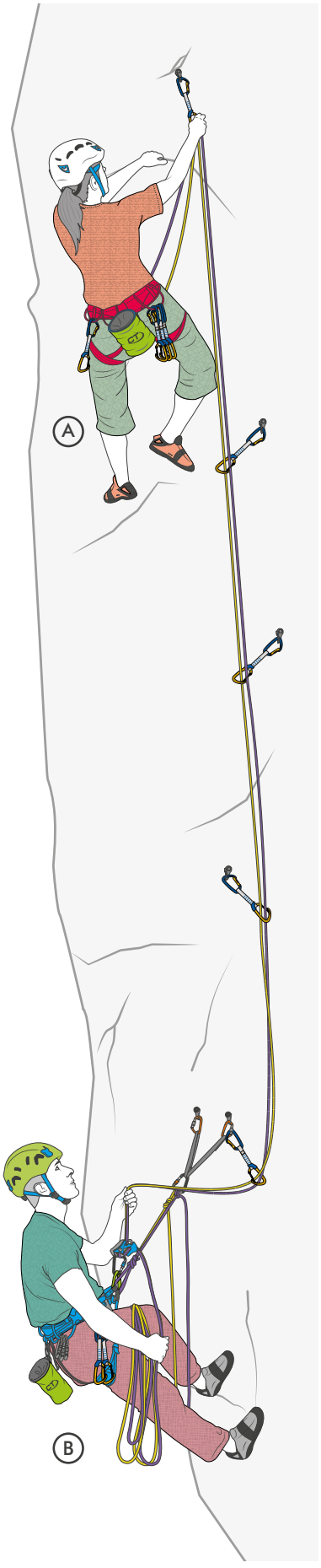
Paying out rope. With one hand feed the dead end of the rope into the Alpine Up, and with the other pull the rope through the device (Fig. 4).

Holding a fall. With one hand hold tight the dead end of the rope, moving your hand downwards. The Alpine Up will block the rope, making the distinctive "Click" (Fig. 5).

Paying out rope after a fall. To start to pay out rope again after a fall or when the leader first starts climbing, hold the dead end of the rope with one hand and with the other hold the Alpine Up as shown and push it forwards to be able to pay out rope. (Fig. 6). **Important!** At all times keep a firm grip on the free end of the rope.



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ALPINE UP

Alpine Up is the most complete and versatile belay / rappel device ever produced. It has been developed especially for mountaineering and it can be used with half, twin and single ropes. Extremely advantageous, it allows self-locking abseiling and it can be used in three different belay modes, depending on the terrain.

The **Click Up mode** (Hand assisted braking) allows:
- belaying a lead climber on multi pitch sport climbing routes (bolted);
- self-locking abseiling, using the folding handle;
- absolute safety, even if the rope is incorrectly inserted.

The **Dynamic mode** (Manual braking) allows:
- belaying a lead climber on alpine route or ice climbing (friends, nuts and pitons);
- braking friction with "V" grooves, similar to a tube device;
- abseiling with "V" grooves brake.

The **Guide mode** allows:
- independent and self-locking belaying of one or two seconding climbers;
- possibility of gradual releasing of a second under tension, by placing a biner in the proper hole.

Alpine Up is supplied and must be used with the proper Concept SGL HC carabiner with hardcoated wear-proof anodization and ACL system that prevents the possibility of the cross loading.

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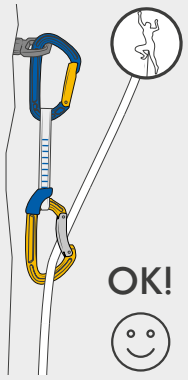
Patented. Made in Italy.

4 - BELAYING ON TRAD/"ALPINE" ROUTES

"Trad" routes are one of the oldest and most rewarding ways of climbing a mountain. The setting is beautiful, often isolated and wild. The routes normally follow the natural lines of the face (cracks, arêtes, corners, etc) and generally terminate at the summit of a mountain or pinnacle. In the mountains objective dangers multiply and you need a better all-round preparation as well as good route-finding skills to find the start of the route or the descent. You may find some pegs placed by the first ascensionists, and you will have to place nuts and Friends.
On such routes the leader is traditionally belayed with a belay plate. On the Continent of Europe, the Italian/Munster hitch is often used. It can be difficult to pay out rope rapidly with belay plates and similar devices since the device moves towards the carabiner, increasing the fiction on the rope you are trying to pay out.
This drawback can be overcome by using two of our best belay devices: **Alpine Up** and **Be Up**. Those who prefer versatility and innovation will most likely choose **Alpine Up** (pg. 13). This device, used in Dynamic mode, has a shape that is designed to make it remain in place with respect to the carabiner in use, allowing you to pay out rope efficiently, quickly and smoothly. For those who love the traditional tube, instead, we have developed **Be Up** (pg. 19) which, thanks to the particular shape of the main body, reduces the movement towards the carabiner and, therefore, makes paying out rope extremely fluid and fast.

4.1 - POSITIONING QUICKDRAWS ON ROCK PEGS

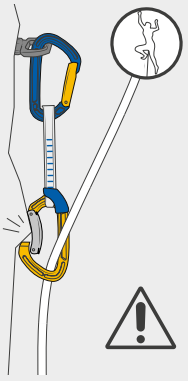
1



As we described in the booklet dedicated to crag climbing, it is critical to place the rope through the quickdraws in the correct way. However, it is equally important to use the right technique to clip the quickdraws to the anchors. You have to take special care with rock pegs so that the karabiners of the quickdraw are loaded correctly: if the eye of the peg is horizontal, the quickdraw should be placed so that its gates are both facing outwards.

Important! The example cases illustrated are not exhaustive.

2



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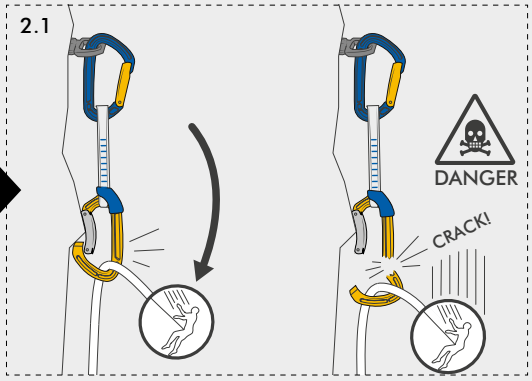

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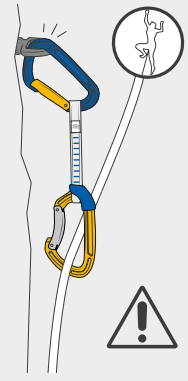

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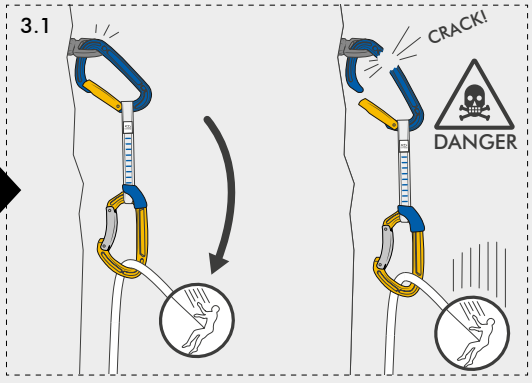


In the following situations:

1) Quickdraw placed correctly with the gates of the carabiners facing outwards.
2) Quickdraw placed dangerously. The gate of the lower carabiner is facing the rock and could be held open in case of a fall. The axial load a karabiner can hold is substantially reduced if the gate is open and the karabiner could fail (Fig. 2.1).
3) Quickdraw placed dangerously. The gate of the upper carabiner is facing the rock: it certain cases, the carabiner can jam in the eye of the peg and be subject to increased loading. This reduces the axial load the karabiner can bear and in the event of a fall it can break (Fig. 3.1).

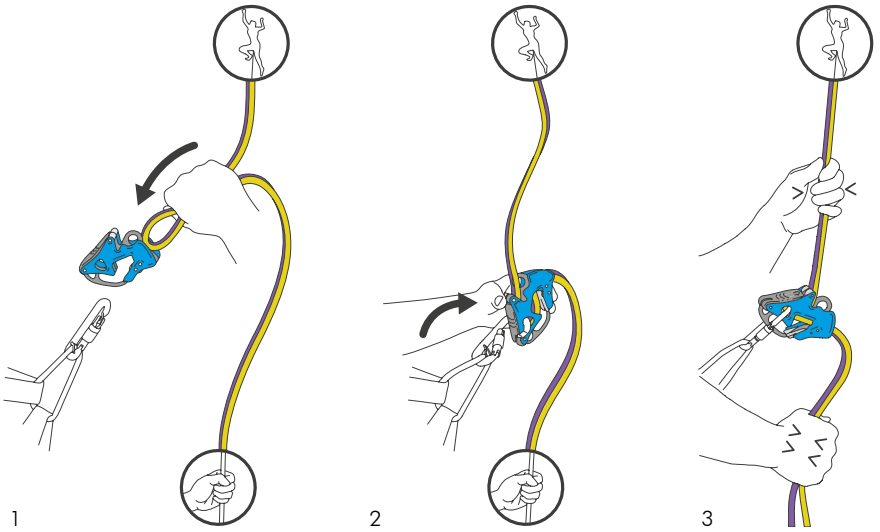
The conclusions are:
• using quickdraws whose two carabiners have their gates facing the same way makes placing the quickdraw simpler and reduces the variables which could lead to the dangerous situations illustrated. All Climbing Technology quickdraws are supplied with their carabiners oriented in this way.
• the quickdraws should be placed with their gates facing away from the rock, to avoid the dangerous situations shown.

Not exhaustive information: always consult the user's instructions of each device and the technical manuals.
Attention! It is essential to possess a proper technical education.

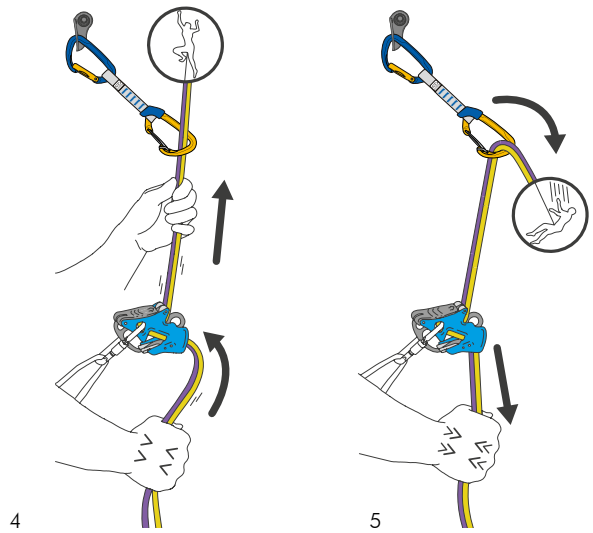
4.2 - ALPINE UP - DYNAMIC MODE BELAYING THE LEADER

In the diagram on the right, use of the Alpine Up in Dynamic Mode is illustrated on an "alpine"/trad route:
A climbs, progressively hammering pegs into the rock with her hammer and placing quickdraws onto them. She clips the ropes in alternately to the quickdraws.
B, belayed to the stance, pays out the rope carefully to **A**.

Important! Before starting climbing on a new pitch, the leader's rope should be clipped into a quickdraw or carabiner clipped onto the belay, so that in case of a fall the Alpine Up is pulled upwards: if you don't do this, the Alpine Up may not arrest a leader fall.



Installation. Clip the carabiner into your harness's belay loop. Insert the loop of rope into the Alpine Up, referring to the symbols on the device (Fig. 1). Insert the carabiner through the" Dynamic Mode" hole so that the ropes are inside it (Fig. 2). The system is now ready for use (Fig. 3).



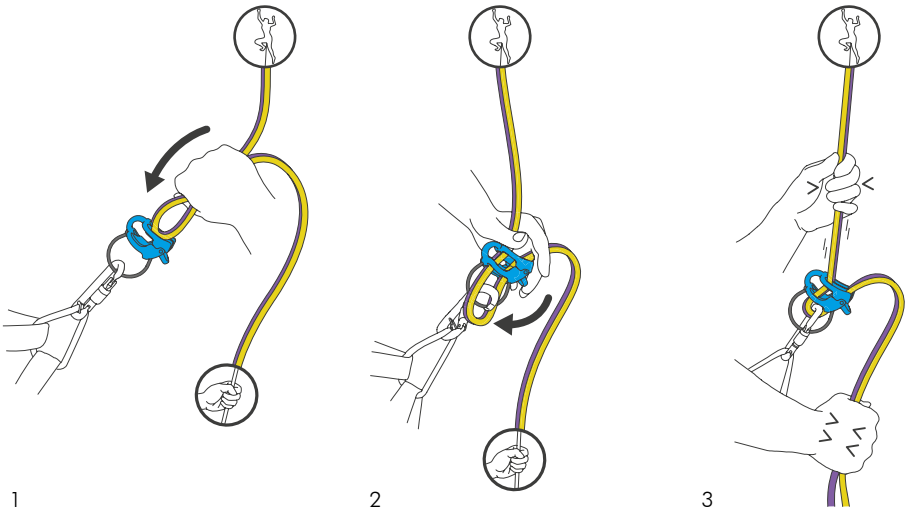
Paying out rope. With one hand feed the dead end of the rope into the Alpine Up, and with the other pull the rope through the device (Fig. 4).

Holding a fall. With one hand hold tight the dead end of the rope, moving your hand downwards (Fig. 5). **Important!** At all times keep a firm grip on the free end of the rope.

G. Venturelli, C. Montorsi, Muzzerone (Italy) 📷 K. Dell'Orto - Climbing Technology

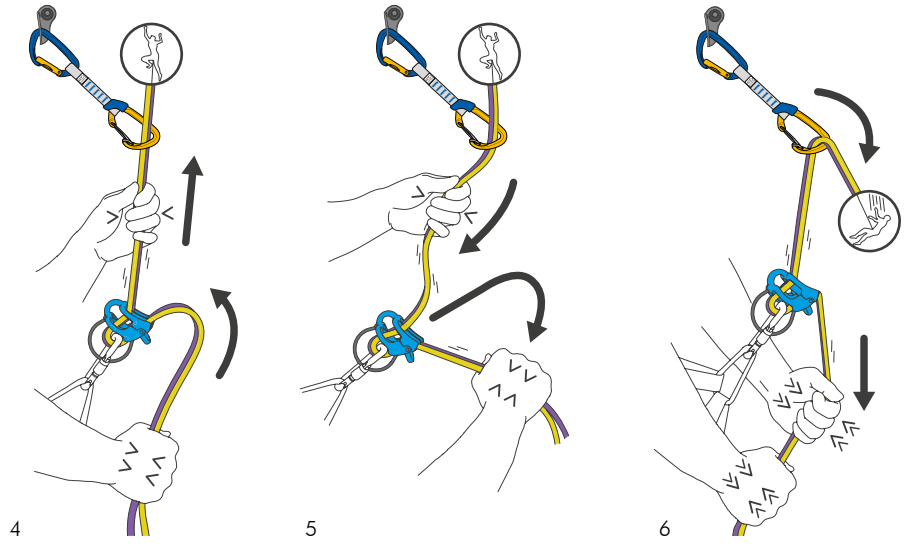
4.3 - BELAY / RAPPEL DEVICE BE UP BELAYING THE LEADER

In the sketch to the right, it is shown a possible use of Be Up, where:
A climbs, progressively hammering pegs into the rock with her hammer and placing quickdraws onto them. She clips the ropes in alternately to the quickdraws.
B, belayed to the stance, pays out the rope carefully to **A**.
Important! Before starting climbing on a new pitch, the leader's rope should be clipped into a quickdraw or carabiner clipped onto the belay, so that in case of a fall the Be Up is pulled upwards: if you don't do this, the Be Up may not arrest a leader fall.



1 2 3

Installation. Clip the belay karabiner to the belay loop on the harness (if present, open the lever and insert the loop). Attach the Be Up to the karabiner using the connection cable. Place a loop of rope through the C (Pag. 19) part of the Be Up (Fig. 1), referring to the symbols and clip the rope to the karabiner as shown (Fig. 2). Close the karabiner gate: the system is now ready to use (Fig. 3).



4 5 6

Feeding the rope. With one hand, bend the free end of the rope and feed it through the Be Up and with the other pull and feed the climber's rope through the device (Fig. 4). Always hold the free end of the rope in one hand.
Taking in slack. With one hand pull and feed the free end of the rope through the Be Up and with the other hand pull the climber's rope towards the device (Fig. 5). Always hold the free end of the rope in one hand.
Holding a fall. Hold the free end of the rope firmly in one or two hands and pull it downwards (Fig. 6).

White & Blue, Muzzerone (Italy) K. Dell'Orto - Climbing Technology

BE UP

Multiuse belay / abseil device with innovative and compact design (*registered design*), suitable for use with half, twin and single ropes for mountaineering, multi-pitch sport climbing and trad routes. Intuitive and easy to use, the Be Up has a modular braking system to optimise braking with all types of rope and allow the auto-locking and independent belaying of two seconds.

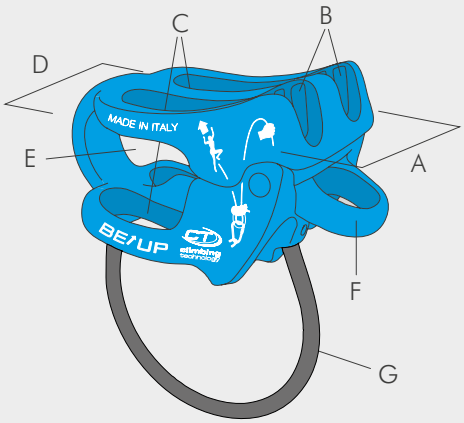
Extreme flexibility permits:

- effective belaying of the leader. The particular shape of the Be Up's body allows rope to be paid out fluidly, rapidly and without jams;
- while belaying the leader on a multipitch route using two ropes, the Be Up lets you pay out one rope while the other is locked-off, Be Up is the only such device that lets you do this;
- effective, modular braking of the rope: the "V" notches are specially designed to guarantee better braking control when arresting a fall, abseiling or bringing up seconds;
- the bringing-up of one or two seconds, with auto-locking and each second being belayed independently of the other (guide mode). The Be Up's special shape and the attachment ring built into the body allow you to bring up one or two seconds using twin or half ropes with $\varnothing \geq 7{,}3$ mm. You can continue to bring-up one second while the other is hanging with their rope locked-off in the Be Up;
- the unlocking of the rope and lowering of one free-hanging second, without difficulty, with twin or half $\varnothing \geq 7{,}3$ mm ropes. Be Up is the only such device that lets you do this, simply by inserting a normal HMS carabiner in the unlocking hole;
- rapidly switching from taking-in (guide mode) to belaying the leader, for leading through;
- abseiling descents, keeping the ropes separate. The "V" notches allow you to effectively control the rate of descent, without twisting the ropes.

Construction details / specification:

- light, extremely functional form, for the highest performance;
- hot-forged body for strength;
- attachment ring is part of body, easily identified to prevent errors of attachment;
- plasticised steel cable, so you can't drop the Be Up and to limit its movement during belaying.

EN 15151-2.
Registered design. Made in Italy.



Nomenclature:

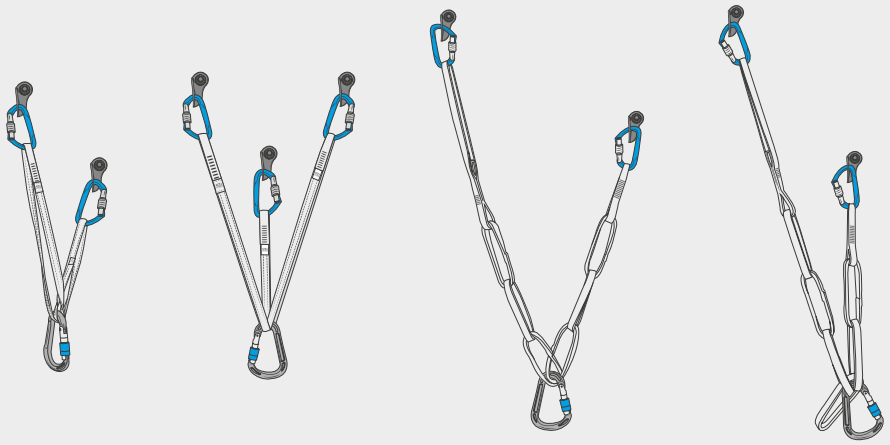
A) braking side in standard mode;
B) braking groove;
C) rope loop insertion hole;
D) braking side in reduced mode;
E) hole for belaying karabiner;
F) hole for supporting karabiner at the release;
G) plastic coated steel connection cable.

5 - BRINGING UP SECONDS

After the leader reaches the stance he brings up the second(s). It is possible to climb as a two (one second, both half ropes are tied into his harness) or as a three (two seconds, each tied onto one of the half ropes).
The correct sequence for bringing up seconds is:
• **A** arrives at the stance, sets up the belay, belays himself to it and tells **B** and **C** that he no longer needs belaying. (UK: "I'm safe!")
• **A** takes in the ropes and inserts them correctly into the belay device. In the "guide mode" to be able to belay two seconds, this is attached directly into the stance and not to the climber's waist;
• **A** shouts to **B** and **C** that he is belaying them and that they can start climbing after releasing themselves from the belay;
• **A**, belaying **B** and **C** from above, takes in the ropes as they climb.

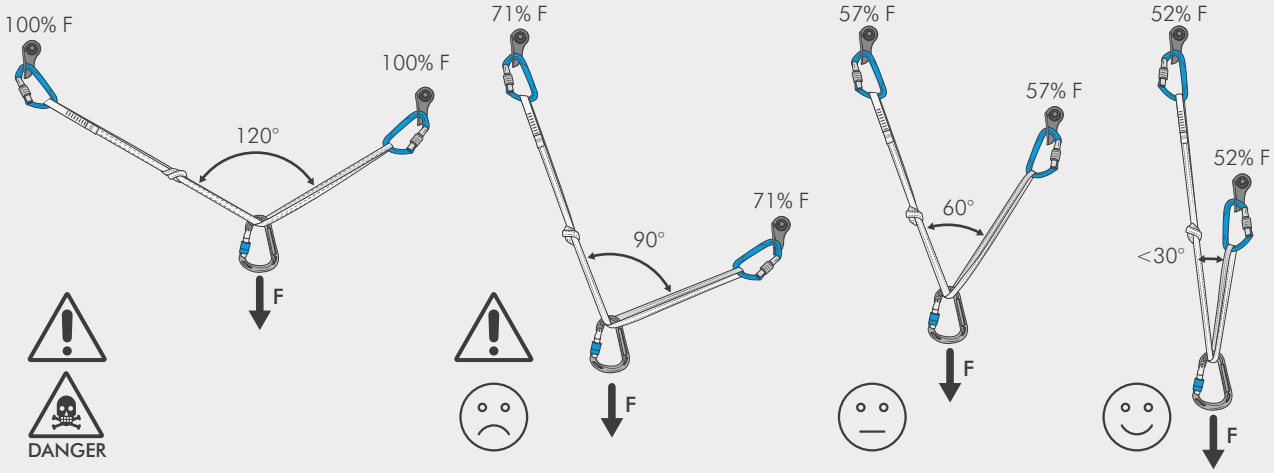
A belay plate is traditionally used for bringing up one or two seconds on a multi-pitch route. The traditional belay plate has the following drawbacks when belaying two seconds:
• if one second is hanging on the rope, you can't take in rope for the other second;
• it is hard to lower a second after they have hung on the rope when the belay plate is used in the "guide" mode - the belay plate is locked.
Our new belay devices **Alpine Up** and **Be Up** overcomes these problems in the **Guide mode**. Their designs mean:
• you can keep taking in rope to one second when the other is hanging on his rope;
• you can lower a second hanging on the rope. This requires only the use of one additional carabiner on the device, no slings are needed.

5.1 - TYPES OF BELAYS



The belay attaches the climbing team to the rock when the leader or second is climbing, when they are both at the stance or when they abseil down and is made of at least two anchor points which should be connected together. On the left are shown some common types of stances.

5.2 - ANGLE AT THE CENTRAL POINT OF THE BELAY

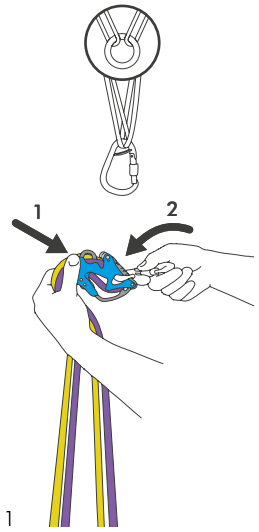


During the preparation of the belay station, it is necessary to keep into account the angle originated at the central point. The closer is the angle, the better results the distribution of the forces, in case of stress on the belay station. Namely, the wider is the angle at the central point, the higher is the load on each single anchor point. Use longer slings to avoid open angles at the central point of the belay which increase the forces on the single anchor points. The drawings show the distribution of the forces with belay stations having different angles.

5.3 - ALPINE UP - GUIDE MODE BELAYING THE SECONDS

The diagram to the right shows the use of the Alpine Up in Guide mode to belay two seconds:
B and **C** are each tied to the end of one of the half ropes and as they climb they remove the quickdraws placed by **A.**

A is belayed to the central point of the stance and takes in the rope to **B** and **C**, maintaining a slight tension in the rope to avoid giving loops of slack. With the Alpine Up he can belay two seconds at the same time and each second is independent of the other.



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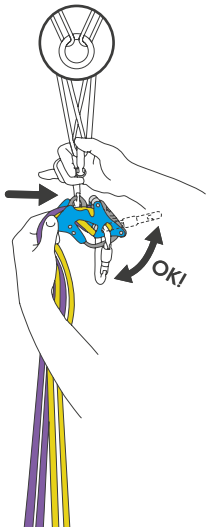

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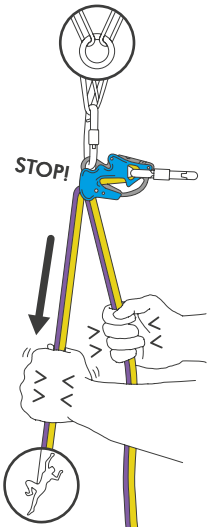
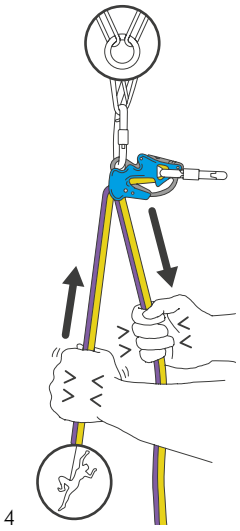


3

Installation.
Make a loop of the two ropes and insert it into the Alpine Up, following the symbols on the device. Insert a pear-shaped HMS carabiner through the hole marked,at right angles to the lever, with the rope inside (Fig. 1). Clip a Concept SGL screw-gate carabiner into the central point of the stance and into the hole marked of the Alpine Up, so that the ropes are below it, correctly inserted into the Alpine Up (Fig. 2).
Functional check.
Pull the climber's ropes downwards, to confirm the system locks correctly (Fig. 3).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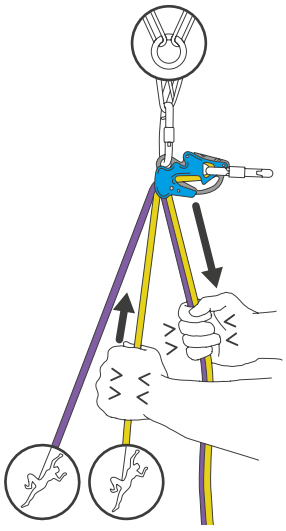
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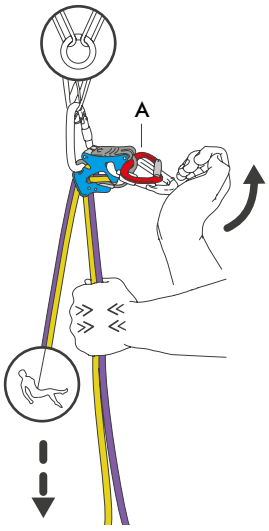
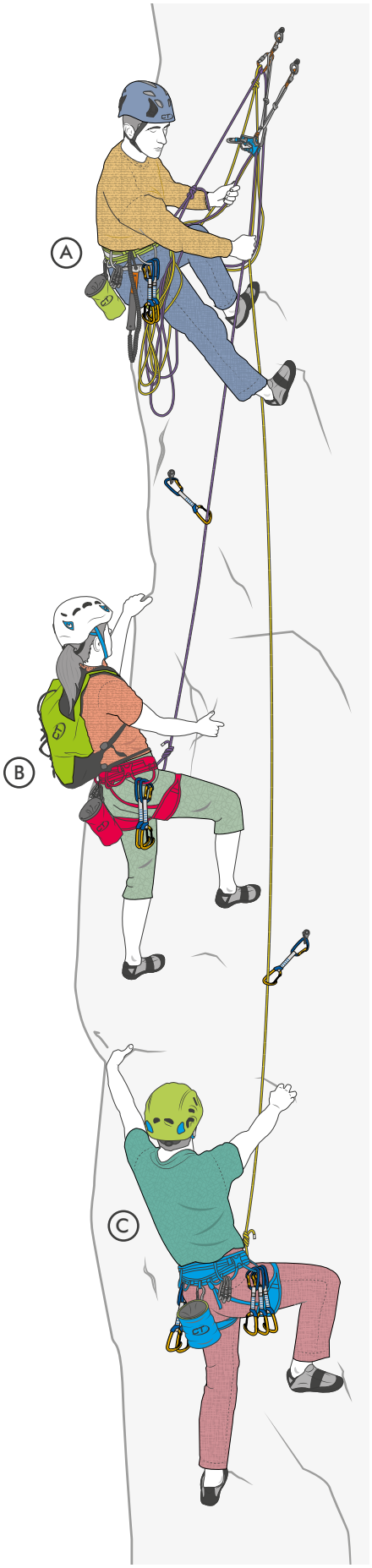


6

Belaying 1 or 2 seconds.
Use both hands to take in progressively the rope through the Alpine Up (Fig. 4-5). **Important!** <u>During use keep a firm hold of dead ends of the ropes.</u>
Releasing the rope when in tension. Insert above the HMS carabiner a quickdraw carabiner (A) in the hole shown with its the long side perpendicular to the Alpine Up. Hold the free ends of the ropes tightly in one hand and with the palm of the other hand push the HMS carabiner upwards. The lever created with the second carabiner helps you to unlock the ropes and/or lower the second (Fig. 6).



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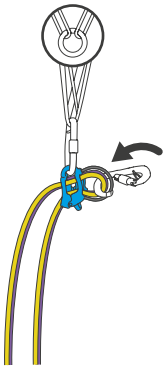
5.4 - BE UP - BELAYING THE SECONDS

The picture on the side shows an example of a climber being lowered with the Be Up device. A is lowering **B** with the Be Up connected to the anchor point, and the speed of descent is adjusted using the supporting carabiner for the release.



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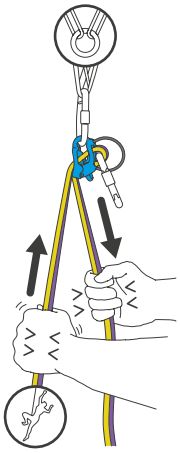

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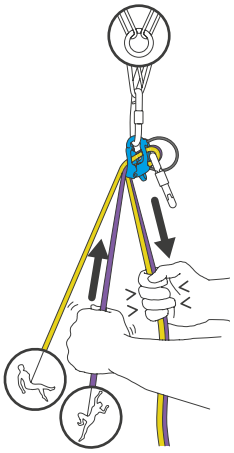
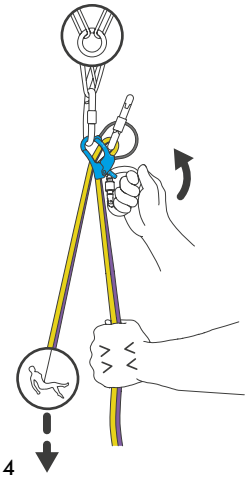


3

Installation (Fig. 1). Connect a wide base HMS karabiner to the top of the anchor and insert it in the E (Pag. 19) hole of the Be Up. Place a loop of rope through the C part of the Be Up, referring to the symbols. Clip the belay karabiner through the rope and the connection cable as shown. Close the karaniner gate.

Belaying 1 or 2 seconds (Fig. 2-3). Use both hands to take in correctly the rope of the seconds climbers (climber side) through the Be Up. **Attention!** Always hold both free ends of the ropes firmly in your hands and taut.



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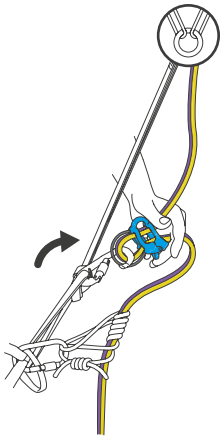

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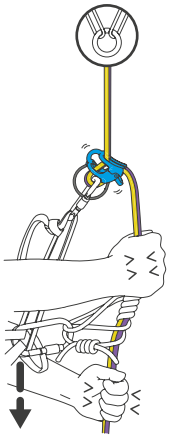
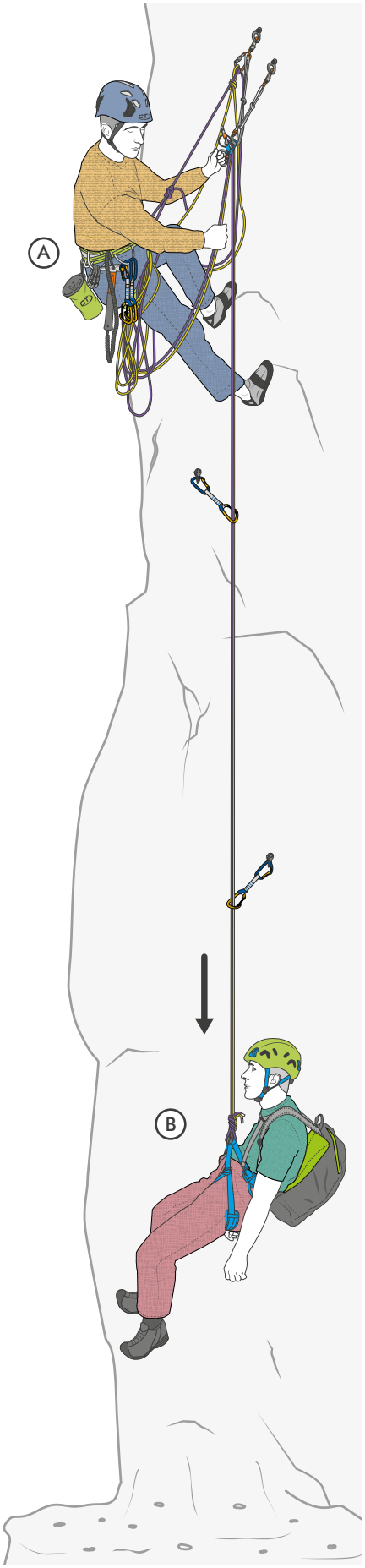


6

Releasing and gradually lowering of a second (Fig. 4). Using Be Up it's possible to release and lower a second in a progressive way, even under tension and free hanging. Insert an HMS karabiner in the hole F (Pag. 19). Hold firmly in one hand both ropes and push the karabiner in the F hole upwards, this, without turning the hole will create an extremely convenient lever that will allow you to release the ropes and/or lower the climbers.

Abseiling (Fig. 5-6). Before abseiling you must: attach yourself to the anchor with a lanyard that is attached to your harness in a safe way; prepare the rope for the abseil making sure it is not tangled and there is a knot in the end of the ropes; make a prusik knot on the rope and connect it to your harness with a screwgate karabiner.
Connect the karabiner to the lanyard. Clip the Be Up to the karabiner through the connection cable. Place a loop of rope through the C part of the Be Up, referring to the symbols and clip the rope to the karabiner as shown. Close the karabiner gate.
Apply tension to the prusik knot in order to remain suspended on the rope. With one hand hold firmly the free end of the rope, than release the karabiner of the lanyard. Manage the prusik knot in one hand so that it does not tighten around the rope and with the other hand control the speed of descending by accompanying the free end of the rope towards the device.

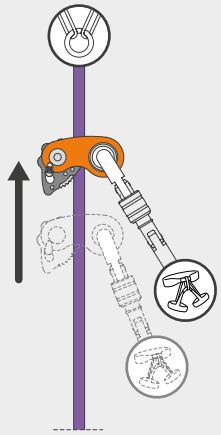


6 - HAULING A LOAD / ASCENDING THE ROPE

This section addresses some less common scenarios that require specific techniques and that share the use of rope clamps. The first situation to be addressed regards the lifting of a haul bag up a multi-pitch route or a big wall. The second scenario is the occasional ascent on rope. Both situations involve the use of the pulley/rope clamp Rollnlock. This small piece of equipment can be used in a variety of modes: in locking mode it allows rope ascent (Fig. 1-2); in hauling-pulley mode, it allows the lifting of loads or people (e.g. haul bags, rescue on crevasses) (Fig. 3-4). The simple-pulley mode instead lets the rope slide freely in both directions (Fig. 5-9).

6.1 - LOCKING MODE

1



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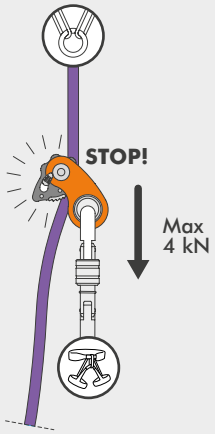
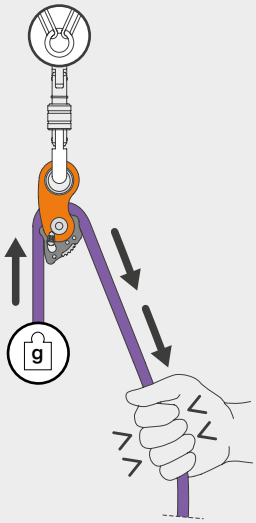


Use. This device slides freely upwards and locks in position (Fig. 1). To ascend a rope, pull downwards parallel to the rope (Fig. 2).

3



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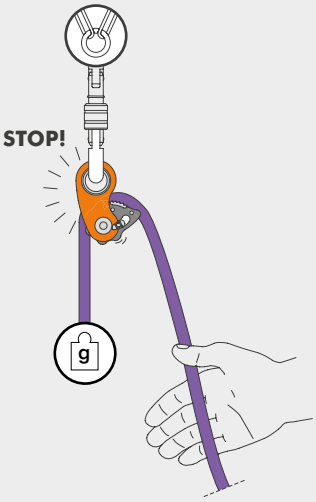
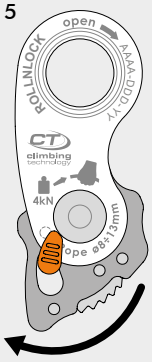


Use. The device connected to the anchor point allows the rope to slide in one direction (Fig. 3), and locks in the opposite direction (Fig. 4).

5



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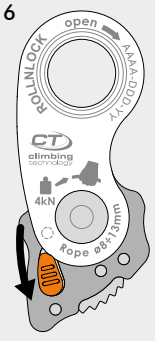

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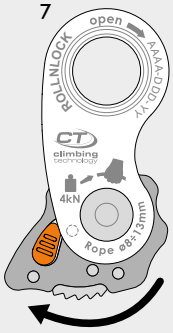

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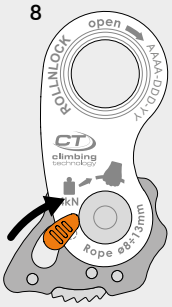

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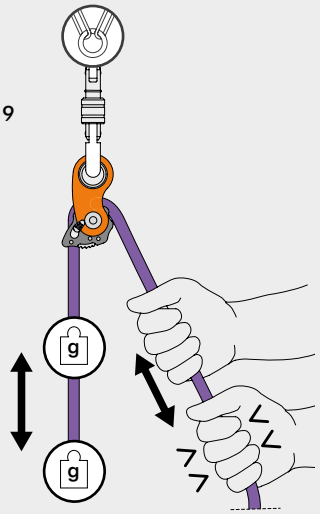


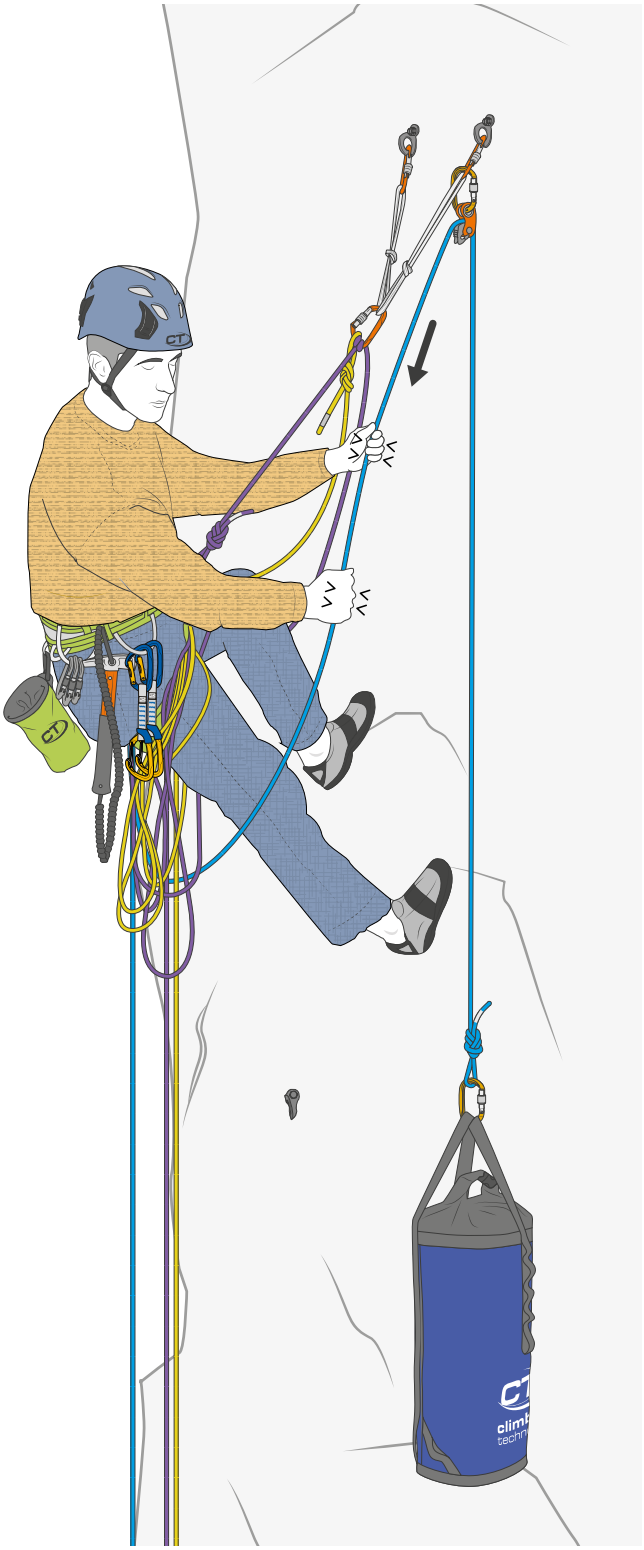
Installation. If you wish to switch from hauling pulley mode to simple pulley mode, move the sheave position lever until it engages the pin (Fig. 5-8). **Attention!** It is essential to possess a proper technical education. When doing this, hold the rope from the device with one hand.

Use. With the cam locked in the open position, the device allows the rope to run freely in either direction (Fig. 9). Make sure the device works properly.

Not exhaustive information: always consult the user's instructions of each device and the technical manuals.
Attention! It is essential to possess a proper technical education.

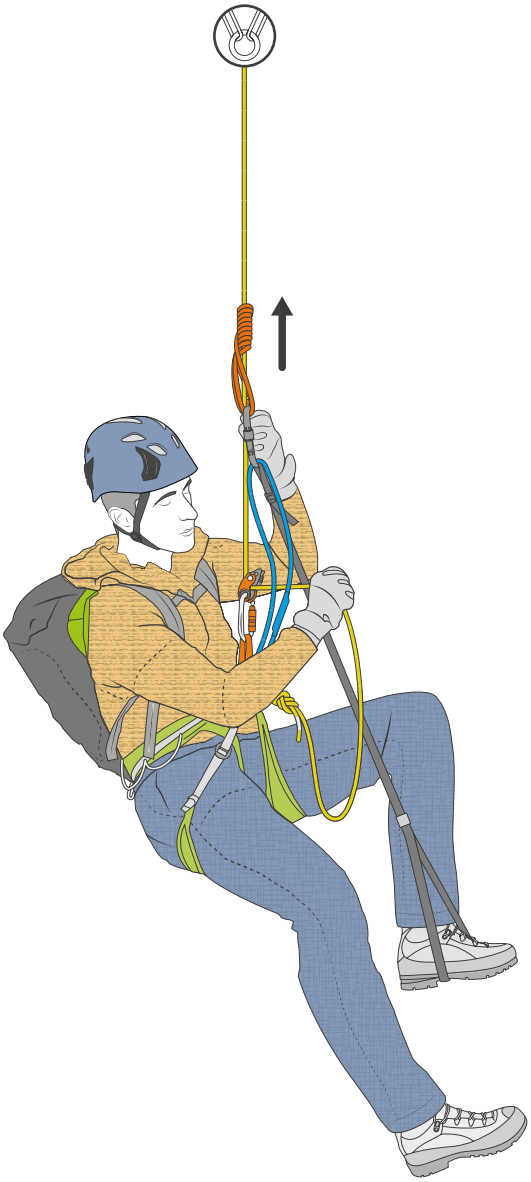
6.2 - HAULING PULLEY MODE

The sketch below shows one of the simplest methods to haul a bag up a big wall. The manoeuvre consists of installing the pulley/rope clamp Rollnlock at the belay station and using it to haul the bag. In case of heavier loads, the system can be implemented to create an even more effective haul system.



6.3 - SIMPLE PULLEY MODE

The following sketch shows the occasional ascent on rope. This is usually a rescue manoeuvre that can be used either during big wall climbing or in glacier travel, in the case of a fall in crevasse.



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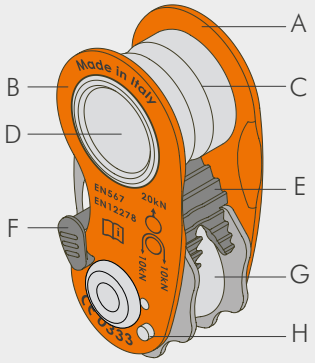
ROLLNLOCK

Ultra-light (80 g) pulley / rope clamp designed for work, rope climbing maneuvers, rescue and self-rescue situations.

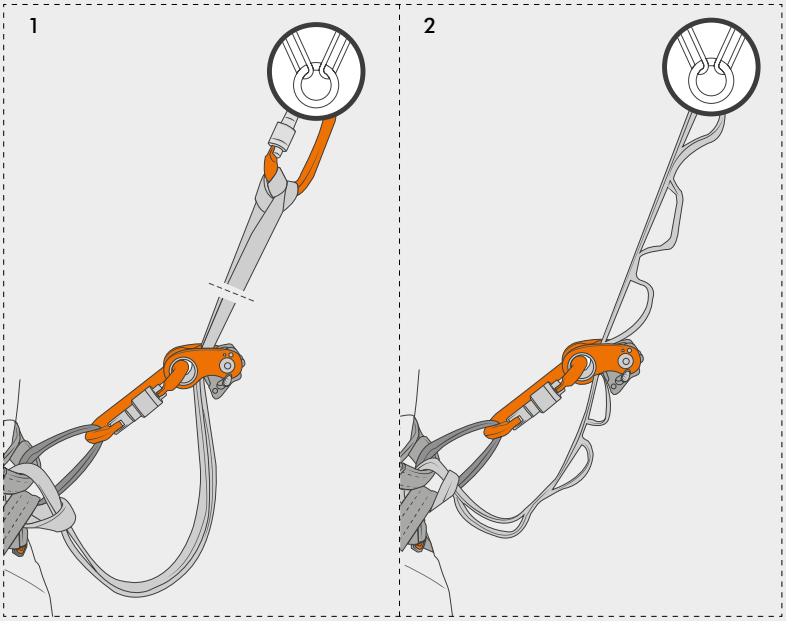
Main technical features:
- mobile side plates for the rope or on sling placement;
- spring operated cam for use as a rope ascender;
- sliding lock for use as a pulley;
- ideal for the crevasse rescue;
- it allows the hauling of light loads;
- developed to work also on wet or dirty ropes;
- to be used with ropes EN 1891/EN 892 Ø 8÷13 mm and webbing 10÷16 mm width.

EN 12278 / EN 567.
Made in Italy.



Nomenclature:

A) Mobile side plate;
B) Fixed side plate;
C) Bushing;
D) Connector hole;
E) Locking cam;
F) Sheave position lever;
G) Pulley;
H) Sheave position pin.



Sling adjustment mode:

The Rollnlock can be employed for the length adjustment of a lanyard (Fig. 1) or a daisy chain (Fig. 2), connected to the harness by means of a knot.

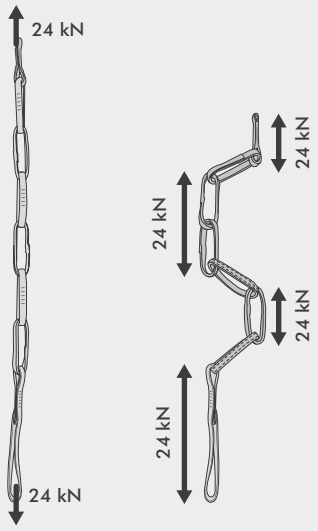
Caution! Exceptional application, not covered by the EN 567 standard: do not use to protect against falls from a height. Maximum load: 3 kN.

7 - ABSEIL DESCENT

After reaching the top of the route, the team abseil (normally back down the same route they have just climbed) down the ropes using a belay/abseil device. Abseiling needs care, good knowledge of the technique to be used and good organisation. You abseil using your two climbing ropes joined with a knot and threaded through the abseil anchor point.
The following sequence is used for abseiling:
• both/all three climbers reach the stance of the last pitch, and the stance is equipped with a ring for abseiling;
• each climber, using a daisy chain or a sewn sling, belays themselves to the stance;
• the climbers untie from the climbing ropes, being careful not to drop them(!);
• one rope is threaded through the abseil point's ring/maillon and the other rope is joined to it with an overhand knot. A knot is tied at the end of each rope and they are thrown down from the stance.
• one of the climbers clips his descender into his harness/daisy chain, and backs the descender up with a Prusik knot. Only after taking in the rope through the descender to make sure that it has been installed correctly and can support his weight, he unclips his sling/daisy chain from the belay and starts abseiling down, remembering which of the two ropes has to be pulled at the next stance below to pull down the ropes.
There are various devices for abseiling and all require the use of a back-up Prusik knot. This knot lets you take your hands off the rope to untangle the ropes and stops the descent if you let go of the rope (stonefall, illness, etc) but tying this knot takes time and it can be fiddly to get right and use easily.
The **Alpine Up** belay/abseil device resolves this problem. When used for abseiling in the **Click Up mode**, a back-up Prusik knot is not needed. The device's design mean that the ropes remain locked until the descent lever is moved to permit the descent.
Alpine Up, in Click Up mode, presents the following advantages:
• lets you use both hands to untangle the ropes;
• automatically arrests the descent if you inadvertently let go of the ropes (stone fall, illness, etc.).

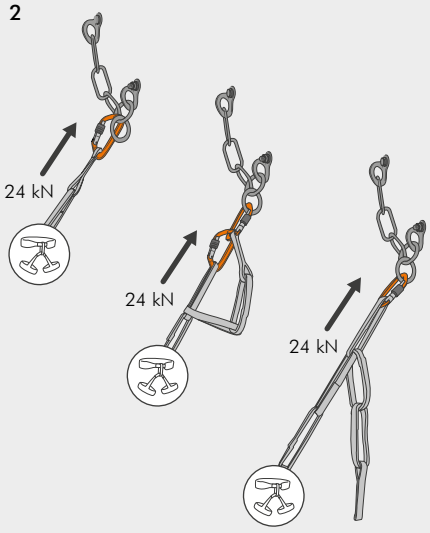
7.1 - CONNECTING THE MULTI CHAIN EVO

1



Multi Chain Evo is an Innovative daisy chain with loops made of the new single-layer Dyneema webbing, specific for long routes and for mountaineering in general. The particular design of the Multi Chain Evo guarantees a load-bearing capacity of 24 kN: from one end to the other, for each intermediate loop or connecting to or more intermediate loops. The construction out of single loops reduce the possibilities of error or of the daisy chain coming out of the connector, as can happen with traditional daisy chains. Once installed correctly into the harness, this daisy chain must be connected to an anchor point, or to another device, using an EN 12275 connector correctly inserted into the upper loop or into any of the intermediate loops. To shorten the Multi chain Evo, use a connector inserted into one of the intermediate loops.

2



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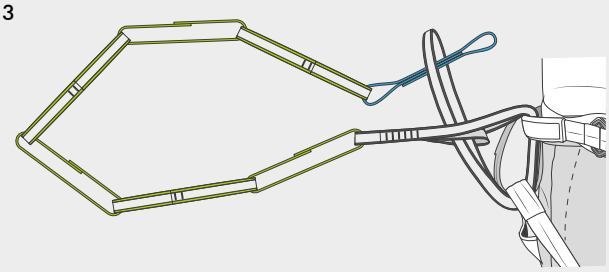

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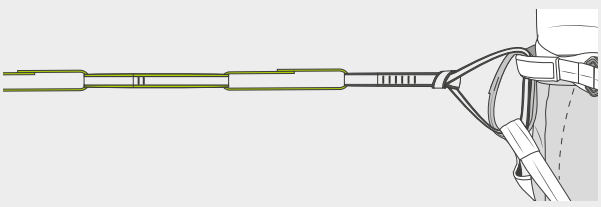
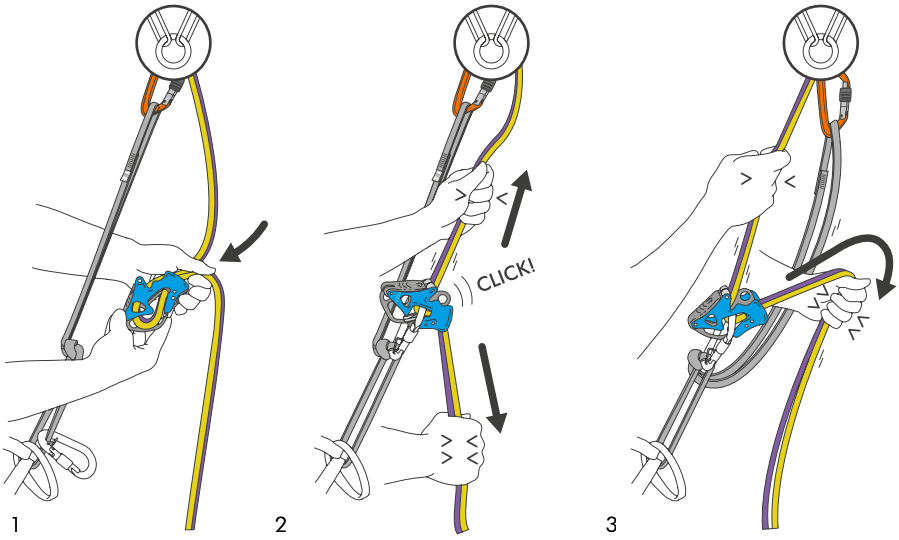


To attach the **Multi Chain Evo** to the harness use only the special knot which is now explained: thread the bottom loop of the daisy chain through both harness loops as shown and pass it through the tie-in loop; thread the top loop through the bottom loop and pull it away from the body until the knot is tight. Check the knot is correctly tied. Using the special knot the breaking strength of the Multi Chain Evo remains equal to 24 kN.

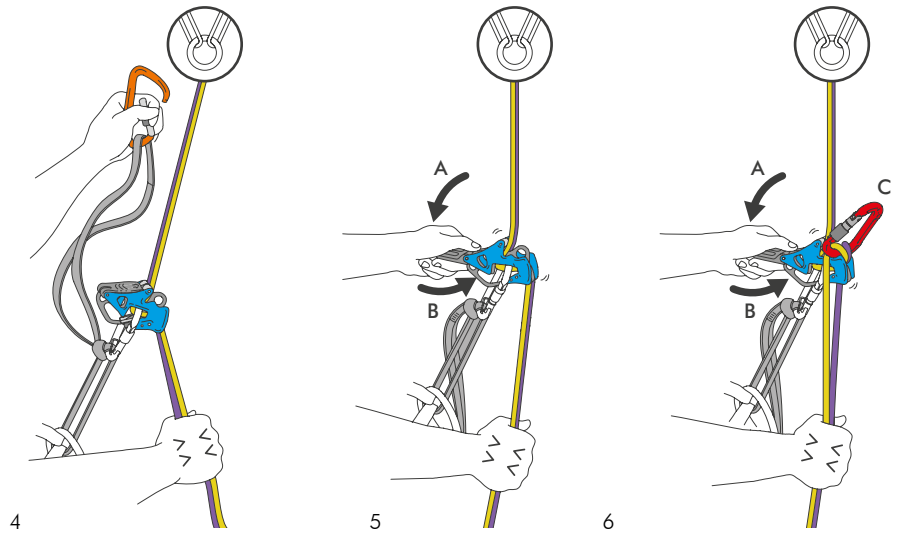
7.2 - ALPINE UP - CLICK UP MODE AUTOBLOCKING ABSEIL

The diagram on the right shows the Alpine Up in Click Up mode being used for an autoblocking abseil descent:
A is abseiling with the Alpine Up connected to the Multi Chain. He controls the rate of descent using the descent lever and the free ropes. As needed, thanks to the Alpine Up's autoblocking function, he can use both hands to untangle the ropes or remove knots.



Installation.
Attach the Alpine Up to the daisy chain at least 20 cm above your harness and lock it as indicated (Fig.1-2).

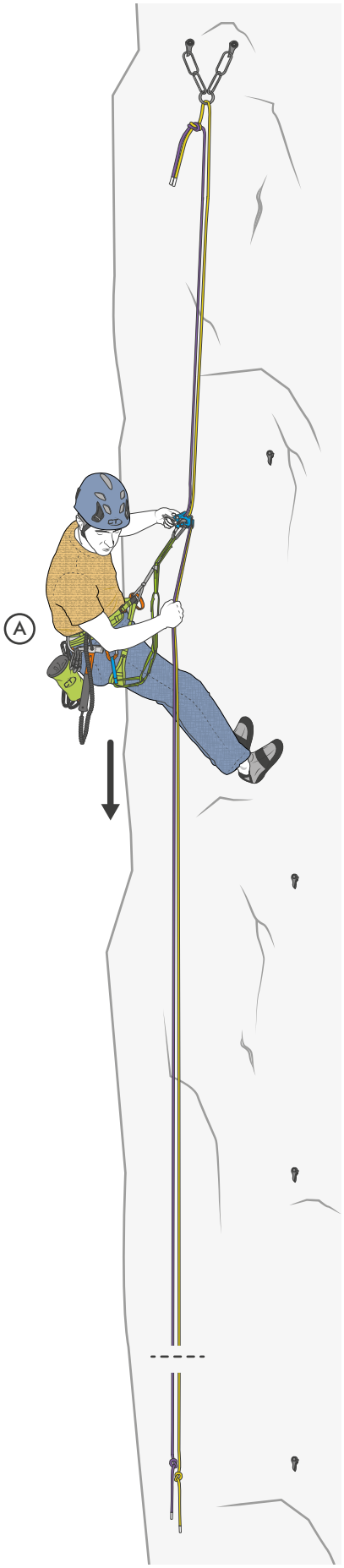
Taking in slack.
Take in slack so the rope is holding your weight (Fig. 3).



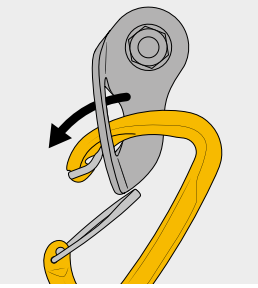
Unclipping from the belay.
Keeping one hand on the free ends of the rope, with the other hand unclip the daisy chain/sling from the stance (Fig. 4) and clip it onto your harness's gear loops.

Abseil descent.
Always keeping one hand on the free ends of the ropes, with the other open the descent lever (A) and press on it and rotate the Alpine Up upwards (B) a shown. Feed the free ends of the rope into the device to descend (Fig. 5).

Low fiction abseil descent.
In certain circumstances it can be hard to abseil down: if the ropes are hanging freely in space, if the climber is very light, etc. In these cases it is necessary to reduce friction in the Alpine Up by inserting an additional karabiner (C) in the hole shown, passing the ropes inside the carabiner, screwing up the gate and then descending as described above and shown (Fig. 6).

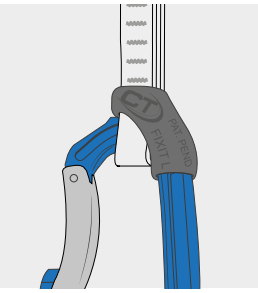


8 - INNOVATIONS



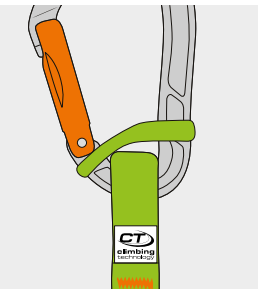
FG (Free Gate)
Innovative carabiner locking system that combines the functionality of the catch free systems along with the performance of wire gates. The stainless steel cover makes it easier to clip and unclip the carabiner avoiding ropes, slings or anchors accidentally catching during use.

Patent: US8234761B2 / EP2341255B1.

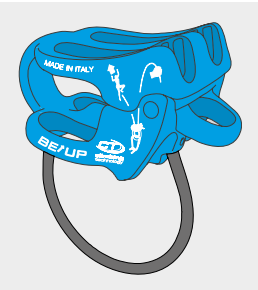


FIXIT
Innovative shaped rubber fastener for quickdraw slings. It secures the lower carabiner of the quickdraw to the sling, preventing the accidental rotation and keeps it on the axis. It also protects the sling from wear and tear.

Patent pending.

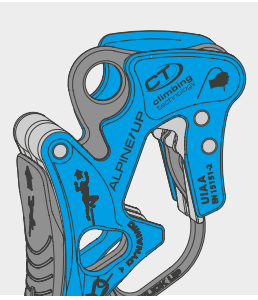


FIXBAR
Rubber retaining bar which prevents the top carabiner of the Nimble Fixbar quick-draw from rotating with respect to the sling and/or to the anchor, always keeping it in line.



BE UP
Be Up is a versatile belay/rappel device, compact and with an innovative design, suitable for use with half ropes, twin ropes and single ropes, in mountaineering, climbing on multi-pitch routes, sport and trad.

Registered design.



ALPINE UP
Alpine Up is the most complete and versatile belay / rappel device ever produced. It has been developed especially for mountaineering and it can be used with half, twin and single ropes. Extremely advantageous, it allows self-locking abseiling and it can be used in three different belay modes, depending on the terrain.

Patented.

Not exhaustive information: always consult the user's instructions of each device and the technical manuals.
Attention! It is essential to possess a proper technical education.

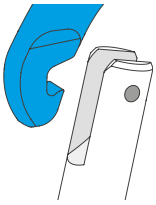
9 - STANDARDS

Mountaineering equipments:	
EN 564	Accessory cords
EN 565	Tapes
EN 566	Slings (tape, cord or rope)
EN 567	Rope clamps
EN 568	Ice anchors
EN 569	Pitons
EN 892	Dynamic mountaineering ropes
EN 893	Crampons
EN 958	Energy absorbing systems for use in via ferrata
EN 959	Rock anchors (plates, glue-in anchors, etc.)
EN 12270	Chocks
EN 12275	Connectors: Type B - Base connectors Type H - HMS connectors Type K - Via ferrata connectors Type D - Directional connectors Type A - Connectors for specific anchorage Type Q - Screw gate connectors (quick-links) Type X - Oval connectors
EN 12276	Frictional anchors (friends, etc.)
EN 12277	Harnesses
EN 12278	Pulleys
EN 12492	Helmets for mountaineers
EN 13089	Ice tools - ice axes: Type 1: For use in snow and/or ice Type 2: For use on rock, snow and/or ice
EN 15151-2	Manual braking devices: Tipo 2: Belay device without friction adjustement Tipo 4: Belay device with friction adjustement

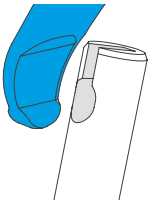
Work equipments:	
EN 795	Protection against falls from a height - anchor devices
EN 362	Connectors: Class B - Basic connectors Class A - Anchorage connectors Class T - Terminal connectors Class M - Multipurpose connectors Class Q - Screw gate connectors
EN 1891	Low stretch Kernmantel ropes
EN 12841-B	Rope access systems - working line ascender

10 - CARABINERS AND QUICKDRAWS

Locking system typology:

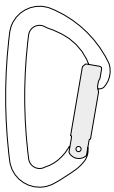


TRADITIONAL
This locking system is recommended in dirty environnements, where it's necessary to clean the carabiner easily.

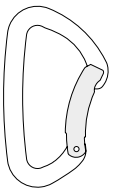


CATCH FREE
This locking system makes the hooking and releasing movements of the carabiners more fluent, avoiding the catching in ropes, webbings and anchoring points.

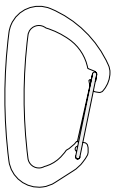
Gate typology:



STRAIGHT GATE (S)
Classic lever designed for progression.

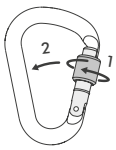


BENT GATE (B)
Classic lever designed for progression. Eases the placement of the rope.

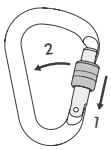


WIRE GATE (W)
On equal performances highly reduces the weight of the connector. Diminishes the "open gate" effect in case of fall.

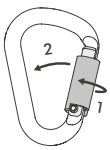
Gate blocking system typology:



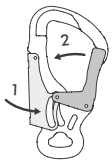
SCREW GATE (SG)
Two movements are necessary to open the gate (1-unscrew and 2-open). **Warning!** It's necessary to screw in order to guarantee lock the gate.



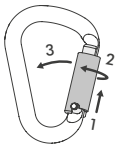
AUTOMATIC GATE
Two movements are necessary to open the gate (1-push and 2-open). **Warning!** It automatically comes back in the locking position of the gate.



TWIST-LOCK GATE (WG)
Two movements are necessary to open the gate (1-twist and 2-open). **Warning!** It automatically comes back in the locking position of the gate.



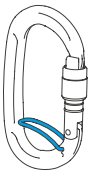
DOUBLE GATE
Two movements are necessary to open the gate (1-push and 2-open). **Warning!** It automatically comes back in the locking position of the gate.



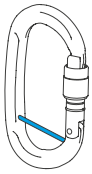
TRIPLEX GATE (TG)
Three movements are necessary to open the gate (1-push, 2-twist and 3-open). **Warning!** It automatically comes back in the locking position of the gate.

The abbreviation that follows the name of the carabiner indicates the type of gate. The letter L at the end indicates the ACL system, whereas the HC acronym at the end indicates the anodizing anti-wear.

Special features:



ACL SYSTEM (ANTI CROSS LOADING)
The ACL system allows to maintain stable eyelet ropes or webbings inserted in the connector. It allows an easy positioning or removal. It avoids the danger to load along minor axis.



CAPTIVE BAR
The captive bar could be supplied assembled or loose, to be assembled by the customer.

ALL THE CONNECTORS ARE INDIVIDUALLY TESTED

Not exhaustive information: always consult the user's instructions of each device and the technical manuals.
Attention! It is essential to possess a proper technical education.

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