Equipment for Rock Climbing

By

Patrick Weaver

Getting starting in climbing is more complex than it used to be, climbers have a greater selection of gear, and sometimes it is hard to find someone with the experience necessary to get good advice from. In this article I want to present recommendation for rock climbing gear that works, is reliable and advice for selecting the most appropriate gear for your type of use. It will cover basic essentials: harness selection, helmets, belay devices, and shoes.

Getting Started

Climbers starting out will typically want to get the necessary gear to join their friends climbing at the gym or crag. To accomplish this you'll need: harness, helmet, shoes, belay setup, a chalk bag and possibly a rope.

Harness

The harness is the connecting point to the safety system, either the climbing rope or direct anchor, so it should function well. Things to consider are fit and function. No matter what harness you purchase it MUST fit well. The correct fit should meet all of the following criteria:

1. Waist belt. This should come up over the hip bone and fit snuggly. If you can slide three stacked finger between your hip and waist belt the belt is too loose. Pull down on the belay loop; does the waist belt slide down past the hips? If this happens, the harness is too loose and is dangerous. If you can't get any tighter, the size is too large, go smaller on the size. Harnesses do not fail, but people can fail to fit them properly.
2. Buckle. Even if the waist belt can fit the hips is there enough belt tail to be threaded through the buckle? There should be a least 3 inches of tail on the webbing belt after it has threaded three times through the buckle. Some modern harness have auto locking buckles, this three inch rule still applies, but should be less of an issue.
3. Leg loops. The leg loops will come in two styles; adjustable and fixed. If purchasing a harness with fitted leg loops there will be an elastic band that keeps the leg loops snug. If the leg loops are adjustable, make sure that you can get them tight enough

and large enough to fit over bulky cloths if you plan on climbing in the winter and yes you must close the buckles.

Function of a harness depends on what the intended use is. Tips for purchasing a Harness

1. Shape. The belt shape will have a big impact the performance of the harness. Too wide or bulky and it will limit your climbing movement. Too thin or narrow and you will hate life on your first multipitch climb. The best shape is somewhat of a bull horn shape with some padding and about 3-4" in the back with a taper down to around 1" in the front. This will be supportive but allow freedom of movement.
2. Belay loop**.** The belay loop is the location for attaching the belay device with a carabiner. Look for a harness that has a small, compact loop. The compact loop keeps the belay device closer to the body and makes it less strenuous to work the belay mechanics. This is especially true with people with small hands and short arms. This loop should be no more than 3" from end to end.
3. What is your intended use of the harness? Sport, gym, single pitch trade climbing or multipitch climbing. Beginners should focus on an all around harness.
    a. How many gear loops you need will depend on the type of use. For traditional climbing, a harness with 4 or 5 loops is preferred. Sport climbers often only need two, but most harnesses will have four, the loops will be smaller on a sport harness. If you plan to ice climb, a harness with ice clipper slots is a real advantage for racking ice screws.
    b. Location of Gear loops. What is the location of the gear loops? Put the harness on and see where the gear loops are. Are they too far back for you to reach or are they so far forward that the gear bounces off your legs while climbing.
    c. The sizes of the gear loops are important. For traditional climbing you will need to be able to clip 5-7 items on each loop.
    d. Forward tilt. On many harness the gear loops tilt forward, forcing gear to slide forward as gear is removed. This is handy when climbing harder routes. I will rack gear in order of use so that I am always pulling from the front of the gear rack. Having a forward tilt makes this easier.

Recommended harnesses include:

a. Mammut
b. Misty
c. Black Diamond

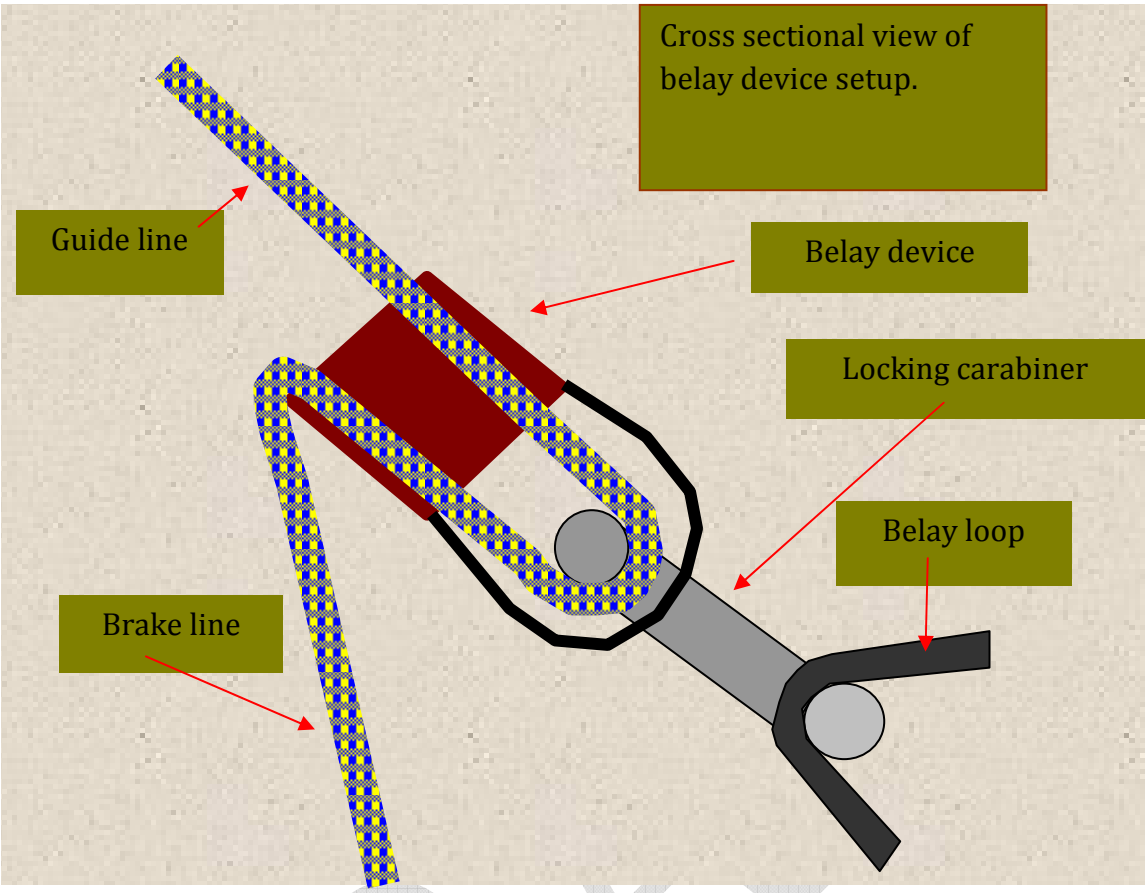
Parts of a harness

This is a seat belt with leg loop made from webbing that is either sewn or tied. There are several parts to a harness.

Waist belt	This belt goes around the waist. A buckle is responsible for holding the seat belt together. The webbing on the belt must be doubled back to function properly.
Leg loop	These are attached to the seat belt and go around the legs. They should fit snuggly and may also have a buckle that should be doubled back.
Belay loop	This is a loop of webbing that connects the seat belt to the leg loops. It is also used to attach the belay device to the harness with a locking carabiner. It is never used as a tie-in point for the rope.
Buckle	This is a flat metal component with two slots in it or a two piece auto locking buckle. For non auto locking buckles, look for buckles that have tight snug-fitting slot to hold the webbing, otherwise it will have a tendency to creep and loosen through the day. For auto lockers, look for a buckle system that has to be lift over 60° before releasing the webbing. Never unthread an auto-locking buckle; they are a pain to rethread.

Belay setup

The belay setup is composed of two mechanical devices, rope and belay loop. This section will focus on the belay device and the carabiner. Study the diagram for information on how the belay should be set up.



Belay devices come in a variety of styles. There is no one style that is ideal for all situations, but there are a few that are good all around. Most styles these days are a form of the tube style belay device. The rope will pass through a slot and down around a carabiner and back up through the same slot. The bends in this style create pressure and increase surface contact which increases friction for holding power.

When selecting a device you must match the diameter of rope that you will be using with the device. For example, a Black Diamond ATC (a very common belay device) will work great with ropes in the 10.5mm range. However, many find this device to be slippery on ropes under 9.8mm making it difficult to catch falls and lower climbers.

If using rope less than 10mm in diameter consider

- Kong Ghost
- Black Diamond ATC Guide
- Black Diamond ATC-XP

If using ropes over 10mm consider

- Black diamond ATC

Carabiners

Most people select large carabiners to belay with. This is incorrect. The things to look for in a belay carabiner are size, shape and stock. The first consideration is size; this should be smaller. The smaller carabiner keeps the belay device closer to the belay loop and under more control. Shape should be a HMS pear shaped or D shaped. The D shape keeps the rope along the spine better, which is the strongest part, but the HMS carabiner can also be used with the Munter hitch in case you drop the belay device. The stock of the carabiner should be round, not flattened. Round stock is more rope friendly, locks up when needed and feeds better than flattened carabiners.

Recommendations

- Metolius HMS Element Belay locker
- Petzel Attaché
- Petzel Am' D

Shoes

The selection of shoe will depend not only on what you intend to climb, but also the shape of your foot. Remember the most important thing; the shoe must fit your foot. Don't buy a shoe just because someone climbed that hard route in them, the shoe must fit your foot properly in order to do the job.

The fit of a climbing shoe should be snug. There are three general patterns that climbers follow: flat foot, curve toe and hammer toe. For most people the hammer toe is not recommended, and many climbers who used this fit method are having foot trouble these days. Flat foot is what beginning climbers will be most comfortable with. This can be described as having your toes flat but touching the end of the shoe. A good rule of thumb is to select a climbing shoe that is approximately 1" shorter that your street shoe provided you have the correct street shoe size, less for smaller feet. The shoe will fit well if there is no dead space in the toe box area. For more climbing performance, you may want to use a curve toe fit. This is approximately ½ smaller than the flat foot fit. It will cause your toes to curl under slightly, but not so much that they point down.

Foot shape affects the fit. Foot shape relative to climbing can be broken down into two categories: narrow feet vs. medium and mortan toe vs. normal. The most difficult foot shape to fit is a narrow foot. Climbing shoes must be snug to edge properly otherwise you will get foot roll, or the foot shifting in the shoe. This will constantly cause your feet to pop off small foot holds, not fun. Some shoes that work with narrow feet are

- Evolv – bandit
- Evolv - pontas
- La Sportiva - mythos
- La Sportive – Barracuda

A mortans toe is a foot with the second or third toe longer than the big toe. Many shoes today have an asymmetrical shape the curves toward the big toe. This is unfriendly to people with mortans toe, but works great for normal feet. There are a couple of shoes that work with mortans toe

- Evolv – Demorto
- La Sportiva – Katana
- La Sportiva – Mythos

The function of the shoe will be a factor in selection also. Shoes are made flat or down curved these days. Flat shoes will work for outdoor climbing on slabs, cracks and vertical face climbing. Flat lasted shoes will also be preferred for long days when you can't take the shoes off between pitches. But when the angle steepens beyond vertical, most climbers are using a shoe with mild to extremely down curved last. Beginners should avoid shoe with a down curve at first, it's painful. It took me a month to get use to my first pair of down curve shoes. Remember, you won't keep them on for more than five minute anyway. Get a pair of flat lasted shoes first and as your feet get stronger and use to being crammed into a tight pair of climbing shoe then get a pair of down curve shoes.

Helmets

If you climb outdoors, you will eventually need a helmet. I have not personally been hit on the head by a rock in twenty years of climbing, however a half dozen of my friends have and I have been hit by rocks before, just not on the head. There are places where you may get by without a helmet, but with modern advances in technology helmets have become comfortable, light and much more agreeable to wear. Make sure the helmet is CE approved before purchasing. This guarantees that it will with stand impacts from falling objects.

Helmets

- Mammut – Tripod
- Petzel –Elios

Ropes

Selecting a climbing rope these days is an overwhelming task; which size, which brand, why are they so expensive, bicolor, triple marked, dry, non-dry, are just some of the considerations you have to decide upon.

Rope length

The modern standard is 60meters or 198 feet. Most ropes are cut 3% longer to allow for shrinkage. In some areas routes are being put up with 70m ropes. These are sport routes that are around 35m in length and therefore you need a 70m to lower off. In traditional climbing avoid the temptation to use 70m. Linking pitches may work at times, but more often you'll end up running out of gear, having really bad rope drag and not being able to hear you partner which can lead to confusion and even accidents. This has happened more than you think.

Size

For beginners, who will be top roping most climbs, a 10.2 to 10.5 will give the best compromise between durability, handling and feed well through the belay device. 11mm ropes are unnecessarily thick and make belaying a chore. This size will allow you to take many falls without damaging the rope.

For multipitch climbing a 9.5 to 10mm works well. It is light, handles well and will hold up if used properly. Obviously, it will not take as many falls as a thicker rope, but I don't know too many traditional leaders who are taking lots of falls on tradition gear.

Other considerations

Bicolor ropes change color at the mid- points and are great for single pitch top roping and even multipitch climbing. If you plan to climb ice, get the best dry treatment possible. Icy ropes will not pull through the belay device well. If not, you can skip the dry treatment as most do not climb rock in the rain.

Good ropes

- Sterling Velocity 10.2
- Blue water Dominator 9.4

To uncoil a NEW rope

1. Remove packaging
2. Insert left arm into the coil and hang the coil from this arm. You must get all the loops or you WILL BE IN TROUBLE.
3. Look at the rope and find one end and pull a few feet off. Make sure that you are pulling from the side that the strand will uncoil from.
4. Insert the right arm into the coil from the opposite side and pull tension between the arms, holding the coil in place.
5. Begin to unwind the coil UNDER TENSION. Go slow and pile the rope at your feet. Keep the tension between the arms, otherwise you will lose the coil (this is bad)
6. If you do this correctly, you will not need to do a single thing else to the rope.
7. If you do this incorrectly,

a. Place a carabiner on a sling around a sturdy object at least 25 feet away, the farther the better.
b. Start with one end and pull the entire rope through the carabiner and stack randomly. The rope MUST make a 180 degree bend at the carabiner. Stand next to the rope stack 25 feet away.
c. Flip the stack and repeat this process 3-6 times. Be sure to always pull the same end each time, otherwise you will just be moving twists back and forth across the rope.

Rope handling

The rope needs to be handled properly to prevent kinks and tangles. There is nothing worse than having to untangle a rope. The easiest method of coiling the rope is the butterfly coil. Start with a flaked rope on a tarp or rock, find the two ends and pull 10 ft of both strands through your hands. Drape the rope over your neck and begin throwing 5-6 ft sections over your neck. Soon you will reach the end of the rope, which is actually the middle. Carefully remove the coil from your neck and wrap it 3 times with the extra 10ft. Pull a loop of rope through the newly created hole; pass the end through the loop and you're done. To do this effectively you must flake the rope beforehand.

Flaking the rope involves taking one end of the rope and pulling it through your hands, **randomly** stacking the rope on top of itself. Check for nicks and frays as you do so. Be careful to leave both ends showing so they are easy to find for coiling or tying into. Now you are ready to toss the rope.

For tossing a rope, you will need to first coil the middle section in a butterfly coil. First, make sure that you are anchored. You can toss this section after you yell "rope". This call will notify anyone below that you are tossing a rope, so be aware. Coil the last half and yell rope again and toss the second half over the edge.

Rope Care

A rope is a valuable tool that must be kept in good working condition for your safety and the safety of others. Keep the rope clean by using a tarp in dirty climbing areas or sand stone cliffs. Some prefer a rope bag, but a 5x7 tarp can be cut down to 4x5 and is the perfect size. Avoid running the rope over edges. Place the master points over the edge so the climbing rope does not run over and edge. The motion will abrade the sheath. Sunlight and chemical can weaken the rope. Store a rope in a location away from light and chemical cleaners. Bleach, acid and many other chemical can have a negative effect on the rope. Do not place the rope on asphalt or in a parking lot. Cars can leak chemical that have a negative effect on ropes. Retire a rope when it is time, old rope will lose the dynamic properties even when the sheath looks good.