

Tech Skills: Choice and use of karabiners

Karabiners are the unsung workhorse of every climber's rack. Without them all those fancy camming devices wouldn't be much use at all. But with the evolution of a myriad of modern designs just how to you choose which type to use?

Well, karabiners and other similar devices such as quicklinks (aka maillon rapides) are manufactured to the European Standard EN12275. And this handily splits them into six different categories:

Type B - Basic

Most karabiners fall into this category, usually an offset D shape for maximum strength. The exact use will depend on the type of gate used, which can be locking or non-locking. Non-locking gates include the solid straight/bent gate, and the more recent wiregate. The straight gate is ideal for most purposes, especially the protection clipping

end of quickdraws. Bent gates are for the rope clipping end of quickdraws only, and although they make clipping much easier, they do require more care to avoid accidental unclipping. Wiregates offer a number of advantages including reduced weight, and can be used for most situations.

In some instances the additional security of a locking gate may be required. The most common type is the screwgate, which requires manual locking. Automatically locking types also exist, although often with a weight and price penalty. There are no hard and fast rules as to when a locking gate is required; the key is to do a quick risk assessment. Consider the chances of the gate being forced or jarred open, and then the consequences if this was to happen. Examples of when you would want to use a locking gate could include attachment of the belayer to the main belay anchor, or for clipping a vital piece of protection. Don't forget that if you've run out of screwgates,

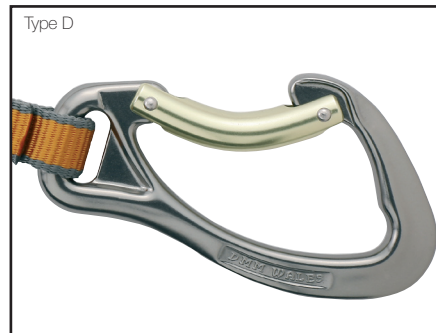
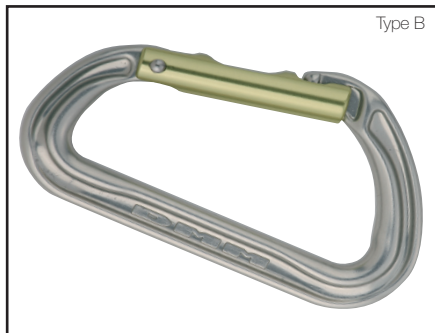
you can use two normal krabs with the gates opposed instead.

Type D - Directional

This type has a captive or semi captive sling, ensuring that the krab is loaded along the main axis (hence no minor axis strength requirement). Of course, this sacrifices their versatility, making them most often seen in-situ at climbing walls, or on the racks of dedicated sports climbers.

Type X - Oval

Oval shaped karabiners are particularly useful for aid climbing, since being symmetrical they prevent the shifting under load that can happen with other shapes. This also makes them ideal for use with pulleys, and also for racking wires, pegs etc. The downside is that this shape is inherently weaker than the D shape, especially with the gate open, hence the reduced strength requirements. But it's worth noting that



Expert Q&A



This issue's equipment expert is Chris Rowlands. Chris is Brand Manager/Export Manager for DMM. He started climbing in 1970 aged 12 when there was a lot less kit to worry about.

Q. What are the advantages of wiregates?

A. Wiregates have three

advantages over the traditional solid straight or bent gates; they're lighter (noticeable when you're carrying a full rack), they don't freeze up (handy for winter), and they're less prone to "gate flutter". Take a straight gate krab, hold it at the bottom end, hit it against the palm of your other hand, and you'll hear the clicking of the gate opening and shutting. This is gate flutter, and it can cause gate open failure in a fall situation.

Q. What is a shrouded gate?

A. Here the open end of the gate is protected by small wings

on the body of the nose - so the gate is less likely to accidentally open when it rubs against rock.

Q. Why is hot forging better than cold forging?

A. The use of hot forging allows creation of more intricate shapes than with cold forging. It allows you to move metal around, both strengthening parts that need it, and removing unnecessary metal to save weight. The result is a krab that is both light and strong, and also an ergonomic shape to make handling easier. Hot forging is also better for the metal, and will result in a stronger product.

Q. When should I retire a krab?

A. The lifespan of hardware is generally given as ten years, but check the manufacturers instructions. There are so many variables involved that I'd just say two things. Firstly, if you have any doubt about the integrity of a bit of kit then don't use it. And secondly, most of us are a little lazy about looking after our equipment - show it some TLC and it'll probably last longer.

Q. Do krabs ever break, and why?

A. It's possible to break most

by Dan Middleton

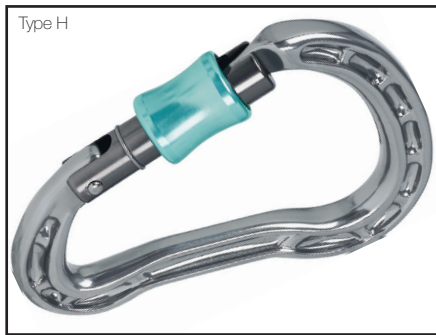
modern forging techniques and design have made it possible to manufacture oval shaped krabs which are strong enough to qualify as type B.

Type H - HMS

This type is designed for belaying, either with the Münter or Italian hitch, or a belay plate. The wide rope-bearing surface allows smooth running of the rope, and allows room for the Italian hitch to invert. The consequence of this shape is a reduction in gate open strength, although this type invariably comes with a locking gate. Another common use of this type is to use the extra width to connect multiple anchors with clove hitches or slings, but real care needs to be taken when doing this, as loading near to the nose will dramatically reduce the strength.

Type K - Klettersteig

Designed for use on Via Ferrata lanyards,



Type H

How strong must krabs be to meet the European Standard?

Karabiner Type	Name	Usage	↔	↕	⤵
			Main axis	Minor axis	Gate open
B	Basic	General purpose	20 kN	7 kN	7 kN
D	Directional	Sewn into quickdraw	20 kN	n/a	7 kN
X	Oval	Aid climbing	18 kN	7 kN	5 kN
H	HMS	Belaying	20 kN	7 kN	6 kN
K	Klettersteig	Via Ferrata	25 kN	7 kN	n/a
Q	Quick Link	Extra safety	25 kN	10 kN	n/a

these must have an automatically locking gate and are larger than normal to allow clipping onto cables. The optional UIAA standard includes extra strength requirements for this type, including bending strength over an edge.

Type Q - Quicklink

Quicklinks or maillons offer increased security, as there's no gate to accidentally open, but require the sleeve to be fully

screwed shut. They are ideal for leaving in place on abseil stations, or when retreating from a route, as they are strong and cheap. Available in several different shapes and alloys, those suitable for climbing are marked and tested to EN12275. ■

Dan Middleton is the BMC Technical Officer. Email him at dan@thebmc.co.uk with those technical questions.



Type K



Type Q

things, and krabs are no exception. However in our experience it's usually through misuse or abuse. Krabs are designed to load down the spine, and their design encourages this to happen. But if they're loaded away from the spine or back (e.g. they are hung up on a bolt hanger or three-way loaded) then they can fail at greatly reduced loads. Keep any eye out for such situations!

Q. What does the future hold?

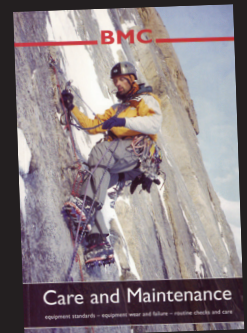
A. Designs are continually moving on. The thrust over the

last few years has been towards designing stronger and lighter krabs without compromising on size - something too small is difficult to use. Of course, what was state of the art four or five years ago is now pretty standard, and we're very aware of the need to continue to innovate - you only have to look at our portfolio of products to see this. We never allow ourselves to rest on our laurels, and just when you think you can't push things further, somebody will come up with an exciting suggestion or idea. Perhaps the next step will be to look at totally different materials - who knows?

Further information

BMC Care & Maintenance Booklet

£4 members / £6 non-members
58-page glossy booklet covering equipment standards, equipment wear and failure, routing checks and care.



DMM
www.dmmclimbing.com

UIAA
www.uiaa.ch/?c=310
For details of equipment standards.

