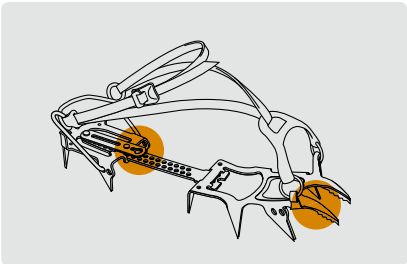
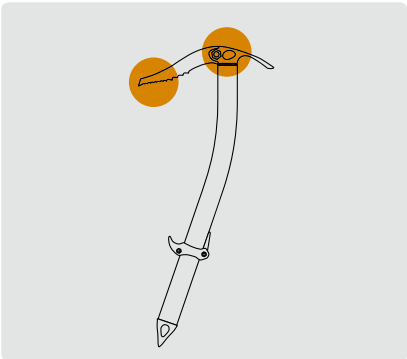
Technical information **Checking your equipment**





Ice axes and crampons are basically an extension of the limbs, aiding progression on ice or frozen rock. Walking on ice, repeated striking, and mixed climbing or dry-tooling are activities that put great demands and wear on the equipment.

Crampons

Before each use, inspect:
- the bindings: the condition and the fastening of the toe and heel bail attachments, the rivets (e.g. the SIDELOCK's lever), the plastic parts, the webbing and the functioning of the adjustment buckles
- for cracks and deformities on the metallic structure of the crampon, particularly around the front points. Remove the ANTISNOW for a more thorough inspection.

After each use, clean and dry your crampons. Spray with lubricant to avoid corrosion.
Sharpen (or have sharpened) the points by filing the side of the tooth, never the top (except for the forged front points). File by hand only, to avoid heating which may affect the properties of the steel.
Verify the proper engagement of the rapid adjustment system and test the attachment of the crampon to the boot.

Ice axes

Before each use, inspect:
- for cracks and deformities
- the condition of the rivets, the attachment of the head, the condition and attachment of the leash
- the condition and attachment of the pick; sharpen if necessary, replace bent or worn picks

Retire your ice axes or crampons:
- if the results of your inspection are not satisfactory
- after a significant shock load or impact
- if you have any doubt about their reliability

After each outing, clean and dry all equipment carefully according to the instructions in the technical notices.

… www.petzl.com/ppe

Information is non-exhaustive; consult the details of the inspection procedure to be carried out for each item of PPE (Personal Protective Equipment) on its technical notice or at www.petzl.com/ppe

Technical information **Basics**

1 Be very aware of the conditions of the ice and the surrounding environment

Consider this activity as a mountaineering activity, with serious and variable risks; rapid changes in conditions can increase the risk at an icefall from "acceptable" to "dangerous", even "unacceptable".
How have the conditions been over the past few weeks? What is the forecast temperature? Double-check the ice quality on site. Is there an avalanche risk from above? Are there other climbers already in the route? If so, avoid climbing the same line.

2 Don't forget your helmet and headlamp

You must wear a helmet at the base of the climb, as you would when climbing. A face shield can protect the eyes from flying ice shards. Remember to take a headlamp for late finishes. Keep your headlamp warm by having it close to your body during the day. Carry a threading tool, a cordelette equal to or thicker than 8 mm, and a long ice screw in order to be able to set up a natural ice thread anchor at any given moment.

3 Use double ropes

Avoid falling, if possible: Falling with ice axes in your hands and crampons on your feet can have serious consequences.
Clip the ropes in alternately along the route, and use energy absorbers (e.g. NITRO 3) to limit the shock force on the ice screws in case of a fall.

4 Think about protecting the seconding climber

Set up your stations to the side, not directly in line with the next pitch. Place enough gear on traverses so that the second climber doesn't pendulum in a fall.

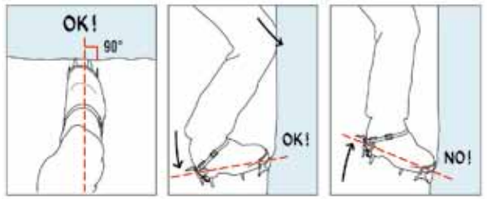
5 Managing time, gear and effort

Ice climbing is generally practiced during the shortest days of the year. Be quick in all the transitions, when installing the belay stations, and during all maneuvers. This will easily save that precious half-hour which will allow you to descend before dark.
Organize your clothing well (remove layers when climbing and put them on to stay warm at the station); one pitch may take 30 to 45 minutes per team member, even an hour, to climb... beware of freezing winds and dripping water that can make the wait at the station very unpleasant.
Manage your effort well, standing on your feet whenever possible so as to not exhaust the upper body; release and relax the forearms when you can.

A. Tips for striking

Ice axe

Crampons

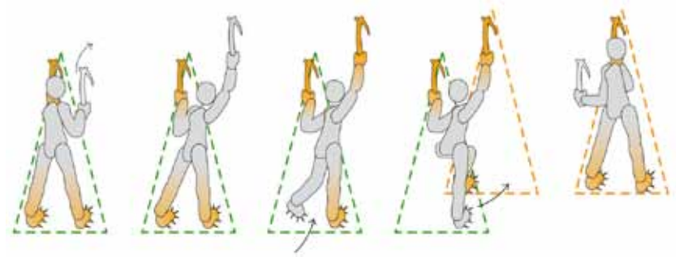


No hesitation for Ueli Steck, in the key pitch of The Secret at Ben Nevis.

© Tony Lamiche

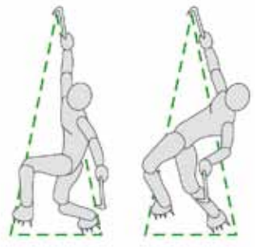
B. Progression

Triangular progression (balanced positioning in triangle form):
Three contact points: the two feet and one ice tool, centered over the feet



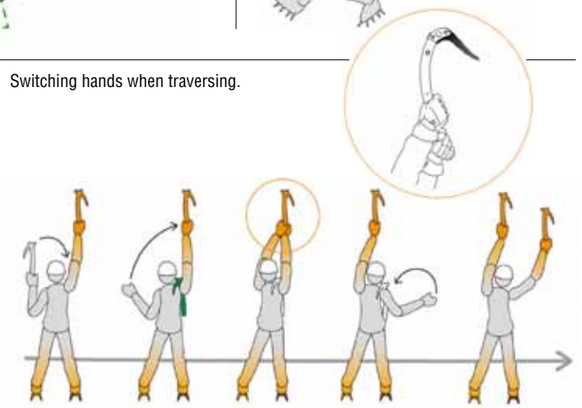
Rotation for remote striking.

Resting positions.



Mantling.

Switching hands when traversing.

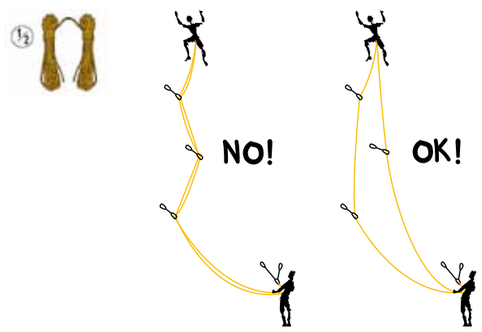


Clipping the quickdraw while dry tooling.

Ice axe in hand.

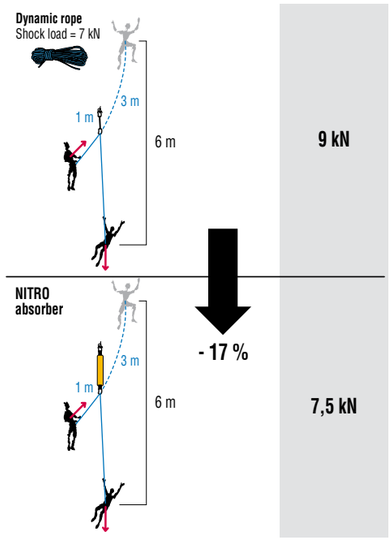
Ice axe on shoulder.

To reduce the shock force on the ice screws in case of a fall, clip the ropes in alternately along the route.



Shock force reduction on directional anchor with energy absorbing quickdraw.

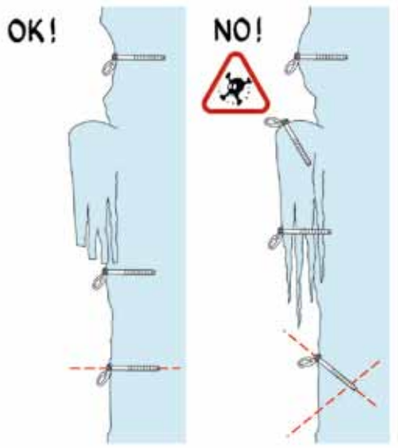
Fall factor: 6/4 = 1.5



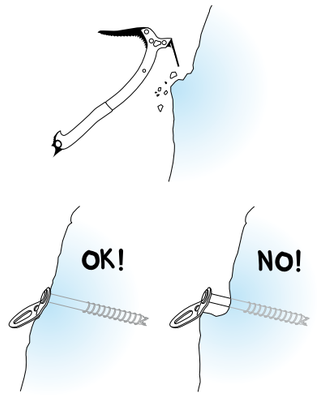
Comparison of shock force with and without an energy absorber.

C. Ice screws

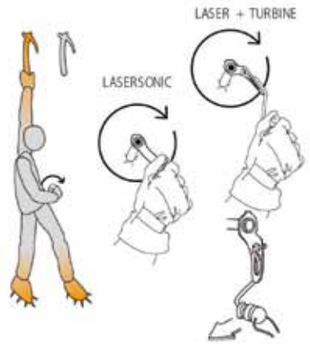
Ice screw placements.



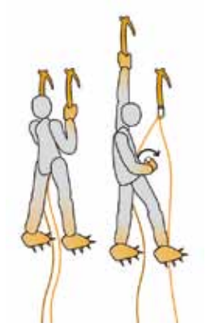
Clean the placement area.



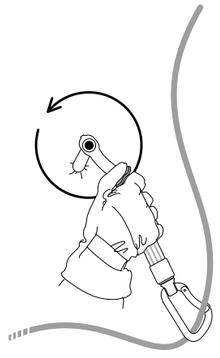
Place the ice screw at hip height.



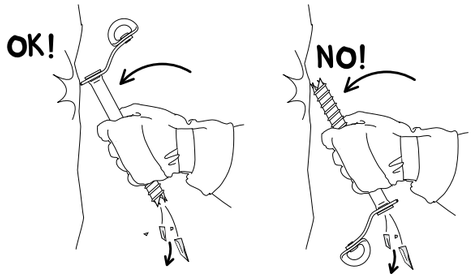
Temporary protection while placing a screw.



Unscrew the LASER SONIC ice screw without unclipping the rope.

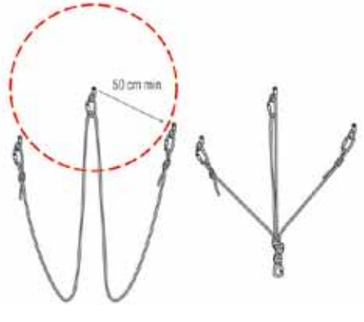


Empty the ice screws, protect the teeth and threads.



Two-screw belay.

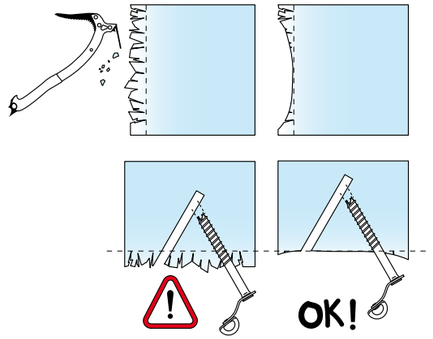
Three-screw belay.



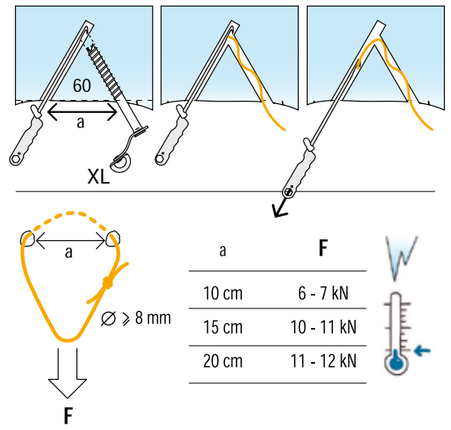
Make sure the belay is in the right spot.

D. Ice threads: preparing the anchor for the rappel

Clean off any fragile surface ice to create an ice thread in more compact ice.

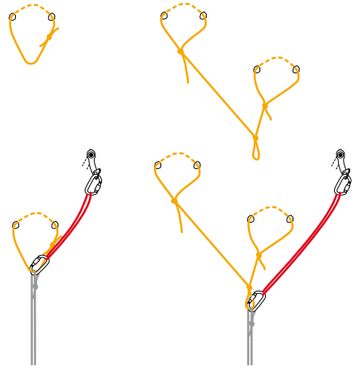


Building an ice thread anchor.

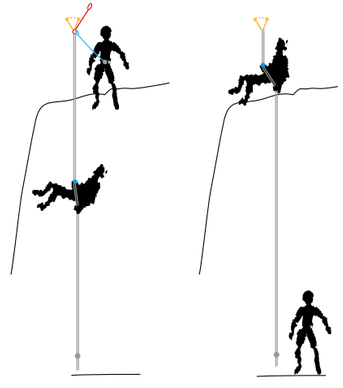


a	F
10 cm	6 - 7 kN
15 cm	10 - 11 kN
20 cm	11 - 12 kN

Depending on the ice quality and temperature, make one or several connected threads. Connecting the ice thread with one or more ice screws for rappels.



Rappel on ice thread.
The leader descends on ice thread and ice screws.
Once the thread has been tested, the second pulls the screw(s) and descends.



What's the best solution? wonders Yann Mimet on the pillar of Babylon, VII, 8, in the Number Three Gully at Ben Nevis.