



AAC Publications

Essentials: Micro-Cams

What to Expect, How to Optimize

Tiny cams pulling out of cracks frequently contribute to accidents reported in these pages. Often, these cams are deformed by twisting and impact forces, leading climbers to conclude the units have “failed,” when the real culprit is almost always unrealistic expectations of the capabilities of micro-cams and/or less than optimal placements.

Micro-cams are defined here as smaller than 2/3 inch (17mm) at their widest range—such cams’ effective range maxes out at around 1/2 inch (13mm) or fin- gertip size. These cams are rated to significantly lower strength than their larger siblings (up to 50 percent less). More significantly, the smaller surface area of each cam lobe and their limited expansion range make micro-cams much more likely to shear or pull out of a crack if the placement is not optimal.

Many times, a wired nut can be placed in the same spot as an equivalent size cam and will be easier to evaluate and more predictable. With practice, nuts can be placed almost as quickly as cams. If a micro-cam must be used, optimize the piece’s security in these ways:

- Choose the best placement. Whenever possible, place small cams toward the bottom of flares or constrictions, so they benefit from passive resistance to pulling out, like a nut. Even “parallel” cracks may have subtle variations.
- Avoid dirty, sandy, wet, icy, loose, or soft rock.
- Set cams in the narrower half of their range. In terms of security, there is no such thing as an “over-cammed” micro-cam.
- Try to prevent cams from walking out of place. Look for nubbins or variations in the crack that will hold the cam in its best position. Extend the placement with a quickdraw or sling to keep the rope from moving it. Avoid knocking the cam out of place with your hand, foot, body, or equipment.
- Orient the cam stem in the anticipated direction of pull. Cams that rotate under load put more force on fewer cam lobes.
- Double up on dubious placements. Avoid having “all your eggs in one basket” with micro-cams.

There is no guaranteed bomber placement in nature. In the words of guide and author Topher Donahue, “Every placement is only as good as the judgment of the person who placed it, on the day they placed it.”

With information from Rob Coppelillo, Topher Donahue, Jim Karn, Dale Remsberg, and Rick Vance.

Images



A solid small cam placed in good, dry rock, in the tighter half of the unit's range, at the bottom of a constriction, with the stem oriented in the direction of anticipated pull. Ideally, the cam might have been placed a little deeper into the crack, so the outer lobes aren't as close to the edge.

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