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PREVIEW DRAFT
5 products are still being compiled - completion in late April'24 when the same link will be availabale & will go out with TECHNICAL RESCUE #84

ROPES, ROPE SOFTWARE AND OTHER HARDWARE.....
ArbRopes, hybrid descenders, winches & impact blocks are in Arborist Eqpt
'Black' tactical/theatre rope, hardware & access items are in 'Black' Eqpt
Helmets lighting, boots, stretchers & medical are in PPE & CasEvac
Cases, area lighting, tripods & high directional are also in USAR/Extrication

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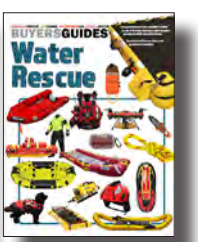
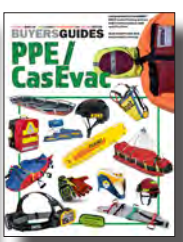
Welcome to our **BUYERSGUIDES.** These are free to all as a page-turning pdf or you can download a regular PDF by clicking on the cloud icon. Many of these GUIDES originally appeared in our print magazines so have been updated and **will continue to be updated every month**. The same link that you used this time can be used anytime to see the latest version. New Guides and those appearing in forthcoming magazines will also be incorporated into the relevant **BUYERSGUIDES** building into an amazingly comprehensive guide to the best products on the market.

The tabulated data in our GUIDES is non-subjective although the comprehensive introductions do have subjective comment and pick out key and interesting products.

MANUFACTURERS can contact us at any time to update the information on a product(s).
admin@rescuemagazines.com.

OTHER BUYERSGUIDES





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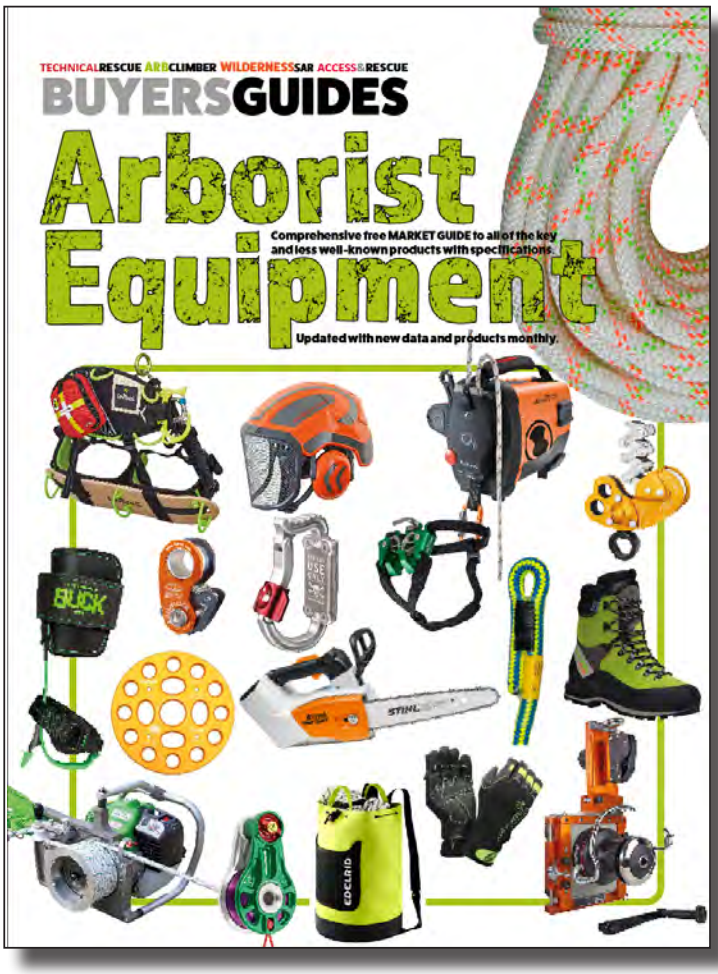

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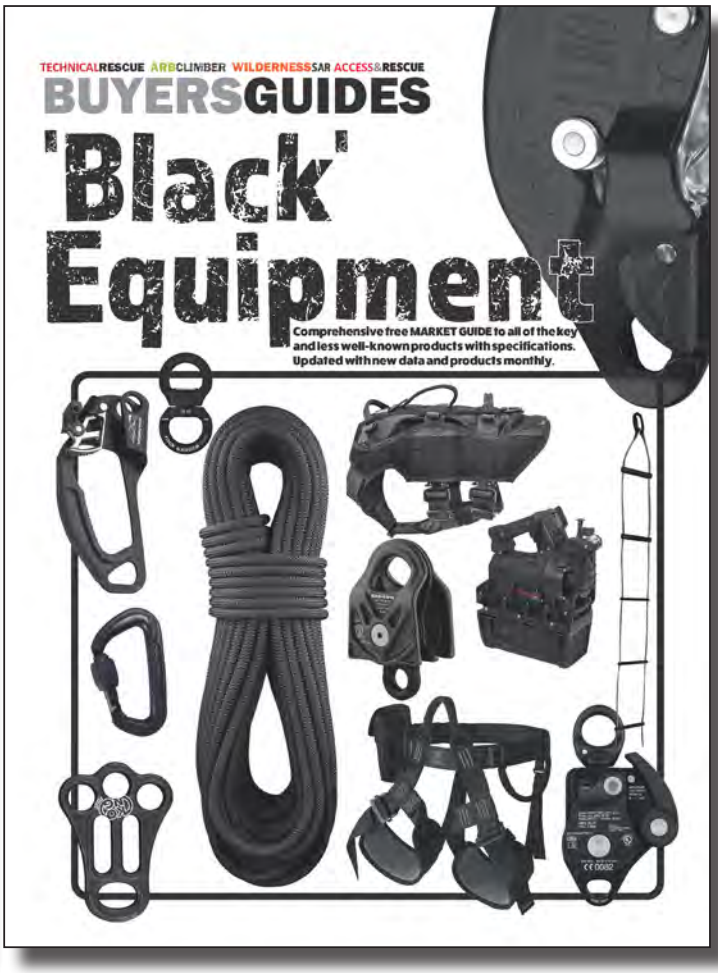

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PART 1 ROPE EQPT

CONTENTS

'BLACK = not only military and tactical equipment but also film/theatre. This may simply be that the product is black or camouflaged but there are also specialist tactical and theatrical rigging products in here

ROPE EQPT pt2

From Q2 2024 we will start to add the following product groups to this BUYERSGUIDE:

Swivel Carabiners
Captive Eye Carabiners
Scaffold hooks
Rope Rescue Harnesses
Slings
Rope/Tackle bags
Rope Protection
Mobile Back-Up Devices

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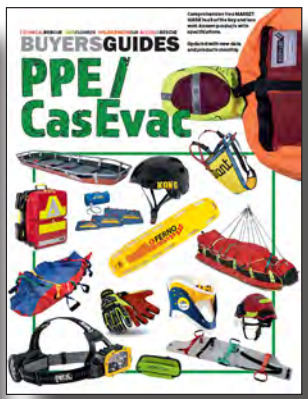

Summer 2024

KEY TO TABLES:

Across all of our BUYERS GUIDE tables, some of the data entries are quite complex in appearance and you do need to refer to the individual keys to fully understand the information in the tables. Note that in the print magazine we have tended to round down lbf (pounds force) from KiloNewtons as a straight 2.2lb:1kg conversion but these GUIDES use the actual lbf to KN conversion which is a little higher at almost 225lbf:1kN

Cyan blue is always a variant of the main model shown. data relating specifically to that version will be highlighted in cyan blue or any squares or circles may be outlined in cyan blue ■■■●●● the cyan blue outline is admittedly difficult to spot on the green square or circle.

□□□○○○ An outline square or circle of any colour = an OPTION, not part of the data shown

●●♦ a solid circle or diamond indicates that the usage or feature indicated is partial or OK but not ideal. this may be a use for which it is not intended but it cope OK in that role like a descender being used as an ascender. These also appear as an outline if they are an option.○◊

The main flags shown are the origin of the company listed but there may be a smaller inset flag like this Taiwan flag, indicating that the country of manufacture is different.

COSTS are all approximate and rounded up. We include VAT at 20% and State tax at 10% but these can all vary, especially state taxes in the US. £$€ Prices shown in burnt orange are currency conversions only. They do not reflect import costs like shipping, duty and local taxes so are a very rough guide only

Page corners are colour coded to common groups of equipment eg. rope is in lime green.
Rope hardware including descenders and lowering devices are in grey. Pulleys, ascenders, hauling kits and winches are in red. Accesories are in Plum. Software, slings and bags are in purple and safety/PPE is in green.

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BLUEWATER ROPES	■	■	■	■			Pulleys
CASCADE RESCUE		■				■	
CLIMBING TECHNOLOGY (SKYLOTEC)	■	■	■				Carabiners, Pulleys, Ascenders, PCDs, Descenders, Swivels, Rig Plates, Tool Hooks, AHDs, Gloves, Bags
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EDELRID	■	■					Carabiners, Pulleys, Ascenders, PCDs, Descenders, Swivels, Rig Plates, Tool Hooks, Gloves, Ropes,Bags
HARKEN		■	■		■		Powered Ascenders, Carabiners, Pulleys, Ascenders
HOLMATRO		■			■		AHDs
HUSQVARNA	■				■		Tool Hooks
KONG ITALY	■	■	■		■	■	Carabiners, Pulleys, Ascenders, PCDs, Descenders, Swivels, Rig Plates, Tool Hooks, AHDs, Gloves, Bags
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PELI PRODUCTS			■	■	■	■	
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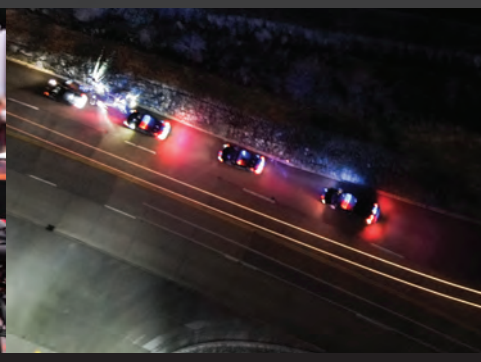

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CONNECTORS

LOCKING CARABINERS

This guide does not include Scaffold (Firefighter) hooks, carbine hooks or *Maillon*s/quick links which will be included in their own guides later and you can already see pulley carabiners on page 92 and swivel carabiners on page 20. Also not included are paragliding connectors (unless they are specifically multi-use) and snap-gate carabiners other than to indicate when there is a snap-gate version within the range we have included. This guide would triple in size if we listed all gate-types as separate entries so we are listing the screwgate data and showing other gate options and data as colour-coordinated data (see key on page 9) . No Chinese or Taiwanese are included yet even though they make for many that are here but as we verify credentials these will be added. Russia is still a pariah state so no inclusion yet but if there's a regime change they will return.

A BRIEF HISTORY

Carabiners take their name from the Italian Carabinieri's use of a hook to attach their weapons to their straps but the German translation to Karabiner is widely used, especially since it is the Germans, Austrians and Swiss who largely developed the basic carbine hook into a recognisable life-support carabiner around the turn of the 20th Century. Carbine hooks still exist and some have life-support functions. Sport carabiners are largely snap-only without a locking gate and they may further have a curved gate to make clipping into protection and rope faster and easier. There are also *Maillon*s, a whole different family but together, all of these load-bearing clips are now known by the modern 'collective' term - CONNECTOR.

Our own first experience of proper mountaineering carabiners was use of Austrian *Stubai* models. They were solid steel and weighed a ton with a very angular D-shape. The gate had a deep screw thread running up and into the hook, this was so deep and angular that the top of the gate and the nose on the body of the carabiner could pull chunks out of your fingers if you weren't careful. France's Pierre Allain in the form of *Chouinard* produced the first commercial alloy carabiner in the 30's but it wasn't until the late 70's and 80's that we had alloy carabiners offering similar strength to the steel but perhaps not the same ability to take abuse. Sport climbing was quick to switch to lighter alloys and to snap-gate carabiners in particular while industry and rescue doggedly stuck to steel.... initially.

DESIGN INNOVATIONS

NOSE PROFILE: We feel there were two design elements that stand out as truly game-changing for carabiners, the first was to remove the hook from the nose of a carabiner that connects to a pin on the gate and instead have a smooth, CLEAN bar that slots into a shaped hole on the gate. This gets rid of a hook that tries to snag on every rope, cord or slings that you try to detach from. Excellent for tasks that require you to work fast - rescue and tactical situations in particular. Italy seemed to be the focus of design innovation throughout the 80s and 90s with *KONG* introducing their revolutionary and much copied *Keylock* where an hourglass shape on the gate slotted into a similar shaped hole on the nose (and vice versa in some models) . On the right is CMC's version made by Rock Exotica. We were also big fans of *CAMP* alloys - their smooth nosed *BetClimb*s served us well as did (at the time) the only 3000kg alloy, the *CAMP Hi-Strength*.

HOT&COLD FORGING: The other great area for carabiner innovation in the last century was the UK, specifically Wales with Denny Moorhouse's trio of legacy companies - *Clog*, *DMM* and *ISC* producing steel and alloy carabiners. These often lacked the finesse of Italian designs but were (and are) some of the toughest and best designed in the world. It is therefore ironic that design finesse was eventually owned by *DMM*, with their hot and cold forging and this is the second game-changer. Forging, rather than casting, stamping and machining, allowed quite intricate shapes and cross sections to be achieved. Previously, virtually every carabiner had a round bar. Forging allowed the creation of a more T or H-shaped cross section shaving material off of sections it wasn't needed and not only directing more material to the high load areas of the carabiner but giving the rope or connected item a much larger contact area because it was broader (especially on the inside corners adjacent the spine). Thanks to *DMM*'s selfless dive into intricate design and forging processes (which are not necessarily the best way to make money in the 'build it cheap and sell lot's of 'em' marketing philosophy) we now have products that are the most functional works of art ever produced.

SAFER LOCKING MECHANISMS

Towards the end of the last century, practically every climbing company introduced carabiners to their range, often with interesting innovations. *Petzl*'s ball-lock was their version of a secondary locking action to stop accidental opening which had first been pioneered by Denny Moorhouse's *Twistlock* - a sprung barrel that sought to speed up the safety of a manual screwgate. This was to address the traditional need to use two carabiners with gates in opposite orientation in order to reduce the risk of accidental gate opening because a carabiner with an open gate is, even these days, significantly weaker than with the gate closed. *Grivel* (right) expanded on this opposing gates concept by using two gates on the same carabiner and they have at least three variations on this locking-closure method which they consider is faster and safer than a screwgate. We have included them as manual but they are actually auto-closing. Now, the number of different mechanisms is bewildering, as are the different names and number of lock stages allocated by the manufacturer. Onwards from the screwgate and we first met the sprung barrel concept as the *Twistlock* on *Clog* carabiners now a term reserved for double-action opening. Bear in mind that there is a time and a place for each type of gate-locking option. If you're forgetful, a screwgate may not be the best way to go although some, like *Petzl*, put a useful red band to around the gate, above the locking collar, to show that you've forgotten to do it up. *AustriAlpin* also have it on their Pyrium and *Oval*s (pic right). A doble acting Twistlock negates the need to manually lock

CONNECTORS-LOCKING CARABINERS

it (pic right). However, it can oscillate open in certain circumstances but is otherwise a great general purpose option. For more critical applications where the carabiner will be placed and left rather than repeatedly moved, a triple action like *DMM's Durolock* can be useful but is too cumbersome for the vast majority of applications.

A simpler but still very secure double acting lock which requires you to lift and twist before opening is good enough. These are generally visually the same as a single acting twistlock but the *DMM* and *Petzl* ANSI versions above left are bulkier because they are beefed up to meet the 16kN cross gate loading requirement of that US standard and in *Petzl*'s case NFPA too. This equates to less gate clearance than a screwgate or regular twistlock. One other auto or twist-gate of note is *Skylotec*'s '*Double*' series that twists both ways so is well suited to the otherwise often neglected left-handers amongst you. Their short-lived *Pinchlock* has been discontinued.

A more unusual manual mechanism is the *Orca* gate (left) by *Rock Exotica* that looks like an auto collar but requires you to manually rotate the barrel into a locked position that cannot then come undone unless you manually lift and rotate the barrel. This also enables you to lock the gate into a snap-open position for easy initial clipping. We found these excellent for jumper and strandee securing slings where you need quick and easy initial clipping and then a more secure double action lock once the sling was safely in place. *Petzl* also have a version called *Wire-Lock (left)* intended for Via-Ferrata where you can also lock the gate open as a snap until you need it to be more secure. Another model we have used extensively is *Petzl's Ball-Lock* which is effectively a double action that we list as partially manual. Unlock is initiated by pushing in a small recessed ball. Petzl's can be on a triple action whereas on the right is *Edelrid* locking screwgate (so a dbl action) and they also have the *Slidelock* which is very low-bulk requiring you to slide the sprung 'knob' down to open - a double action but again listed here as manual.

SHAPES (our interpretation of shape in the tables is shown in [square brackets]
Even after 50 or 60 years of R&D, there are still 5 basic shapes:
Oval: Symmetrical with the same shape/curves top and bottom. Rope will sit in the middle of the curve and load both sides equally. There are many examples of carabiners described as 'Oval' that are clearly not. *CAMP* for instance has excellent oval models that are indeed oval but also has one called the *Oval Plus* that is a D or Symmetric *not* an oval. raditionally, the parallel sides of an oval carabiner meant that the weaker gate side of a carabiner was carrying the same load as the much stronger spine or major axis. This meant that ovals rarely exceeded 2000kg MBS and even though some have increased to 2500kg, if you see a model (like *Petzl*) that is rated as stronger than normal it will be because there is a subtle asymmetry that diverts more load to the spine.

D symmetrical through the gate - front to back and with angled 'shoulders' that direct rope towards the spine. The two FOIN examples above demonstrate how subtle the differences can be - oval on the left, D on the right. The D-shape was the first to address this load imbalance by using the sloping shoulders to direct the rope to sit directly adjacent the spine and allow that to take the largest part of the load - in the early days this meant 2500kg instead of the oval's 2000kg and this is a significant increase. The drawback is that, relative to size, these were quite narrow carabiners and the gate could only open a short distance before being stopped by the spine. Ways around this included an angled gate opening that misses the spine altogether but you are still left with a relatively small working area with the carabiner in which to organise rope and hardware. Enter the single most important carabiner design, even today, the asymmetric or offset D.....

Offset D or Asymmetric: The spine slopes backwards to accommodate a wider top curve with a narrow bottom curve providing greater working area, wider gate opening and ropes are directed to towards the stronger spine. This is the standard carabiner shape and is often more curved on the top edge than the *DMM* steel example on the right implies.

Asymmetrics come in a myriad of designs and with hundreds of different gate locking options, in steel, stainless steel and alloy, with plain round bar or a shaped cross-section in the case of cold and hot-forged models. It is a fair compromise between bulk and working space with a decent gate opening width. There are a number of unorthodox shapes like *ISC's Gator* (right) *DMM*'s *Rhino* and *Petzl*'s *Vertigo* which have a pronounced waist near the base of te spine to help isolate the rope into the botom 'corner' - these are foavoursd for cowstails and via-ferrata but are none-the-less still assymmetric.

Klettersteig: A larger, more angled asymmetric, originally designed with wide gate opening for clipping ladders and wire in via-ferrata systems but with high strength and vast working area. With these *DMM* examples a larger Offset D would simply be a small Klettersteig but generally, Klettersteigs have the much straighter and longer top section and some are mis-described as HMS.

HMS or **Pear** Large rounded top section and narrow bottom. The top curve is largely Traditionally for use of Munter Hitch for belaying and still used that way but more often with a belay device rather than just the rope. Some 'HMS' models are also morphing into more of an irregular asymmetric as they move away from the pure pear shape curves.

There are two additional shapes that are more recent developments than these other five but have quite specific tasks. The first is the carabiner equivalent of a semi-circular Mailon like *CAMP*'s *Triad, Courant's* more triangular *Moka* or *Petzl*'s *Omni* (pic right). These are intended as harness connections - a removable hard-point for webbing to hardware connections.

They are relatively weak compared to general purpose carabiners at 20kN/2000kg because, like a true oval carabiner, the gate side takes equal load, in fact, in this design the gate is effectively the spine or major axis.

The second shape or series of shapes are the Aero or Paragliding connectors. We haven't included most of these as they are specifically designed to be used for limited flight hours in specific locations on the aircraft or pilot's safety system. However, some of these trapezoids do have similar applications to the semi-circular designs mentioned above in that they make useful harness connectors - usually between a sit harness and a chest harness. They tend to be trapezoidal in shape with a narrower top than bottom like *AustriAlpin's PowerFly* and *Beal's Flat* on the right. The *Flat* has a conventional twistlock but the *PowerFly* has a bespoke 'slide' lock which counteracts the vibration encountered in flight and is perhaps applicable to rescue flight crews? They have good strength at 25kN+ when used with the correct size webbing top and bottom.

BEWARE of CROSS GATE LOADNG

As with any carabiner you should never load them with oversized webbing that will apply more ***outward*** load to the weaker gate. A wide section of thick, industrial style webbing can render any carabiner as only having the strength shown for cross-gate loading. The same will be true of rope diameters that are too large to sit neatly into the carabiners curves. Most regular asymmetric carabiners have a cross-gate strength (the minor axis) of only around a third that of the major axis. If you also take into account that a well used alloy or steel carabiner may also be weaker than it's brand new strength indicates - you could be exposing your system to a significant risk of failure. The industrial standard EN362 has a B and M subclass where B= a minor Axis of at least 7kN and M= a minor axis of at least 15kN. Be aware that there is some correlation between minor axis strength and ***inward loading*** of the gate when pushed against an edge but not always because the forces on an acute edge can be immense. Rock Exotica's Rock D for instance has a minor axis figure of 19kN but only 13kN if pushed inwards. Always assume that pressure on the gate leads to a lower limit than simply the minor axis figure.

BELAY & QUIRKY FEATURES

Finally a quick word about some of the more unusual design elements but first the belay adjuncts that are present on some carabiners. Belay adjuncts are plastic or metal components that restricts the rope or webbing to a specific position at the base of the major axis while providing plenty of room at the top for connection to a device and/or rope wraps on a Munter hitch or similar. These retainers often hinge like the metal clip on the Camp Atom right and the *DMM Rhino* left which has a 'horn' to stop rope migrating around the frame or the carabiner rotating in its connection. Some have a cup-style clip and unclip from the body to swing clear like the *DMM Belay master* left. This one also acts as a second gate closure option making it super safe with

moving rope that can otherwise be a hazard to screwgate or single action twistlocks. The *Rhino* also exhibits a feature we see on a number of models - a slight horn at the top that is intended to prevent the loaded rope, wrapped around the top section, from migrating down the spine.

Petzl's Freino (right) has an additional sprung-gate housing on its spine that makes it perfect for use with a descender where the trail rope can be passed though that gate for extra friction. *AustriAlpin* provide some talking points with their *50:50* on the left and their *Colt* on the right. The *50:50* has a divider that acts both as a gate closure and a means to separate the top and bottom of the carabiner into two distinct work areas. The gate closure uses a spring at the back to hold it in place and allow you to pivot the gate opening so that only one chamber opens at a time. On the right is the *Colt* which is ostensibly a snap gate carabiner with clothes on so hasn't yet been included in our tables. In this case it has a series of plastic shrouds that protect the top inner surface from wire wear on a via-ferrata or wire rope while the two attachments at the bottom act as both isolators for your bottom connection and as a gate lock because you need to depress the right hand 'wing' to enable the gate to open. Lastly the DNA helix as a carabiner. We're not sure if *Kong* are the inventors but they certainly took the lead with this twisted form (left) that rotates attached hardware by around 90 degrees. Pretty strong at 40kN for the major axis but no figure given for the gate open?

IN THE FOLLOWING TABLES:.....

ORIGIN: The main flag refers to the manufacturer's home country, but this may not be where the connector is made. If we know, we show an inset flag.

COST: Prices are for a basic screwgate or the cheapest gate option. **Add around 25-30% for a basic autolock and a further 10-15%** for each extra locking stage but we are gradually adding a highest price in blue, green or magenta on all models with autolocks or special gates. These are a rough guide only, include 20%VAT/10%state tax but these can vary wildly even within the same state due to different tax rates, exchange rates, other taxes etc. **We usually round the price up**. Prices in **burnt orange** are currency conversions only to give you an idea of price but may need import duty, shipping and local taxes added.

WEIGHT: for the individual item in its basic form which is usually screwgate. A second figure may be shown in either green or blue to indicate the heavier weight of a twistlock or triplelock collar and maybe a quad-action.

DIMENSIONS: Height/length by width

MATERIALS: ALU refers to ALUMINIUM or ALUMINUM ALLOY

StSt = Stainless Steel and **Steel** =carbon steel

Some round ar sizes shown but we will be adding bar-profile and whether hot/cold forged later in 2024.

MBS: Minimum Breaking Strength for the **Minor Axis** which is across the width, **Major Axis** which is down the spine of the carabiner and always the strongest direction of load and with the **Gate Open** which is usually the weakest because it allows the carabiner ends to bend away from the spine. Bizarrely, the gate open and minor axis figures are not given for purely industrial

(EN362) models even though the strength (or lack of it) if loaded with the gate open or pushing against an edge are just as important to a worker as to a climber? EN362 requires a major axis of at least 20kN so, by design, they will all have a minimum of 7kN cross gate and gate open strengths.

SHAPE NOSE: The generic form of carabiner as described by the manufacturer. Square brackets [] indicates the true shape as some square-top kletts are described as HMS and D's as ovals.

NOSE is either a traditional Hook or Clean (aka Keylock)

GATE OPENING: is the widest rope or bar that can pass through an open gate. This figure may vary by a mm or two depending on the type of gate closure used - a bulkier barrel or collar (shown in green or blue may allow slightly less room than a slim screwgate. Also beware that for some the gate-opening is NOT the same as the clearance which can be a few mm less.

GATE LOCK: is whether and how the gate is secured.

■ **SNAP** no locking action-gate pushes open on contact

■ **SCREW** is 'Screwgate' requiring the user to manually unwind and wind up the collar on the gate, failure to do so renders it a snap-gate.

■ **MANUAL** is a *locking* barrel that requires the user to manually rotate the collar into a locked or unlocked position like *Rock Exotica*'s *Orca* or *Petzl*'s *Wire-Lock*. It can be fixed in a 'snap' position or rotated further to lock.

■ **AUTO** means a sprung barrel that automatically locks on release of the locking collar. There is a spring action on the barrel which keeps the gate locked until you open the collar by twisting against the spring. **AUTO2**=double action -a quarter turn followed by opening the gate.

■ **AUTO3**= a **third** action is required involving pushing the collar upwards or downwards as well as twisting and opening.

■ Some even have a **FOURTH** action **AUTO4** usually involving a combination of positioning the barrel before rotating and pushing up or down. Note that we are numbering these functions as steps to allow clipping ie. with the gate open.

CAPTIVE EYE: These are additional rather than integral part of the carabiner frame (see separate guide) and often an **OPTIONAL** bar, that ensures that the rope remains at the base of the spine - the strongest part of the carabiner. Once fixed, you will need to thread rope or slings rather than simply clipping through the gate. Some, like ISC supply a captive bar with their carabiners for you to apply as required though they are an inexpensive addition if you need to purchase them separately. Perhaps the most versatile option are the hinged CEs shown opposite and on this *Simond Spider* on a harness belay loop rather than a cowstail.

STANDARDS: Many list the minimum to meet a standard rather than the actual strength. North American minimums below:

Standard	CSA Z259.12-01	CSA Z259.12-11	CSA Z259.12-15	ANSI Z359.1-1992	ANSI/ASSE Z359.12-2009	ANSI/ASSE Z359.12-2015	EN 362:2004	???
Major Axis	5000 lbs (22.2kN)	5000 lbs (22.2kN)	5000 lbs (22.2kN)	5000 lbs (22.2kN)	5000 lbs (22.2kN)	5000 lbs (22.2kN)	4500 lbs (20 kN)	***
Gate Face	220 lbs (1kN)	3600 lbs (16kN)	3600 lbs (16kN)	220 lbs (1kN)	3600 lbs (16kN)	3600 lbs (16kN)	220 lbs (1kN)	N/A
Side Load	350 lbs (1.55kN)	3600 lbs (16kN)	3600 lbs (16kN)	350 lbs (1.55kN)	3600 lbs (16kN)	3600 lbs (16kN)	350 lbs (1.55kN)	N/A
Minor Axis	N/A	3600lbs (16kN)*	3600 lbs (16kN)*	N/A	3600 lbs (16kN) *	3600 lbs (16kN) *	**	***
Transverse	N/A	N/A	3600 lbs (16kN)****	N/A	N/A	3600 lbs (16kN) ****	N/A	N/A

* New Standards require Minor Axis Loading for connectors with non-integral eyes.

** EN: Basic Connector 1575 lbs (7kN); Multi Use Connector 3378 lbs (15kN)

*** NFPA: Light Use... Major Axis gate closed 6069 lbs (23kN); Major Axis gate open 1574 lbs (7kN); Minor Axis 1574 lbs (7kN)
General Use... Major Axis gate closed 8922 lbs (39.7kN); Major Axis gate open 2473 lbs (11kN); Minor Axis 2473 lbs (11kN)

**** New standard require Transverse Loading for connectors with opening one inch or larger

Pensafe (Canada) -chart

[[[[standard]]]]= specific to gate type colour-code

For CE standards there are 2 that are applicable:

EN12275 as a SPORT CONNECTOR/CLIP ■

There are 6 sub-classes for mountaineering/climbing carabiners which we are starting to add to the tables:

TYPE B BASIC CARABINER Universal carabiner in various forms and sizes for use in a fall arrest system.

TYPE H HMS CARABINER Pear-shaped carabiner primarily used for belaying with a Munter hitch (HMS). Usually fitted with a screw or automatic locking mechanism.

TYPE K SPECIAL CARABINER FOR VIA FERRATA Carabiner with automatic locking mechanism used for self-belaying on ladders and "via ferrata". Wide opening of the gate enables use on metal cables, chains and other anchor elements.

TYPE D TERMINATION CARABINER Carabiner intended to anchor loads in a predetermined direction eg. cowstail;

TYPE X OVAL CARABINER Carabiner designed for smaller loads, not designed to give full protection in the event of a fall. Intended for SRT-style applications where no fall is expected.

TYPE Q SCREWED-CLOSURE CARABINER/MAILLON The screw-gate closure is a load-bearing component and has to be fully closed [eg. Maillon or the original Stubai Steel D with screw thread to the end of the nose . Meant for infrequent unclipping.

EN362 as WORK CONNECTOR/CLIP ■

industrial and professional carabiners that are not necessarily stronger than their sport counterparts although the US has specific gate requirements for ANSI to make them safer and easier to use with gloves etc. Anyway....these are the sub-classes for EN362 work carabiners which we will gradually be including in the tables:

CLASS B BASIC CONNECTOR Universal connector intended for use as a fall arrest system component, equipped with a manual or automatic locking mechanism;

CLASS M MULTI-USE CONNECTOR Basic screw link connector that can be loaded along both major and minor axes;

CLASS T TERMINATION CONNECTOR Connector intended to anchor a load in a predetermined direction. eg. cowstail.

CLASS A ANCHOR CONNECTOR Connector designed to be linked directly to a specific type of anchor eg Scaffold hook.

CLASS Q SCREW GATE CONNECTOR The screw-gate closure is a load-bearing component and has to be fully closed [eg. Maillon or the original Stubai Steel D with screw thread to the end of the nose . Meant for infrequent unclipping

Pulley ***Carabiners or is it carabiner pulleys?*** are listed in a separate guide and may adhere to **EN12278** as a PULLEY

NFPA: US fire-rescue 'standard' with G-General for heavy duty (>40kN) and T-Technical for lighter duty but we haven't yet differentiated that in this guide.

ANSI/CSA: are the industrial standards for USA and Canada respectively usually requiring a stronger gate open or minor axis strength. Often available as an option on some European made models -shown in square brackets [ ]

OTHER COLOURS: some colours apply only to specific gate-types, these are shown by being bracketed [] in the colour of the gate[ ] [ ] [ ] [ ], eg. [■] = screwgate carabiner body colour is black with a green coloured screwgate/collar.

UPDATES in 2024

RFID and **Unscrewed-Danger colour** (currently shown in some images) will be additional data rows

MATERIALS will have hot/cold-forge and/or profile added. Taiwanese manufacturers NalHon, Usang &Carabiners IndCo will be vetted and may be added - that's a lot of carabiners!

Images NOT to Scale Various gate closure types shown but data is for screwgate or the most basic locking model (not snap-gate)						
MANUFACTURER	AT-HEIGHT UK	AT-HEIGHT UK	AT-HEIGHT UK	AT-HEIGHT UK	AT-HEIGHT UK	AT-HEIGHT
MODEL VARIANT Product code & data in the table is for the basic model	Alu Oval K15SG1TA1	Steel Oval K10SGDATA	Steel offset Oval K20SGDATA	Steel Mod. HMS K30SGTA	Steel Offset D K40SGDATA	Steel Larg K50SGDAT
ORIGIN						
COST (inc Tax) for Screwgate or base model	£13 $17 €0	£6-11 $8-12 €0	£16 $24 €0	£0 $0 €0	£0 $0 €0	£0 $0 €3
WEIGHT min- max (see gatelock colour-coding)	78-82g 2.75-2.9oz	170g 6oz	200g 7oz	350g 12.4oz	225g 7.9oz	255g 7.9oz
MBS Minor Axis Major Axis Gate Open	7kN 1574lbf 25kN 5620lbf 8kN 1780lbf	7kN 1574lbf 25kN 5620lbf 8kN 1780lbf	716kN 15743596lbf 36kN 8093lbf 8kN 1780lbf	16kN 3596lbf 50kN 11240lbf 20kN 4496lbf	16kN 3596lbf 50kN 11240lbf 12kN 2967lbf	16kN 359 65kN 1461 20kN 449
SHAPE NOSE	Oval [D] Keylock	Oval Hook	Oval [D] Clean	HMS [Klett] Clean	Asymm Clean	D Clean
DIMENSIONS Length x width	111 x 63mm 4.4 x 2.5"	106 x 55mm 4.2 x 2.2"	112 x 63mm 4.4 x 2.5"	130 x 91mm 5.1 x 3.6"	110 x 68mm 4.3 x 2.7"	126 x 72r 5 x 2.8"
GATE OPENING	19mm 0.8"	17 16mm 0.7 0.6"	23 21mm 0.9 0.8"	25 24mm 1 0.9"	23mm 0.9"	32 31mm 1.
GATELOCK- SNAP SCREW MANUAL AUTO2 AUTO3 AUTO4-ACTIONS	■ ■	■ ■ ■	■ ■ ■	■ ■	■ ■ ■	■ ■
CAPTIVE EYE (OPTIONAL ■)	□	-	-	-	□	-
MATERIAL	Alu	STEEL	STEEL	STEEL	STEEL	STEEL
STANDARDS **CE: work=■ sport=■**	CE ■	CE ■	CE ■ ANSI.CSA	CE ■	CE ■	CE ■
OTHER COLOURS	[■ ■] [■ ■]					
NOTES						
WEBSITE	atheightuk.com	atheightuk.com	atheightuk.com	atheightuk.com	atheightuk.com	atheightuk

Images NOT to Scale Various gate closure types shown but data is for screwgate or the most basic locking model (not snap-gate)						
MANUFACTURER	AUSTRIALPIN	AUSTRIALPIN	AUSTRIALPIN	AUSTRIALPIN	AUSTRIALPIN	AUSTRIAL
MODEL VARIANT	Ovalo KA11B..65B..35B3	Pyrium KC..13B..35B..35B3	Rockit KG13A-B-ID	D Asymm SS TN35AK..11AK	Micro NM31AK	Oval Asyr TF11AK..35AK
ORIGIN						
COST (inc Tax) for Screwgate or base model	£1418 $39 €1419	£18 $0 €0	£10 $25 €12	£10 $28 €12	£11 $28 €12	£0 $0 €
WEIGHT min- max (see gatelock colour-coding)	67-70g 2.4-2.5oz	96-101g 3.4-3.6oz	63g 2.2oz	231256g 8.1-9oz	136g 4.8oz	244-260 8.6-9.2
MBS Minor Axis Major Axis Gate Open	10kN 2248lbf 24kN 5395lbf 7kN 1574lbf	10kN 2248lbf 30kN 6744lbf 10kN 2248lbf	10kN 2248lbf 26kN 5845bf 10kN 2248lbf	16kN 3596lbf 40kN 8992lbf 12kN 2967lbf	12kN 2967lbf 33kN 7418lbf 12kN 2967lbf	16kN 359 38kN 854 10kN 224
SHAPE NOSE	Oval [D] Clean	Asymm Clean	Asymm Clean	Asymm Clean	Asymm Clean	Oval [D] C
DIMENSIONS Length x width	105 x 58mm 4.1 x2.3"	128 x 76mm 5 x 3"	98 x 59mm 3.85 x 2.3"	113 x 70mm 4.5 x2.75"	94 x 56mm 3.7 x 2.2"	120 x 62r 4.7 x 2.5
GATE OPENING	19mm 0.8"	28 26mm 1.1 1"	19mm 0.75"	25mm 1"	23mm 0.9"	20mm 0.
GATELOCK- SNAP SCREW MANUAL AUTO2 AUTO3 AUTO4-ACTIONS	■ ■ ■ ■	■ ■ ■	■ ■	■ ■ ■	■	■ ■
CAPTIVE EYE (OPTIONAL ■)	-	-	-	□	-	-
MATERIAL	Alu	Alu	Alu	STAINLESS STEEL	STAINLESS STEEL	STEEL
STANDARDS **CE: work=■ sport=■**	UIAA CE ■B ■B	UIAA CE ■B ■B	UIAA CE ■B ■B	UIAA CE ■M ■B	UIAA CE ■B ■B	UIAA CE ■
OTHER COLOURS	■ ■ ■ [■ ■]	[■] [■] [■ ■]	■	[■] ■	■	
NOTES						
WEBSITE	austrialpin.at	austrialpin.at	austrialpin.at	austrialpin.at	austrialpin.at	austrialpi

CONNECTORS-LOCKING CARABINERS







T UK		AUSTRIALPIN	AUSTRIALPIN	AUSTRIALPIN	AUSTRIALPIN	AUSTRIALPIN	AUSTRIALPIN
ge D A		50:50 KX55..	Eleven KE13B-Y-ID	2800 Evo KW11..35B3	HMS mini KO13B..35B..35B3	HMS RondoSelfie KR13B..35B/43B..35B3..52B-N..S	Micro NM31AK
33		£0 $0 €0	£12 $30 €14	£0 $0 €0	£0 $0 €1218	£1933 $2342 €1537	£10 $28 €12
		90g 3.2oz	64g 2.25oz	97 112g 3.4 4oz	70 74g 2.5 2.6oz	8489g 3 3.1oz	63g 2.2oz
6lbf 12lbf 6lbf		10kN 2248lbf 26kN 5845lbf 8kN 1780lbf	8kN 1780bf 25kN 5620lbf 11kN 00lbf	10kN 2248lbf 28kN 6294lbf 10kN 2248lbf	10kN 2248lbf 22kN 4945lbf 6kN 1348lbf	10kN 2248lbf 23kN 5170lbf 7kN 1574lbf	10kN 2248lbf 26kN 5845lbf 10kN 2248lbf
n		D Clean	Asymm Clean	Klettersteig Clean	HMS [Klett] Clean	HMS Clean	Asymm Clean
mm "		113 x 63mm 4.5 x 2.5"	102 x 58mm 4 x 2.3"	115 x 75mm 4.5 x 3"	100 x 66mm 4 x 2.6"	110 x 72mm 4.3 x 2.8"	94 x 56mm 3.7 x 2.2"
3 1.2"		21mm 0"	19mm 0.8"	32mm 1.25"	23mm 0.9"	26mm 1"	23mm 0.9"
		-	-	-	-		-
		Alu	Alu	Alu	Alu	Alu	Alu
		UIAA CE B B	UIAA CE B B	UIAA CE B H	UIAA CE B H	UIAA CE B H	UIAA CE B B
			Brass gate collar			[Alt Auto2 Slidelock shown] Selfie=Hinged captive eye	
.com		austrialpin.at	austrialpin.at	austrialpin.at	austrialpin.at	austrialpin.at	austrialpin.at








LPIN	AUSTRIALPIN	AUSTRIALPIN	AUSTRIALPIN	BEAL	BEAL	BEAL	BEAL
mm AK3	Oval Asymm XL TP11AK..35AK ..35AK3	Oval Symm TK11AK TF35AK....AK3	Powerfly FP10A	Be Link -	Be Lock A343	Be One -	Be Quick -
0	£0 $0 €0	£0 $0 €0	£0 $0 €0	£1622 $1619 €1622	£1825 $1724 €1825	£16 $17 €16	£12 $14 €13
0g oz	274-291g 9.7-10.3oz	244-260g 8.6-9.2oz	139g 4.9oz	65g 2.25oz	86 100g 3 3.5oz	58g 2oz	48g 1.7oz
6lbf 2lbf 8lbf	16kN 3596lbf 38kN 8542lbf 10kN 2248lbf	16kN 3596lbf 32kN 7193lbf 8kN 1780lbf	- 26kN 5845lbf 10kN 2248lbf	8kN 1780lbf 26kN 5845lbf 7kN 1574lbf	8kN 1780lbf 26kN 5845lbf 8kN 1780lbf	7kN 1574lbf 24kN 5395lbf 7kN 1574lbf	9kN 2023lbf 23kN 5170lbf 8kN 1780lbf
lean	Oval [D] Clean	Oval Clean	Trapezoid Hook	Asymm Clean	HMS Clean	Asymm Clean	Asymm Clean
mm 5"	128 x 70mm 5 x 2.75"	120 x 60mm 4.7 x 2.4"	82 x 63mm 3.2 x 2.5"	108 x 66mm 4.25 x 2.6"	121 x 76mm 4.8 x 3"	0 x 0mm 0 x 0"	103 x 59mm 4.1 x 2.3"
.8"	30mm 1.2"	20mm 0.8"	9mm 0.35"	20mm 0.8"	22mm 0.9"	18mm 0.7"	19mm 0.75"
	-	-	-	-	-	-	-
	STEEL	STEEL	STAINLESS STEEL	Alu	Alu	Alu	Alu
M B	UIAA CE M B	UIAA CE M B	CE B	CE B B	CE B B	CE B	
			Specific to paragliding but can function as harness connector				
n.at	austrialpin.at	austrialpin.at	austrialpin.at	beal-planet.com	beal-planet.com	beal-planet.com	beal-planet.com

Images NOT to Scale Various gate closure types shown but data is for screwgate or the most basic locking model (not snap-gate)						
MANUFACTURER	BEAL	BEAL	BEAL	BEAL	BEAL	BEAL
MODEL VARIANT Product code & data in the table is for the basic model	Be Safe -	Flat Link BMCLFL	O'Light -	Orient Express C85_	Air Smith MOSMITH 3MATIC	O'Smith MOSMITH 3M
ORIGIN						
COST (inc Tax) for Screwgate or base model	£13 $17 €15	£22 $25 €20	£1416 $1619 €1416	£2122 $2324 €2122	£2227 $2530 €2329	£1623 $1825
WEIGHT min- max (see gatelock colour-coding)	65g 2.3oz	81g 2.85oz	82g 2.8oz	81g 2.85oz	251g 8.9oz	179 198 6.3 7oz
MBS Minor Axis Major Axis Gate Open	8kN 1780lbf 28kN 6294lbf 8kN 1780lbf	10kN 2248lbf 20kN 4496lbf 5kN 1124lbf	8kN 1780lbf 22kN 4945lbf 8kN 1780lbf	7kN 1573lbf 25kN 5620lbf 7kN 1573lbf	16kN 1631lbf 52kN 5302lbf 18kN 1835lbf	16kN 00 30kN 674 8kN 1780
SHAPE NOSE	Klettersteig Clean	Trapezoid Clean	Oval Clean	Mod.HMS Clean	Klettersteig Clean	Oval Cle
DIMENSIONS Length x width	100 x 71mm 4 x 2.8"	85 x 70mm 3.4 x 2.75"	111 x 61mm 4.4 x 2.4"	118 x 72mm 4.6 x 2.8"	114 x 73mm 4.5 x 2.9"	107 x 57 4.2 x 2.2
GATE OPENING	20mm 0.8"	16mm 0.6"	17mm 0.7"	18.6mm 0.7"	25 24mm 1 0.95"	17mm 0
GATELOCK- SNAP SCREW MANUAL AUTO2 AUTO3 AUTO4-ACTIONS	■	■		■ ■	■ ■	■
CAPTIVE EYE (OPTIONAL ■)	-	-	-	■	-	-
MATERIAL	Alu	Alu	Alu	Alu	STEEL	STEEL
STANDARDS CE: work=■ sport=■	CE ■B ■H	CE ■B	CE ■B ■B		CE ■B ■B	CE ■B ■
OTHER COLOURS	■ ■ ■			■ ■		
NOTES						
WEBSITE	beal-planet.com	beal-planet.com	beal-planet.com	beal-planet.com	beal-planet.com	beal-planet

Images NOT to Scale Various gate closure types shown but data is for screwgate or the most basic locking model (not snap-gate)						
MANUFACTURER	CAMP	CAMP	CAMP	CAMP	CAMP	CAMP
MODEL VARIANT	Atlas 137304	Atom Belay 292101.	Core Belay 2926 2926	Guide 130903	Guide XL 136303..403..503	HMS Bel 1176
ORIGIN						
COST (inc Tax) for Screwgate or base model	£22 $2226 €24	£14 $1622 €15	£1415 $1520 €1516	£12 $15 €12	£1416 $1825 €1417	£18 $18 €
WEIGHT min- max (see gatelock colour-coding)	87-92g 3.1-3.2oz	82-88/85g 2.9-3.1/3oz	81/84g 2.9/3oz	77g 2.7oz	82-86g 2.9-3oz	75g 2.6oz
MBS Minor Axis Major Axis Gate Open	10kN 2248lbf 40kN 8992lbf 13kN 2922lbf	11kN 2472lbf 2624kN 5395lbf 8kN 1780lbf	11kN 2472lbf 2322kN4945lbf 6kN 1348lbf	10kN 2248lbf 32kN 7193lbf 10kN 2248lbf	9kN 2023lbf 28kN 6294lbf 8kN 1780lbf	10kN 224 23kN 494 7kN 1573
SHAPE NOSE	Asymm Clean	HMS Clean	HMS Clean	Asymm Clean	Asymm Clean	HMS Cle
DIMENSIONS Length x width	120 x 68mm 4.7 x 2.7"	120 x 78mm 4.7 x 3.1"	114 x 77mm 4.4 x 3"	112 x 63mm 4.4 x 2.5"	117 x 75mm 4.6 x 3"	113 x 77 4.4 x 3
GATE OPENING	22mm 0.85"	24mm 0.95"	25mm 1"	18mm 0.71"	23mm 0.9"	23mm 0
GATELOCK- SNAP SCREW MANUAL AUTO2 AUTO3 AUTO4-ACTIONS	■ ■ ■	■ ■ ■	■	■	■ ■ ■	■
CAPTIVE EYE (OPTIONAL ■)	-	■	■	-	-	■
MATERIAL	Alu	Alu	Alu	Alu	Alu	Alu
STANDARDS CE: work=■ sport=■	CE ■■ EAC	CE ■■ EAC	CE ■■ EAC	CE ■■	CE ■■ EAC	CE ■■ E
OTHER COLOURS	-	[■ ■ ■]	[■]	-	[■] [■ ■] [■]	-
NOTES		Belay (shown on HMS) has hinged captive eye	Belay (shown on HMS) has hinged captive eye			Belay (shown) ha captive ey
WEBSITE	camp.it	camp.it	camp.it	camp.it	camp.it	camp.i

CONNECTORS-LOCKING CARABINERS

							
	BLACK DIAMOND	BLACK DIAMOND	BLACK DIAMOND	BLACK DIAMOND	BLACK DIAMOND	BLACK DIAMOND	BLACK DIAMOND
n MATIC	Grid Lock -	Hot Forge -	Lite Forge -	Oval -	Pear Lock -	RockLock -	VaporLock -
€1623	£20 $23 €21	£14 $13 €17	£14 $14 €16	£13 $15 €23	£14 $16 €16	£14 $1523 €16	£16 $17 €15
g z	76g 2.7oz	50g 1.76oz	45g 1.6oz	58g 2oz	78g 2.7oz	85g 3oz	52g 1.8oz
lbf 4lbf 0lbf	7kN 1573lbf 22kN 4945lbf 8kN 1780lbf	8kN 1780lbf 24kN 5395lbf 8kN 1780lbf	8kN 1780lbf 24kN 5395lbf 8kN 1780lbf	9kN 2023lbf 23kN 5170lbf 7kN 1574lbf	8kN 1780lbf 23kN 5170lbf 8kN 1780lbf	8kN 1780lbf 24kN 5395lbf 8kN 1780lbf	8kN 1780lbf 21kN 4720lbf 8kN 1780lbf
an	Mod HMS Clean	Asymm Clean	Asymm Clean	Oval Clean	HMS Clean	Klett Clean	Klett Clean
mm 2"	117 x 68mm 4.6 x 2.7"	95 x 62mm 3.7 x 2.4"	95 x 62mm 3.7 x 2.4"	105 x 62mm 4.1 x 4.5"	106 x 72mm 4.1 x 2.8"	115 x 76mm 4.5 x 3"	100 x 68mm 4 x 2.7"
.7"	21mm 0.8"	18mm 0.7"	15mm 0.6"	18mm 0.71"	22.2mm 0.87"	24mm 0.9"	20mm 0.8"
	-	-	-	-	-	-	-
	Alu	Alu	Alu	Alu	Alu	Alu	Alu
B							
.com	blackdiamondequipment.com	blackdiamondequipment.com	blackdiamondequipment.com	blackdiamondequipment.com	blackdiamondequipment.com	blackdiamondequipment.com	blackdiamondequipment.com
							
	CAMP	CAMP	CAMP	CAMP	CAMP	CAMP	CAMP
ay	Nimbus 2927	Nitro 2928	Nomad 240701	Orbit 292901	Oval Compact 1115	Oval XL 2123 2124 2125	Photon 293101
€16	£12 $14 €11	£22 $17 €24	£17 $20 €17	£12 $12 €13	£14 $13 €15	£14 $1523 €15	£9 $13 €9
	69g 2.4oz	56g 2oz	88g 3.1oz	45g 1.6oz	71g 2.5oz	71-77g 2.5-2.7oz	43g 1.5oz
8lbf 5lbf 3lbf	9kN 2023lbf 21kN 4720lbf 6kN 1348lbf	9kN 2023lbf 22kN 4945lbf 6kN 1348lbf	8kN 3597lbf 25kN 5620lbf 9kN 2023lbf	8kN 1780lbf 24kN 5395lbf 8kN 1789lbf	10kN 2248lbf 24kN 5395lbf 7kN 1573lbf	11kN 2472lbf 28kN 6294lbf 7kN 1573lbf	8kN 1780lbf 23kN 5170lbf 9kN 2023lbf
an	HMS Clean	HMS Clean	Asymm Clean	Asymm Clean	Oval Clean	Oval Clean	Asymm Clean
mm "	101 x 71mm 4 x 2.8"	106 x 75mm 4.2 x 3"	131 x 76mm 5.2 x 3"	98 x 58mm 3.9 x 2.3"	106 x 57mm 4.2 x 2.2"	110 x 62mm 4.3 x 2.4"	102 x 63mm 4 x 2.5"
.9"	22mm 0.85"	24mm 0.95"	20mm 0.8"	17mm 0.7"	15mm 0.6"	20mm 0.8"	17mm 0.7"
	-	-		-	-	-	-
	Alu	Alu	Alu	Alu	Alu	Alu	Alu
AC	CE EAC	CE H	CE	CE EAC	CE EAC	CE EAC	CE B
			-		-		
s hinged e			intended for via ferrata				
t	camp.it	camp.it	camp.it	camp.it	camp.it	camp.it	camp.it

Images NOT to Scale Various gate closure types shown but data/cost is for screwgate or the most basic locking model (not snap-gate)						
MANUFACTURER	CAMP	CAMP	CAMP	CAMP	CAMP	CAMP
MODEL VARIANT Product code & data in the table is for the basic model	D Plus 2145	D Pro 1877 ..01 ..02	Oval Plus 2146	Oval Pro 1455 1878 1456	Oval Standard 0981	Triad 3141 314
ORIGIN						
COST (inc Tax) for Screwgate or base model	£26 $35 €28	£18 $25 €19	£14 $20 €15	£20 $28 €22	£10 $15 €11	£30 $5570
WEIGHT min- max (see gatelock colour-coding)	250g 8.8oz	250-280g 9.5-9.9oz	220g 7.8oz	180-210g 6.4-7.1oz	165g 5.8oz	84/88g 3/3.1oz
MBS Minor Axis Major Axis Gate Open	16kN 3597lbf 41kN 9217lbf 00kN 00lbf	15kN 3372lbf 50kN 11240lbf 18kN 4046lbf	16kN 3597lbf 30kN 6744lbf 00kN 00lbf	15kN 3372lbf 30kN 6744lbf 9kN 2023lbf	7kN 1573lbf 28kN 6294lbf 10kN 2248lbf	16kN 359 *20kN 449 8kN 1780
SHAPE NOSE	Klett Clean	Klett Clean	Oval [D] Clean	Oval Clean	Oval Clean	SemiCirc C
DIMENSIONS Length x width	111 x 68mm 4.4 x 2.7"	114 x 72mm 4.5 x 2.8"	103 x 62mm 4 x 2.4"	109 x 56mm 4.3 x 2.2"	108 x 58mm 4.25 x 2.3"	103 x 73r 4 x 2.9'
GATE OPENING	19mm 0.7"	24mm 0.95"	17mm 0.7"	17mm 0.7"	16mm 0.6"	16mm 0
GATELOCK- SNAP SCREW MANUAL AUTO2 AUTO3 AUTO4-ACTIONS	■	■ ■ ■	■	■ ■ ■	■	■ ■
CAPTIVE EYE (OPTIONAL■)	□	-	-	-	-	-
MATERIAL	STEEL	STEEL	STEEL	STEEL	STEEL	Alu
STANDARDS CE: work=■ sport=■	CE ■ ANSI.CSA	CE ■ ■ EAC	CE ■ ANSI.CSA	CE ■ ■ EAC	CE ■ EAC	CE ■ ■ E
OTHER COLOURS	-	-	-	-	-	-
NOTES						*25kN mid-curv major axis is l
WEBSITE	camp.it	camp.it	camp.it	camp.it	camp.it	camp.it

Images NOT to Scale Various gate closure types shown but data is for screwgate or the most basic locking model (not snap-gate)					
MANUFACTURER	COURANT	COURANT	COURANT	COURANT	COURANT
MODEL VARIANT	AXXIS PPLSMQSY RMQUAXTL	Moka RMQCMOKA	Vector TL RMQK786CA	Victo RMQUS958	Core RMQUS958
ORIGIN					
COST (inc Tax) for Screwgate or base model	£1113 $1517 €1416	£0 $0 €0	£0 $0 €0	£15 $19 €18	£18 $23 €22
WEIGHT min- max (see gatelock colour-coding)	75 82g 2.6 2.9oz	130g 4.6oz	0g 0oz	236g 8.3oz	321g 11.3oz
MBS Minor Axis Major Axis Gate Open	8kN 1780lbf 22kN 4945lbf 7kN 1574lbf	13kN 2922lbf 20kN 2296lbf 00kN 00lbf	0kN 00lbf 22kN 4945lbf 00kN 00lbf	16kN 3596lbf 50kN 11240lbf 12kN 2697lbf	16kN 3596lbf 60kN 13488lbf 16kN 3596lbf
SHAPE NOSE	D Clean	SemiCirc Clean	HMS Clean	Asymm Clean	D Clean
DIMENSIONS Length x width	110 x 62mm 4.3 x 2.4"	113.5 x 75mm 4.5 x 3"	113 x 74mm 4.5 x 3"	110 x 67mm 4.3 x 2.6"	128 x 71mm 5 x 2.8"
GATE OPENING	21 20mm 0.8"	18mm 0.7"	23mm 0.9"	21mm 0.8"	31mm 1.2"
GATELOCK- SNAP SCREW MANUAL AUTO2 AUTO3 AUTO4-ACTIONS	■ ■	■	■	■	■
CAPTIVE EYE (OPTIONAL■)					
MATERIAL	Alu	Alu	Alu	STEEL	STEEL
STANDARDS CE: work=■ sport=■	CE ■	CE ■	CE ■	CE ■	CE ■
OTHER COLOURS	-	-	-	-	-
NOTES					
WEBSITE	mycourant.com	mycourant.com	mycourant.com	mycourant.com	mycourant.com

CONNECTORS-LOCKING CARABINERS

							
		CMC	CMC	CMC	CMC	CMC	CMC
		Protech 300161..182..193	ProSeries 300221..262..233	ProSteel D 300090..092	ProSteel Oval 300093..094	DNA ANSI 300095..096	St SteelANSI 300010..011
€35		£1925 $2328 €2234	£4145 $4955 €4751	£2228 $2735 €2533	£2027 $2634 €2432	£33 $41 €38	£4743 $6055 €5551
		74 79g 2.6 2.8oz	142-150g 5-5.3oz	240 265g 8.2 9.3oz	205 220g 7.2 7.8oz	230 215g 8.1 7.6oz	221 238g 7.8 8.4oz
		9kN 2023lbf 25kN 5620lbf 7kN 1574lbf	1311kN 2922lbf 4440kN 98918992lbf 14kN 3147lbf	1620kN 2697 4496lbf 48kN 10116lbf 17kN 2697lbf	1620kN 2697 4496lbf 40kN 8992lbf 12kN 2697lbf	16kN 3596lbf 40kN 8992lbf 11kN 2472lbf	14kN 3147lbf 42kN 9442lbf 11kN 2472lbf
lean		Asymm Clean	Asymm Clean	Klettersteig Clean	Oval Clean	HMS Clean	Asymm
		112 x 65mm 4.4 x 2.6"	138 x 79mm 5.4 x 3.1"	114 x 76.5mm 4.5 x 3"	110 x 62mm 4.3 x 2.4"	108 x 65mm 4.25 x 2.6"	114 x 69mm 4.5 x 2.7"
.6"		25mm 1"	28mm 1.1"	2625mm 1"	2120mm 0.78"	1819mm 0.7 0.75"	2723mm 1.10.87"
		■ ■ ■	■ ■ ■	■ ■	■ ■	■ ■	■ ■
		□	-	-	-	-	■
		Alu	Alu	12mm STEEL	12mm STEEL	12mm STEEL	12mm STAINLESS STEEL
AC		NFPA	NFPA	NFPA [+ANSI.CSA]	NFPA [+ANSI.CSA]	NFPA-G[+ANSI.CSA]	NFPA-G[+ANSI.CSA]
		[□] [■] [■] [■]	[□][■][■]	-	-	[■]	■ ■
ve when oaded		Captive Eye option on 300153 only	manual-is dbl & snap-gate. XL version=fire/scaff-hook	ANSI,CAN/CSA=AUTOgate only		Twisted frame profile	
t		cmcpro.com	cmcpro.com	cmcpro.com	cmcpro.com	cmcpro.com	cmcpro.com

NB: DMM Gate colour-coding on Grey bodies is Red for Kwiklock/Double/Auto2, Green for Locksafe/Triple/Auto3 and purple for Durolock/auto4

Images NOT to Scale Various gate closure types shown but data is for screwgate or the most basic locking model (not snap-gate)					
MANUFACTURER	DMM	DMM	DMM	DMM	DMM
MODEL VARIANT	AmericanO A343ANSI..347ANSI	Belay Master A872	Boa HMS A902..903ANSI..907ANSI	Ceros A562..563..567	Klettersteig A843..847
ORIGIN					
COST (inc Tax) for Screwgate or base model	£22 23 $29 32 €28 31	£23 $30 €25	£20 24 $23 29 €21 26	£22 26 $26 30 €23 28	£25 $31 €28
WEIGHT min- max (see gatelock colour-coding)	85-102g 3-3.6oz	93g 3.3oz	95-115g 3.4-4oz	86-93g 3-3.3oz	107-109g 3.8-3.9oz
MBS Minor Axis / Major Axis / Gate Open	9kN 2023lbf / 25kN 5620lbf / 7kN 1574lbf	7kN 1574lbf / 25kN 5620lbf / 7kN 1574lbf	12kN 2697lbf / 30kN 6744lbf / 9kN 2023lbf	7kN 1574lbf / 25kN 5620lbf / 7kN 1574lbf	16kN 3596lbf / 30kN 6744lbf / 10kN 2248lbf
SHAPE NOSE	Oval Clean	HMS Clean	HMS Clean	Mod HMS Clean	Klett Clean
DIMENSIONS Length x width	114 x 69 71mm 4.5 x 2.72 8"	115 x 76mm 4.5 x 3"	122 x 83mm 4.8 x 3.3"	121 x 74mm 4.8 x 2.9"	120 x 77mm 4.7 x 3"
GATE OPENING	18-22mm 0.7-0.8"	20mm 0.8"	19-24mm 0.8-1"	19-20mm 0-7-0.8"	21mm 0.8"
GATELOCK- SNAP SCREW MANUAL AUTO2 AUTO3 AUTO4-ACTIONS	■ ■	■	■ ■ ■	■ ■ ■	■ ■
CAPTIVE EYE (OPTIONAL ■)	□	■*	□	■ hinged or □ solid	□
MATERIAL	Alu	Alu	Alu	Alu	Alu
STANDARDS CE: work=■ sport=■	CE ■B(T)■B(T) ANSI.CSA	UIAA CE ■B/T■B/H/T	CE ■B(T)■B/H(T) ANSI.CSA	CE ■B/T■B/H/T	CE ■B(T)■B/K(T) ANSI.CSA
OTHER COLOURS	[■][■] [■■]	■ ■ ■	[■■] [■][■■■]	[■■■] [■][■■]	[■] [■]
NOTES	ANSI version of Kwiklock & Locksafe Add 2or3 £$€	*hinged keeper acts as CE and stops gate opening	ANSI version of Kwiklock & Locksafe Add 2or3 £$€	Shoulder prevents rope slipping & biner rotating	
WEBSITE	dmmwales.com	dmmwales.com	dmmwales.com	dmmwales.com	dmmwales.com

Images NOT to Scale Various gate closure types shown but data is for screwgate or the most basic locking model (not snap-gate)					
MANUFACTURER	DMM	DMM	DMM	DMM	DMM
MODEL VARIANT	PerfectO A592..593..597	Phantom A312_	Phantom HMS A572..573..577	Rhino A542..543..547	Shadow A302..303..307
ORIGIN					
COST (inc Tax) for Screwgate or base model	£16 20 $22 29 €20 26	£15 $21 €18	£19 23 $23 28 €20 25	£17 21 $22 29 €21 28	£17 21 $22 30 €21 28
WEIGHT min- max (see gatelock colour-coding)	60-66g 2.1-2.3oz	42g 1.5oz	56-62g 2-2.2oz	73-81g 2.6-2.9oz	50-58g 1.8-2oz
MBS Minor Axis / Major Axis / Gate Open	7kN 1574lbf / 24kN 4945lbf / 7kN 1574lbf	9kN 2023lbf / 24kN 4945lbf / 9kN 2023lbf	9kN 2023lbf / 25kN 5620lbf / 7kN 1574lbf	9kN 2023lbf / 27kN 6069lbf / 7kN 1574lbf	7kN 1574lbf / 24kN 4945lbf / 9kN 2023lbf
SHAPE NOSE	Oval Clean	Asymm Clean	HMS Clean	Mod HMS Clean	Asymm Clean
DIMENSIONS Length x width	95 x 56mm 3.7 x 2.2"	94 x 54mm 3.7 x 2.1"	96 x 71mm 3.8 x 2.8"	100 x 75mm 4 x 3"	102 x 62mm 4 x 2.4"
GATE OPENING	15-16mm 0.6"	15mm 0.6"	19-20mm 0-7-0.8"	19-20mm 0-7-0.8"	17-18mm 0.6-0.7"
GATELOCK- SNAP SCREW MANUAL AUTO2 AUTO3 AUTO4-ACTIONS	■ ■ ■ ■	■	■ ■ ■	■ ■ ■	■ ■ ■
CAPTIVE EYE (OPTIONAL ■)	□	-	-	-	-
MATERIAL	Alu	Alu	Alu	Alu	Alu
STANDARDS CE: work=■ sport=■	CE ■B(T)■X/B(T)	UIAA CE ■B■B	CE ■B■B/H	CE ■B■B/H	UIAA CE ■B■B
OTHER COLOURS	[[■■■■]][■■] [+■]	■ ■ ■	[■■■■■■][■][■]	■ [■][■][■]	[[■■■■■■][+■][■]
NOTES				Shoulder prevents rope slipping & biner rotating	
WEBSITE	dmmwales.com	dmmwales.com	dmmwales.com	dmmwales.com	dmmwales.com

NB: DMM Gate colour-coding on Grey bodies is Red for Kwiklock/Double/Auto2, Green for Locksafe/Triple/Auto3 and purple for Durolock/auto4

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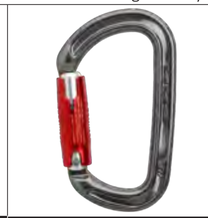
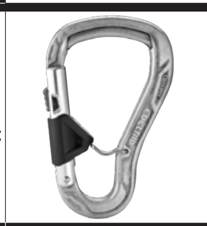
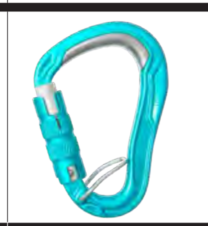
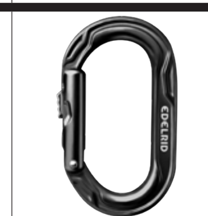
NB: DMM Gate colour-coding on Grey bodies is Red for Kwiklock/Double/Auto2, Green for Locksafe/Triple/Auto3 and purple for Durolock/a

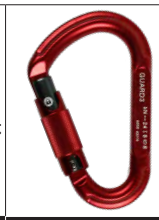
Images NOT to Scale Various gate closure types shown but data is for screwgate or the most basic locking model (not snap-gate)						
MANUFACTURER	DMM	DMM	DMM	DMM	DMM	DMM
MODEL VARIANT Product code & data in the table is for the basic model	Shadow HMS A682..683..687	Ultra D A332..333ANSI..337ANSI	Ultra O A322..323..327..324	Zodiac A822..823..827	10mm Equal D C412..413..417	10mm O C452..453..
ORIGIN	UK	UK	UK	UK	UK	UK
COST (inc Tax) for Screwgate or base model	£1823 $2228 €2025	£1822 $2330 €2026	£1723 $2230 €2026	£1923 $2331 €2127	£15 $20 €17	£1520 $2024
WEIGHT min- max (see gatelock colour-coding)	70-77g 2.5-2.7oz	80-100g 2.8-3.5 oz	68-84g 2.3-3oz	75-79g 2.6-2.8oz	172-190g 6-6.7oz	172-18 6-6.7o
MBS Minor Axis Major Axis Gate Open	9kN 2023lbf 26kN 5845lbf 7kN 1574lbf	12kN 2697lbf 30kN 6744lbf 9kN 2023lbf	12kN 2697lbf 25kN 5620lbf 7kN 1574lbf	12kN 2697lbf 32kN 7193lbf 12kN 2697lbf	9kN 2023lbf 30kN 6744lbf 12kN 2697lbf	12kN 269 30kN 674 10kN 224
SHAPE NOSE	HMS Clean	Asymm Clean	Oval Clean	Asymm Clean	D Hook	Oval Ho
DIMENSIONS Length x width	115 x 77mm 4.5 x 3"	113 x 66mm 4.5 x 2.6"	109 x 63mm 4.3 x 2.4"	114 x 66mm 4.5 x 2.6"	105 x 54mm 4.1 x 2.1"	106 x 56 4.2 x 2.
GATE OPENING	21-22mm 0.8-0.87"	*16-22mm0.6-0.87"	19-22mm 0.75-0.87"	18mm 0.7"	15mm 0.6"	16-18mm 0.
GATELOCK- SNAP SCREW MANUAL AUTO2 AUTO3 AUTO4 ACTIONS	■ ■ ■	■ ■ ■	■ ■ ■ ■	■ ■ ■	■ ■ ■	■ ■
CAPTIVE EYE (OPTIONAL ■)	-	-	□	□	□	-
MATERIAL	Alu	Alu	Alu	Alu	10mm STEEL	10mm ST
STANDARDS CE: work=■ sport=■	CE ■B■B/H	CE ■B■B ANSI.CSA	UIAA CE ■B(T)■B/H(T)	UIAA CE ■B(T)■B(T)	CE ■B(T)■B(T)	CE ■B
OTHER COLOURS	[■ ■ ■ ■] [■] [■ ■]	[■ ■] [■] [■ ■] [■ ■]	[[■ ■ ■ ■]] [+■] [■] [+■]	■ ■ ■		-
NOTES	Lock type shown as Red for dbl, green for triple	ANSI version of Kwiklock & Locksafe Add 2or3 £$€	+all 4 gatelocks = grey (called Titanium by DMM)	Lock type shown as Red for dbl, green for triple		
WEBSITE	dmmwales.com	dmmwales.com	dmmwales.com	dmmwales.com	dmmwales.com	dmmwales

Images NOT to Scale Various gate closure types shown but data is for screwgate or the most basic locking model (not snap-gate)						
MANUFACTURER	EDELRID	EDELRID	EDELRID	EDELRID	EDELRID	EDELRI
MODEL VARIANT	HMS Bulletproof Belay 73757	HMS Bulletproof 738120..130..140..150	HMS Magnum 73799..800..818	HMS Strike 73769..772/3/4..819..770..771	Kiwi 73765..55..67	Oval Power 85204..03..8
ORIGIN	Germany	Germany	Germany	Germany	Germany	Germany
COST (inc Tax) for Screwgate or base model	£33 $40 €35	£2228 $3038 €2836	£1820 $0 €2124	£15 $0 €1723	£17 $0 €22	£20 $0 €
WEIGHT min- max (see gatelock colour-coding)	87g 3oz	82 89g 2.9-3.1oz	82-89g 2.9-3.1oz	55-64g 1.9-2.3oz	59-62g 2-2.2oz	7173g 2.6oz
MBS Minor Axis Major Axis Gate Open	8kN 1798lbf 20kN 4496lbf 7kN 1574lbf	9kN 2023lbf 25kN 5620lbf 9kN 2023lbf	8kN 1798lbf 24kN 5395lbf 9kN 2023lbf	8kN 1798lbf 22kN 4945lbf 7kN 1574lbf	8kN 1798lbf 24kN 5395lbf 10kN 2248lbf	9kN 00l 25kN 00 7kN 157
SHAPE NOSE	HMS Clean	HMS Clean	HMS[Klett] Clean	HMS Clean	Oval Clean	Oval Cle
DIMENSIONS Length x width	117 x 72mm 4.7 x 2.8"	110 x 89mm 4.3 x 3.5"	120 x 76mm 4.7 x 3"	98 x 67mm 3.9 x 2.6"	100 x 60mm 4 x 2.4"	110 x 64 4.3 x 2.
GATE OPENING	26mm 1"	24mm 0.95"	22mm 0.87"	19mm 0.75"	20-17mm 0.8-0.6"	2221mm
GATELOCK- SNAP SCREW MANUAL AUTO2 AUTO3 AUTO4 ACTIONS	■	■ ■	■ ■ ■	■ ■ ■ ■	■ ■ ■	■ ■
CAPTIVE EYE (OPTIONAL ■)	■	■*	-	■*		
MATERIAL	Alu + STEEL insert	Alu + STEEL insert	Alu	Alu	Alu	Alu
STANDARDS CE: work=■ sport=■	CE ■	CE ■■	CE ■■	CE ■	CE ■■	CE ■■
OTHER COLOURS	■	*[■ ■] [■] [■]	[■] [■ ■]	*[■ ■] [■] [■ ■] [■]	[■] [■ ■ ■] [■ ■]	[■ ■] [■
NOTES	slider gate only	*+C/E available on S/G[■] & Triple[■].*+eco		*+C/E available on S/G[■] Slider[■] & Triple[■]	Slidelock (shown)=manu-ally opened double action	[Permalock sho double acti
WEBSITE	edelrid.com	edelrid.com	edelrid.com	edelrid.com	edelrid.com	edelrid.c

uto4

	DMM	DMM	DMM	EDELRID	EDELRID	EDELRID	EDELRID
val 457	12mm Offset D C812..813ANSI..817ANSI	12mm Klettersteig C842..843ANSI..847ANSI	12mm Boa C852..853..857	Bulletproof 73 811..*786...	Classic D 3000 85206..7	Foras 85208	HMS Bullet 738160..7600..8170
€1727	£1823 $2328 €2025	£1823 $2328 €2025	£1823 $2328 €2025	£14 $22 €16	£1320 $2124 €1522	£25 $0 €0	£1825 $0 €2129
9g z	232-262g 8.2-9.2oz	266-295g 9.4-10.4oz	262-277g 9.2-9.8oz	60g 2.1oz	75g 2.7oz	51g 1.8oz	74 79g 2.6-2.8oz
7lbf 4lbf 8lbf	12kN 2697lbf 45kN 10116lbf 12kN 2697lbf	12kN 2697lbf 45kN 10116lbf 12kN 2697lbf	10kN 2248lbf 40kN 8892lbf 12kN 2697lbf	10kN 2048lbf 27kN 60569lbf 8kN 1798lbf	8kN 1798lbf 30kN 6744lbf 10kN 2248lbf	- 23kN 5170lbf -	10kN 2248lbf 26kN 5845lbf 9kN 2023lbf
ok	Asymm Hook	Klettersteig Hook	HMS Hook	HMS Clean	Asymm Clean	Trapezoid Clean	Asymm Clean
mm 2"	111 x 62mm 4.4 x 2.2"	126 x 76mm 5 x 3"	123 x 76mm 4.8 x 3"	100 x 60mm 4 x 2.4"	110 x 65mm 4.3 x 2.6"	81 x 48mm 3.2 x 1.9"	110 x 75mm 4.3 x 3"
6-0.7"	15-18mm 0.6-0.7"	21-24mm 0.8-0.95"	24mm 0.95"	24mm 0.95"	20mm 0.8"	15mm 0.6"	23mm 0.9"
			-				-
EEL	12mm STEEL	12mm STEEL	12mm STEEL	Alu + STEEL insert	Alu	Alu	Alu
	CE B(T)B(T) ANSI.CSA	CE B/(KT)B/(K) ANSI.SA	CE BB/H(K)	CE	CE	CE	CE
	-	-	-			-	*[][][]
	ANSI version of Kwiklock & Locksafe Add 2or3 £$€	ANSI version of Kwiklock & Locksafe Add 2or3 £$€		*eco version=no anodizing		Intended for Paragliding <25mm webbing	*Colours +eco version= silver with no anodizing
s.com	dmmwales.com	dmmwales.com	dmmwales.com	edelrid.com	edelrid.com	edelrid.com	edelrid.com

	EDELRID	EDELRID	EDELRID	EDELRID	EDELRID	EDELRID	EDELRID
r 2500 8284	Pure 73779 ..8/8	HMS Bruce Steel 73805....07	Oval Steel 88248.	Oval PowerSteelANSI 85209 85210	Steel D 882450	Steel Strong 882470	HMS Steel 882910..20
€27	£11 $0 €14	£0 $0 €0	£0 $0 €10	£0 $0 €18	£0 $0 €0	£0 $0 €0	£0 $0 €0
g	50 55g 1.8 1.9oz	140 142g 4.9 5oz	176g 6.2oz	168 240g 5.9 8.5oz	190g 6.7oz	267g 9.4oz	236 250g 8.3 8.8oz
bf lbf 4lbf	8kN 1798lbf 22kN 4945lbf 8kN 1798lbf	8kN 1798lbf 28kN 6294lbf 10kN 2248lbf	15kN 3372lbf 30kN 6744lbf 10kN 2248lbf	10kN 2248lbf 30kN 6744lbf 15kN 3372lbf	15kN 3372lbf 50kN 11240lbf 15kN 3372lbf	15kN 3372lbf 50kN 11240lbf 20kN 4496lbf	15kN 3372lbf 40kN 8892lbf 15kN 3372lbf
an	Asymm Clean	Trapezoid Clean	Oval [D]Clean	Oval Clean	Asymm Clean	Klett Clean	HMS Clean
mm 4"	97 x 60mm 3.8 x 2.4"	107 x 72mm 4.2 x 2.8"	108 x 59mm 4.25 x 2.3"	110 x 64mm 4.3 x 2.4"	118 x 64mm 4.7 x 2.4"	118 x 77mm 4.7 x 3"	110 x 74mm 4.3 x 2.9"
0.8"	18mm 0.7"	22mm 0.87"	23mm 0.9"	19mm 0.75"	20mm 0.8"	24mm 0.95"	23mm 0.9"
	Alu	STEEL	STEEL	STEEL	STEEL	STEEL	STEEL
	CE	CE	CE	ANSI CE	CE	CE	CE
] []	[][][][]	[]	-	[]	-	-	-
wn is a on]	[Slider=double action]						
om	edelrid.com	edelrid.com	edelrid.com	edelrid.com	edelrid.com	edelrid.com	edelrid.com

Images NOT to Scale Various gate closure types shown but data is for screwgate or the most basic locking model (not snap-gate)						
MANUFACTURER	EDELWEISS	EDELWEISS	EDELWEISS	EDELWEISS	EDELWEISS	EDELWE
MODEL VARIANT Product code & data in the table is for the basic model	Guard/Guard 3 Mguard Mguard3	Guard O/O3 MguardO MO3	Link -	Jet -	Quadro mquad	Z101/2 MZ101..2
ORIGIN						
COST (inc Tax) for Screwgate or base model	£25 $32 €26	£0 $0 €0	£0 $0 €0	£8 $14 €9	£22 $25 €20	£0 $0 €
WEIGHT min- max (see gatelock colour-coding)	86 100g 3 3.5oz	73 81g 2.6 2.9oz	66g 2.3oz	65g 2.3oz	80g 2.85oz	179 198 6.3 7o
MBS Minor Axis Major Axis Gate Open	8kN 1798lbf 24kN 5395lbf 8kN 1798lbf	8kN 1798lbf 21kN 4720lbf 6kN 1348lbf	8kN 1798lbf 28kN 6294lbf 8kN 1786lbf	8kN 1798lbf 24kN 5395lbf 7kN 1574lbf	10kN 2248lbf 20kN 4496lbf 5kN 1124lbf	16kN 359 30kN 674 8kN 179
SHAPE NOSE	HMS Clean	Oval Clean	Klett Clean	Asymm Clean	Trapezoid Clean	Oval Cle
DIMENSIONS length x width	120 x 76mm 4.7 x 3"	110 x 61mm 4.3 x 2.4"	105 x 66mm 4.1 x 2.6"	107 x 66mm 4.2 x 2.6"	85 x 70mm 3.4 x 2.75"	107 x 57 4.2 x 2.
GATE OPENING	22mm 0.86"	18 16mm 0.7 0.6"	20mm 0.8"	20mm 0.8"	15mm 0.6"	17mm 0
GATELOCK- SNAP SCREW MANUAL AUTO2 AUTO3 AUTO4-ACTIONS	■ ■	■ ■	■ ■ ■	■	■	■ ■
CAPTIVE EYE (OPTIONAL ■)	-	-	-	-	-	-
MATERIAL	Alu	Alu	Alu	Alu	Alu	STEEL
STANDARDS **CE: work=■ sport=■**	UIAA CE ■■	CE ■B■X/B	UIAA CE■B■B	UIAA CE■B■B	CE ■B	CE ■B
OTHER COLOURS	■	■	-	-	-	-
NOTES						
WEBSITE	edelweiss-ropes.com	edelweiss-ropes.com	edelweiss-ropes.com	edelweiss-ropes.com	edelweiss-ropes.com	edelweiss-rop

Images NOT to Scale Various gate closure types shown but data is for screwgate or the most basic locking model (not snap-gate)						
MANUFACTURER	FIXE CLIMBING	FIXE CLIMBING	FIXE CLIMBING	FIXE CLIMBING	FOIN/HONEYWELL	FOIN/HONE
MODEL VARIANT	Rock Stone K92400-C20	Symmetric Screw 672 673 K50065	Oval3 568 T C20	Big Screw K92400-C20	Oval 04240	D 04247 / CS
ORIGIN						
COST (inc Tax) for Screwgate or base model	£0 $0 €0	£0 $0 €0	£0 $0 €0	£0 $0 €0	£11 $15 €13	£26 $31
WEIGHT min- max (see gatelock colour-coding)	80g 2.8oz	7682g 2.72.9oz	0g 0oz	260g 9.2oz	165g 5.8oz	190g 6.7oz
MBS Minor Axis Major Axis Gate Open	7kN 1573lbf 23kN 5170lbf 7kN 1573lbf	7kN 1573lbf 22kN 4945lbf 7kN 1573lbf	6kN 1348lbf 23kN 5170lbf 6kN 1348lbf	9kN 2023lbf 41kN 9217lbf 12kN 2697lbf	- 22kN 4945lbf 00kN 00lbf	0kN 00l 25kN 494 00kN 00
SHAPE NOSE	Asymm Clean	D Clean	Oval Hook	Klettersteig	Oval Hook	D Hoo
DIMENSIONS Length x width	105 x 60mm 0 x 0"	110 x 59mm 0 x 0"	106 x 59mm 0 x 0"	124 x 77mm 0 x 0"	104 x 57mm 4.1 x 2.2"	104 x 58 4.1 x 2.
GATE OPENING	2019mm 0"	2018mm 0"	1816mm 0"	27mm 0"	17mm 0.7"	18mm 0
GATELOCK- SNAP SCREW MANUAL AUTO2 AUTO3 AUTO4-ACTIONS	■ ■	■ ■ ■ ■	■ ■	■	■	■ ■
CAPTIVE EYE (OPTIONAL ■)	■	-	-	-	-	□
MATERIAL	10mm Alu	Alu	10mm STEEL	STEEL	10mm STEEL	10mm ST
STANDARDS **CE: work=■ sport=■**	UIAA CE ■■	UIAA CE ■■	CE ■■	CE ■■	CE ■	CE ■
OTHER COLOURS	[■]	[■] [■]	-	-	-	-
NOTES						
WEBSITE	fixeclimbing.com	fixeclimbing.com	fixeclimbing.com	fixeclimbing.com	??	??

CONNECTORS-LOCKING CARABINERS

					expansion column		
							
ISS	EDELWEISS	EYOLF	EYOLF	EYOLF		FIXE CLIMBING	FIXE CLIMBING
/3 ..3	Z500/503 mz500..503	Mod D -	General D3 54640	Oval3 INSN65R		Lotus Stone 083 082 R00192 ..193	Rock Screw 526
€0	£0 $0 €0	£18 $23 €21	£20 $25 €23	£16 $20 €19		£0 $0 €0	£0 $0 €0
8g z	251 270g 8.8 9.5oz	80g 2.8oz	289g 10.2oz	250g 8.8oz		0g 0oz	86g 3oz
6lbf 4lbf 8lbf	16kN 3596lbf 52kN 6744lbf 18kN 4046lbf	8kN 1798lbf 30kN 6744lbf 10kN 2248lbf	16kN 3596lbf 52kN 11690lbf 18kN 4046lbf	16kN 3596lbf 30kN 6744lbf 8kN 1798lbf		7kN 1573lbf 25kN 5620lbf 7kN 1573lbf	7kN 1573lbf 23kN 00lbf 7kN 1573lbf
ean	D [Klett] Clean	Asymm Clean	Asymm Clean	Oval Clean		HMS Clean	Asymm Hook
mm 2"	115 x 73mm 4.5 x 2.9"	110 x 62mm 4.3 x 2.4"	114 x 73mm 4.5 x 2.9"	113 x 61mm 4 x 2.1"		113 x 75mm 0 x 0"	105 x 60mm 0 x 0"
.7"	25 24mm 1 0.95"	19mm 0.75"	23mm 0.9"	16mm 0.6"		2322mm 0"	2019mm 0"
	-	-	-	-			
	STEEL	Alu	STEEL	STEEL		12mm Alu	10mm Alu
	CE B	UIAA CE B	UIAA CE ANSI, CSA	UIAA CE ANSI, CSA		UIAA CE	UIAA CE
	-	-	-	-			
						Hinged Captive eye=SG-only	Hinged Captive eye=SG-only
es.com	edelweiss-ropes.com	eyolf.ca	eyolf.ca	eyolf.ca		fixeclimbing.com	fixeclimbing.com

							
YWELL	FOIN/HONEYWELL	FUSION CLIMB	FUSION CLIMB	FUSION CLIMB	FUSION CLIMB	FUSION CLIMB	FUSION CLIMB
20	Oval 04244	Eureka FP-8105..T	Spiridon 2P	Supreme II FP-9318-3	Swift Hi-Strength FP-8106..SG..2T	Vapor III FP-8122-3	Mayan FT9103-SG
€25	£10 $14 €12	£1115 $1418 €1317	£15 $18 €17	£11 $14 €13	£1112 $1415 €1314	£10 $12 €11	£15 $19 €18
	190g 6.7oz	113g 4oz	85g 3oz	85g 3oz	85g 3oz	77g 2.7oz	170g 6oz
bf 5lbf lbf	0kN 00lbf 22kN 4945lbf 00kN 00lbf	11kN 2472lbf 28kN 6294lbf 8kN 1798lbf	8kN 1798lbf 27kN 6056lbf 9kN 2023lbf	9kN 2023lbf 25kN 5620lbf 7kN 1574lbf	7kN 1574lbf 2325kN 51705620lbf 7kN 1574lbf	7kN 1574lbf 25kN 5620lbf 8kN 1798lbf	8kN 1798lbf 30kN 6744lbf 8kN 1798lbf
k	D Hook	HMS Hook	Asymm Hook	D Clean	Asymm Hook	Asymm Clean	Asymm Hook
mm 3"	104 x 57mm 4.1 x 2.2"	121 x 80mm 4.7 x 3.1"	116 x 75mm 4.6 x 3"	114 x 63.5mm 4.5 x 2.5"	110 x 67mm 4.3 x 2.7"	101 x 60mm 4 x 2.3"	115 x 66mm 4.5 x 2.6"
.7"	19mm 0.75"	25mm 1"	25.4mm 1"	23mm 0.9"	20.319mm 0.80.75"	19mm 0.75"	22mm 0.87"
		-	-	-	-	-	-
EEL	10mm STEEL	Alu	Alu	Alu	Alu	Alu	Steel
	CE	CE		CE	CE ANSI	CE	CE
	-	-	-			-	-
	??	fusionclimb.com	fusionclimb.com	fusionclimb.com	fusionclimb.com	fusionclimb.com	fusionclimb.com

Images NOT to Scale Various gate closure types shown but data is for screwgate or the most basic locking model (not snap-gate)						
MANUFACTURER	FUSION CLIMB	FUSION CLIMB	FUSION CLIMB	FUSION CLIMB	GRIVEL	GRIVE
MODEL VARIANT Product code & data in the table is for the basic model	Ovatti FP-9104..9108	Tacoma FP-9005	Tacoma Xtra Duty FP9005	Tahoe -	Alpha RSK1N	Clepsydr RSK10GS
ORIGIN						
COST (inc Tax) for Screwgate or base model	£915 $1119 €1018	£23 $29 €27	£27 $34 €32	£18 $22 €21	£12 $16 €14	£19 $23
WEIGHT min- max (see gatelock colour-coding)	170 199g 6 7oz	227g 8oz	317g 11.2oz	255g 9oz	56g 2oz	67g 2.4oz
MBS Minor Axis Major Axis Gate Open	8kN 1798lbf 25kN 5620lbf 8kN 1798lbf	7kN 3596lbf 50kN 11240lbf 7kN 2023lbf	16kN 3596lbf 60kN 13488lbf 9kN 2023lbf	16kN 3596lbf 60kN 13488lbf 7kN 1574lbf	8kN 1798lbf 24kN 5395lbf 8kN 1798lbf	8kN 1798 20kN 449 9kN 202
SHAPE NOSE	Oval Hook	Asymm Clean	Klettersteig Clean	Asymm Clean	Asym Clean	Asymm C
DIMENSIONS Length x width	106 x 58.3mm 4.1 x 2.3"	116 x77mm 4.5 x 3.1"	120 x 82.5mm 4.7 x 3.2"	137 x 73.6mm 4.55 x 2.9"	99 x 60mm 4 x 2.4"	97 x 66 3.8 x 2.
GATE OPENING	17mm 0.67"	25.4mm 1"	25.4mm 1"	35mm 1.38"	15mm 0.6"	22mm 0.
GATELOCK- SNAP SCREW MANUAL AUTO2 AUTO3 AUTO4 ACTIONS	■ ■	■ ■	■ ■	■	■	■
CAPTIVE EYE (OPTIONAL ■)	□	-	□	-		
MATERIAL	Steel	Steel	Steel	Steel	Alu	Alu
STANDARDS CE: work=■ sport=■	CE ■	CE ■B■ ANSI	CE ■ ANSI	CE ■B	UIAA CE ■B	UIAA CE
OTHER COLOURS	■	-	[■]	■	-	-
NOTES				Black=$25		Shoulder preven slipping & biner
WEBSITE	fusionclimb.com	fusionclimb.com	fusionclimb.com	fusionclimb.com	grivel.com	grivel.co

Images NOT to Scale Various gate closure types shown but data is for screwgate or the most basic locking model (not snap-gate)						
MANUFACTURER	GRIVEL	GRIVEL	HARKIE	HARKIE	HUSQVARNA	HUSQVA
MODEL VARIANT	Sym RSK9T/	Wide RSSK18N..18T	HMS Tree H2411.	O H2415..	D 2P	HMS 2P
ORIGIN						
COST (inc Tax) for Screwgate or base model	£18 $24 €22	£1920 $2527 €2324	£24 $32 €26	£20 $25 €23	£24 $32 €26	£24 $32
WEIGHT min- max (see gatelock colour-coding)	82g 2.9oz	80 85g 2.9 3oz	0g 0oz	0g 0oz	0g 0oz	91g 3.2oz
MBS Minor Axis Major Axis Gate Open	8kN 1798lbf 24kN 5395lbf 8kN 1798lbf	8kN 1798lbf 27kN 6056lbf 9kN 2023lbf	9kN 2023lbf 29kN 6519lbf 8kN 1798lbf	7kN 1574lbf 20kN 4496lbf 7kN 1574lbf	0kN 00lbf 30kN 00lbf 00kN 00lbf	0kN 00 23kN 00 00kN 00
SHAPE NOSE	Oval Clean	Asymm Clean	HMS Clean	Oval Clean	Asymm Clean	HMS Cle
DIMENSIONS Length x width	111 x 60mm 4.4 x 2.4"	120 x 78mm 4.7 x 3"	0 x 0mm 0 x 0"	0 x 0mm 0 x 0	0 x 0mm 0 x 0	112 x 73 4.4 x 2.
GATE OPENING	19mm 0.7"	22mm 0.87"	22mm 0.87"	19mm 0.7"	0mm 0"	0mm 0
GATELOCK- SNAP SCREW MANUAL AUTO2 AUTO3 AUTO4 ACTIONS	■	■ ■	■	■	■	■
CAPTIVE EYE (OPTIONAL ■)						
MATERIAL	Alu	Alu	Alu	Alu	Alu	Alu
STANDARDS CE: work=■ sport=■	UIAA CE ■X	UIAA CE ■B	CE ■B ■H	CE ■■	CE ■B	CE ■B
OTHER COLOURS	[■]	[■]	■■■	■■■	-	-
NOTES	black=+1-2£$€	black=+1-2£$€				
WEBSITE	grivel.com	grivel.com	harkieglobal.com	harkieglobal.com	husqvarna.com	husqvarna

CONNECTORS-LOCKING CARABINERS

							
	GRIVEL	GRIVEL	GRIVEL	GRIVEL	GRIVEL	GRIVEL	GRIVEL
a S	Clepsydra L RSK10G	Delta RSK5N	Lambda RSK7G	Mega RSK6N.. K6G	Plume RSK3N	Sigma RSK8G	Tau RSK12L
€21	£19 $23 €21	£12 $16 €14	£16 $21 €19	£1317 $1825 €1620	£1215 $2026 €1419	£15 $19 €18	£15 $20 €18
	89g 3.1oz	66g 2.3oz	69g 2.4oz	81 83g 2.85 2.9oz	37 42g 1.3 1.5oz	57g 2oz	55g 1.9oz
8lbf 6lbf 3lbf	9kN 2023lbf 22kN 4945lbf 8kN 1798lbf	8kN 1798lbf 25kN 5620lbf 8kN 1798lbf	11kN 2472lbf 30kN 6744lbf 9kN 2023lbf	10kN 2248lbf 2127kN 47206056lbf 610kN 13482248lbf	7kN 1574lbf 20kN 4496lbf 7kN 1574lbf	9kN 2023lbf 30kN 6744lbf 9kN 2023lbf	10kN2248lbf 30kN 6744lbf 9kN 2023lbf
lean	Asymm Clean	Klett Clean	Asymm Clean	Asymm Clean	Asymm Clean	Asymm Clean	Asymm Clean
mm 6"	117 x 73mm 4.6 x 2.9"	100 x 70mm 4 x 2.8"	98 x 70mm 3.9 x 2.8"	117102 x 71mm 4.6 x 2.8"	90 x 5452mm 3.5 x 2.12"	101 x 62mm 3.9 x 2.4"	98 x 60mm 3.8 x 2.4"
.87"	24mm 0.94"	20mm 0.8"	24mm 0.94"	2120mm 0.8"	19mm 0.7"	23mm 0.9"	20mm 0.8"
	■	■ ■	■	■ ■	■ ■	■	■
	Alu	Alu	Alu	Alu	Alu	Alu	Alu
■■T	UIAA CE ■■H	UIAA CE ■B	UIAA CE ■ ■H	UIAA [+CE ■] ■H	UIAA CE ■B	UIAA CE ■ ■B	UIAA CE ■B
	-	-	-	-	-	-	-
nts rope rotating					Special is a dbl wire lock- see Tau and Mega pics		
om	grivel.com	grivel.com	grivel.com	grivel.com	grivel.com	grivel.com	grivel.com
							
RNA	HUSQVARNA	IRUDEK	IRUDEK	IRUDEK	IRUDEK	IRUDEK	IRUDEK
	Oval 2P	Silverlight Oval 936	Silverlight (Supersafe) 990 1131 1135	Blue 991 992 993	Steelsafe 981 981	Steelsafe 982 982 989	Steelsafe Inox 308
€26	£24 $32 €28	£0 $0 €0	£15 $0 €0	£15 $20 €18	£4 $6 €6	£1112 $1415 €1314	£0 $0 €0
	86g 3oz	0g 0oz	79g 2.8oz	74 84g 2.6 3oz	0g 0oz	280g 9.9oz	0g 0oz
bf lbf lbf	0kN 00lbf 23kN 00lbf 00kN 00lbf	0kN 00lbf 00kN 00lbf 00kN 00lbf	0kN 00lbf 23kN 00lbf 00kN 00lbf	0kN 00lbf 23kN 00lbf 00kN 00lbf	0kN 00lbf 00kN 00lbf 00kN 00lbf	0kN 00lbf 45kN 00lbf 00kN 00lbf	0kN 00lbf 00kN 00lbf 00kN 00lbf
ean	Oval Clean	Asymm	Asymm Hook	Asymm Clean	Asymm Hook	Asymm Hook	Asymm Clean
mm 9"	110 x 69mm 0 x 0"	0 x 0mm 0 x 0"	110 x 70mm 4.3 x 2.75"	111 x 68.7mm 4.4 x 2.7"	0 x 0mm 0 x 0"	0 x 0mm 0 x 0"	0 x 0mm 0 x 0"
0"	19mm 0.7"	0mm 0"	22mm 0.87"	22mm 0.87"	18mm 0.7"	22mm 0.87"	0mm 0"
	■	■	■	■	■	■	■
	Alu	Alu	Alu	Alu	10mm STEEL	12mm STEEL	12mm STEEL
	CE ■B	?	CE ■	CE ■B	?	CE ■	?
	-	-	-	-	-	-	-
.com	husqvarna.com	irudek.com	irudek.com	irudek.com	irudek.com	irudek.com	irudek.com

Images NOT to Scale Various gate closure types shown but data is for screwgate or the most basic locking model (not snap-gate)						
MANUFACTURER	ISC	ISC	ISC	ISC	ISC	ISC
MODEL VARIANT Product code & data in the table is for the basic model	Compact Oval KL120	Gator KH453	Gecko KH452	HMS KH204	Link KL218	Mini HM KH214
ORIGIN						
COST (inc Tax) for Screwgate or base model	£20 $25 €23	£23 $30 €28	£23 $30 €28	£21 $27 €24	£0 $0 €0	£22 $29
WEIGHT min- max (see gatelock colour-coding)	63g 2.2oz	47g 1.7oz	86g 3oz	93g 3.3oz	85g 3oz	98g 3.5oz
MBS Minor Axis Major Axis Gate Open	9kN 2023lbf 24kN 5395lbf 7kN 1573lbf	n/a 25kN 5620lbf n/a	n/a 30kN 6744lbf n/a	n/a 27kN 6070lbf n/a	n/a 25kN 5560lbf n/a	n/a 27kN 607 n/a
SHAPE NOSE	Oval Clean	Assym Clean	Assym Clean	HMS Clean	Trapezoid Clean	HMS Cle
DIMENSIONS ht x w x depth	95 x 56mm 3.7 x 2.2"	105 x 65mm 4.1 x 2.5"	115 x 75mm 4.5 x 3"	105 x 65mm 4.1 x 2.5"	113 x 61mm 4.5 x 2.4"	102 x 74 4 x 3"
GATE OPENING	16mm 0.62"	15mm 0.6"	21mm 0.9"	22mm 0.9"	15mm 0.6"	19mm 0.
GATELOCK- SNAP SCREW MANUAL AUTO2 AUTO3 AUTO4 ACTIONS	■ ■ ■ ■	■ ■ ■ ■	■ ■ ■ ■	■ ■ ■ ■	■ ■ ■ ■	■ ■
CAPTIVE EYE (OPTIONAL ■)	□				■	
MATERIAL	Alu	Alu	Alu	Alu	Alu	Alu
STANDARDS **CE: work=■ sport=■**	UKCA CE■B/T■B/X/T	UKCA CE ■	UKCA CE ■	UKCA CE ■	UKCA CE ■	UKCA CE
OTHER COLOURS	[■][■][■][■]	[■][■][■][■]	[■][■][■][■]	[■][■][■][■]	[■][■][■][■]	[■][■]
NOTES	New for 2024					
WEBSITE	iscwales.com	iscwales.com	iscwales.com	iscwales.com	iscwales.com	iscwales.c

Images NOT to Scale Various gate closure types shown but data is for screwgate or the most basic locking model (not snap-gate)						
MANUFACTURER	ISC	ISC	ISC	ISC	ISC	ISC
MODEL VARIANT	HMS KH212	Klettersteig ANSI KL202	Klettersteig StSt KH202	Offset D KL200	Offset D StSt ANSI KH200SG4.TL2.SS2.SS9/TLP11	Oval St KL/KH31
ORIGIN						
COST (inc Tax) for Screwgate or base model	£20 $25 €23	£16 $20 €19	£29 $37 €34	£15 $21 €17	£29 $37 €34	£11 $15
WEIGHT min- max (see gatelock colour-coding)	276g 9.7oz	250g 8.8oz	269g 9.5oz	220g 7.7oz	255g 9oz	188121 6.74.3
MBS Minor Axis Major Axis Gate Open	n/a 50kN 11240lbf n/a	16kN 3596lbf 45kN 11240lbf 12kN 2967lbf	n/a 35kN7868lbf n/a	16kN 3596lbf 50kN 11240lbf 12kN 00lbf	n/a 35kN 7868lbf n/a	n/a 2530kN 5620 n/a
SHAPE NOSE	Asymm Clean	Klett Clean	Klett Hook	Asymm Clean	Asymm Hook	Oval Hook
DIMENSIONS ht x w x depth	125 x 80mm 4.9 x 3.2"	125 x 81mm 5 x 3.2"	125 x 81mm 5 x 3.2"	113 x 61.5mm 4.5 x 2.4"	113 x 61.5mm 4.5 x 2.4"	106 x 58 4.2 x 2.
GATE OPENING	23mm 0.9"	26mm 1"	22mm 0.87"	20mm 0.7"	20mm 0.7"	16mm 0
GATELOCK- SNAP SCREW MANUAL AUTO2 AUTO3 AUTO4 ACTIONS	■ ■ ■ ■	■ ■ ■ [■ ■]	■ ■	■ ■ ■	■ ■ ■	■ [■
CAPTIVE EYE (OPTIONAL ■)		□	□	□	□	
MATERIAL	STEEL	STEEL	STAINLESS STEEL	STEEL	12mm STAINLESS STEEL	STEEL
STANDARDS **CE: work=■ sport=■**	UKCA CE ■ ANSI	UKCA CE■B/T■B/T [ANSI]	UKCA CE ■ ANSI	UKCA CE■B/T■B/T*	UKCA CE ■ [ANSI]	UKCA CE
OTHER COLOURS	-	-	-	-	-	-
NOTES				*T=Captive eye version		
WEBSITE	iscwales.com	iscwales.com	iscwales.com	iscwales.com	iscwales.com	iscwales.c

CONNECTORS-LOCKING CARABINERS

							
	ISC	ISC	ISC	ISC	ISC	ISC	ISC
MS	Mongoose KH451	Offset KL/KH216	Offset Oval KH221	Wizard KH218	Big DanANSI KL455	D KL308	D KH308
€27	£21 $27 €24	£20 $25 €23	£20 $25 €23	£34 $43 €40	£21 $27 €2431	£16 $20 €19	£34 $43 €40
	110g 3.9oz	99g 3.5oz	86g 3oz	115g 4oz	335g 12oz	175g 6.2oz	174g 6oz
70lbf	n/a 30kN 6744lbf n/a	n/a 30kN 6744lbf n/a	n/a 25kN 5560lbf n/a	n/a 45kN 10116lbf n/a	n/a 50kN 11240lbf n/a	n/a 35kN 7868lbf n/a	n/a 30kN 6744lbf n/a
ean	Assym Clean	Asymm Clean	Oval (D) Clean	D Clean	Asymm Clean	Asymm Clean	AsymmHook
mm	133 x 90mm 5.2 x 3.5"	114 x 69mm 4.5 x 2.7"	111 x 67mm 4.4 x 2.6"	128 x 74mm 5 x 3"	133 x 86mm 5.2 x 3.4"	105 x 55mm 4.1 x 2.2"	105 x 55mm 4.1 x 2.2"
75"	26mm 1"	28mm 1.1"	19mm 0.75"	26mm 1"	27mm 1.1"	17mm 0.7"	16mm 0.6"
						☐	☐
	Alu	19mm Alu	Alu	18mm Alu	STEEL	12mm STEEL	12mm STAINLESS STEEL
E	UKCA CE	CE	UKCA CE	UKCA CE	UKCA CE B/T B/T [ANSI]	UKCA CE B/T B/T	UKCA CE B/T B/T
					-	-	-
							Marine grade on request
com	iscwales.com	iscwales.com	iscwales.com	iscwales.com	iscwales.com	iscwales.com	iscwales.com
					expansion column			
	ISC	ISC	ISC		JSP	JSP	JSP
eel 1	Offset Oval KL321	Wizard Steel KL219	Wizard Steel StSt KL219		Alu Twistlock FAR0905..941	Steel Oval FAR0902	Steel TwistLock FAR0903
€13	£16 $20 €19	£26 $36 €32	£36 $4650 €42		£1416 $2023 €1819	£6 $10 €8	£9 $14 €11
g oz	193g 6.8oz	264g 9.3oz	286g 10oz		7984g 0oz	160g 0oz	260g 6oz
6744lbf	n/a 40kN 8800lbf n/a	n/a 70kN 15736lbf n/a	n/a 50kN 11240lbf n/a		n/a 23kN 00lbf n/a	n/a 25kN 00lbf n/a	n/a 40kN 00lbf n/a
Clean	Oval [D] Clean	D Clean	D Clean		HMS	Oval Hook	Asymm
mm 3"	109 x 61mm 4.3 x 2.4"	125 x 73mm 5 x 2.9"	125 x 73mm 5 x 2.9"		112 x 69mm 4.4 x 2.7"	107 x 56.5mm 4.2 x 2.2"	114 x 0mm 4.5 x 0"
.6"	17mm 0.7"	28mm 1.1"	27mm 1.1"		2220mm 0.870.8"	18mm 0.7"	22.5mm 0.9"
		☐	☐				
	STEEL	STEEL	STAINLESS STEEL		Alu	11mm STEEL	11mm STEEL
E	UKCA CE [ANSI]	UKCA CE	UKCA CE B/T B/T [ANSI]		CE B	UKCA CE B/M	UKCA CE B
	-	-	-		-	-	-
					S/G version not sold by JSP		
com	iscwales.com	iscwales.com	iscwales.com		jspsafety.com	jspsafety.com	jspsafety.com

Kong produced the original Keylock closure-referred to in our tables as '**Clean**'

Images NOT to Scale Various gate closure types shown but data is for screwgate or the most basic locking model (not snap-gate)						
MANUFACTURER	KONG	KONG	KONG	KONG	KONG	KONG
MODEL VARIANT Product code & data in the table is for the basic model	Argon S 719HA	Ergo 7831..A0..MG..M0	Ferrata 778..MA..MU..MG..MM	Guide 733LA	Heavy Duty 785 MA..MG..MM	Classic H 786 MA
ORIGIN						
COST (inc Tax) for Screwgate or base model	£0 $17 €0	£0 $24 €0	£0 $1622 €0	£0 $1630 €20	£0 $0 €0	£13 $173
WEIGHT min- max (see gatelock colour-coding)	43g 1.5oz	58-65g 2-2.3oz	90g 3.2oz	70g 2.5oz	88g 3.1oz	88-95 3.1-3.4
MBS Minor Axis / Major Axis / Gate Open	9kN 2023lbf / 22kN 4945lbf / 7kN 1573lbf	10kN 2248lbf / 27kN 6070lbf / 9kN 2023lbf	10kN 2248lbf / 30kN 6744lbf / 12kN 2697lbf	10kN 2248lbf / 30kN 6744lbf / 10kN 2248lbf	11kN 2472lbf / 36kN 8093lbf / 13kN 2922lbf	8kN 1798 / 22kN 494 / 6kN 134
SHAPE NOSE	Asymm	Asymm	Asymm	Asymm Clean	Asymm Clean	Asymm
DIMENSIONS ht x w x depth	93 x 52mm 3.7 x 2"	99 x 64mm 4 x 2.5"	117.5 x 80mm 4.6 x 3.1"	110 x 62.5mm 4.3 x 2.5"	120 x 64mm 4.7 x 2.5"	116 x 78 4.6 x 3
GATE OPENING	15mm 0.6"	1916mm 0.70.6"	27mm 1"	19mm 0.7"	16mm 0.6"	25mm
GATELOCK- SNAP SCREW MANUAL AUTO2 AUTO3 AUTO4-ACTIONS						
CAPTIVE EYE (OPTIONAL ■)	-	-	-	-	-	-
MATERIAL	14mm Alu	14mm Alu	14mm Alu	11mm Alu	11mm Alu	11mm A
STANDARDS CE: work=■ sport=■		EAC UIAA CE■B■	EAC UIAA CE■B■K	EAC UIAA CE■B■B	UIAA CE■B■K	EAC UIAA C
OTHER COLOURS	■	■ ■	[■] [■ ■]	■ ■	-	[■ ■]
NOTES		steel inserts on interi- or-top	Express=pull 'scew'barrel down to open			
WEBSITE	kong.it	kong.it	kong.it	kong.it	kong.it	kong.i

Images NOT to Scale Various gate closure types shown but data is for screwgate or the most basic locking model (not snap-gate)						
MANUFACTURER	KONG	KONG	KONG	KONG	KONG	KONG
MODEL VARIANT	Classic Oval 730	Ovalone 712 LA..LG..LM	Trapper 7891AO	X-Large 711MA..MG..LM	Classic Steel oval 462LD	Harness 535435
ORIGIN						
COST (inc Tax) for Screwgate or base model	£0 $1528 €0	£0 $0 €0	£0 $0 €0	£0 $34 €0	£0 $0 €0	£0 $0 €
WEIGHT min- max (see gatelock colour-coding)	65g 2.3oz	72-79g 2.5-2.8oz	55g 1.9oz	90-95g 3.2-3.4oz	176g 6.2oz	156149 5.55.3
MBS Minor Axis / Major Axis / Gate Open	7kN 1573lbf / 22kN 4945lbf / 7kN 1573lbf	12kN 2697lbf / 26kN 5845lbf / 8kN 1798lbf	10kN 2248lbf / 23kN 5170lbf / 8kN 1798lbf	8kN 1798lbf / 30kN 6744lbf / 10kN 2248lbf	7kN 1573lbf / 24kN 5395lbf / 7kN 1573lbf	0kN 00 / 1722kN 3821 / 00kN 00
SHAPE NOSE	Oval Clean	Asymm	Asymm	Klettersteig Clean	Oval Clean	Asymm
DIMENSIONS ht x w x depth	105 x 54mm 4.1 x 2.1"	110 x 62.6mm 4.3 x 2.5"	98 x 58mm 3.9 x 2.3"	114 x 76.5mm 4.5 x 3"	106.5 x 54mm 4.2 x 2.1"	100 x 60 3.9 x 2.
GATE OPENING	16mm 0.6"	21mm 0.8"	15mm 0.6"	2726mm 1"	16mm 0.6"	16mm 0
GATELOCK- SNAP SCREW MANUAL AUTO2 AUTO3 AUTO4-ACTIONS	■	■ ■ ■	■	■ ■ ■	■	■
CAPTIVE EYE (OPTIONAL ■)	-					□
MATERIAL	11mm Alu	Alu	10mm Alu	10mm Alu	STEEL	10mmST.ST
STANDARDS CE: work=■ sport=■	EAC UIAA CE■B■	EAC UIAA CE■B■B	EAC UIAA CE■B■	UIAA CE■B■		[CE ■B
OTHER COLOURS	-	-	■	[■] [■]	-	-
NOTES		RFID option				Also available captive eye ve
WEBSITE	kong.it	kong.it	kong.it	kong.it	kong.it	kong.i

	KONG	KONG	KONG
	Napik HMS 787 MA..MG..MM	Harness 705 LA..LG..LM	MultiUse (Big-D) 737 LA..LG..LM
	£0 $18 €0	£0 $0 €0	£0 $1520 €0
	80-85g 2.8-3oz	80-90g 2.8-3.2oz	73-77g 2.6-2.7oz
	10kN 2248lbf 23kN 5170lbf 6kN 1348lbf	7kN 1573lbf 22kN 4945lbf 00kN 00lbf	9kN 2023lbf 27kN 6070lbf 9kN 2023lbf
	HMS	Asymm	Klettersteig
	110 x 71.5mm 4.3 x 2.8"	125 x 72.5mm 4.9 x 2.8"	112 x 72mm 4.4 x 2.8"
	2322.5mm 0.9"	23mm 0.9"	23mm 0.9"
	-	☐	-
	12mm Alu	11mm Alu	11mm Alu
	EAC UIAA CE B	CE	UIAA CE B B/H/K
	-	-	-
		Also available as full captive eye version	
	kong.it	kong.it	kong.it

	KONG	KONG	
	Harness StSt 535435LD LR	Heavy Duty StSt 472 572 MD	
	£0 $0 €0	£0 $0 €0	
	217227229g 7.788oz	232223g 3.1oz	
	7kN 1573lbf 2228kN 49456294lbf 00kN 00lbf	1510kN 33722248lbf 6044kN 80939891lbf 18kN 4046lbf	
	Asymm Clean	Asymm Clean	
	124 x 72.5mm 4.9 x 2.9"	120 x 64mm 4.7 x 2.5"	
	2322mm 0.9"	16mm 0.6"	
	☐	-	
	11mmST.ST STEEL	1112mmST.ST STEEL	
	CE B	CE M	
	-	-	
	Also available as full captive eye version		
	kong.it	kong.it	

expansion column

Kong produced the original Keylock closure-referred to in our tables as '**Clean**'

Images NOT to Scale Various gate closure types shown but data is for screwgate or the most basic locking model (not snap-gate)						
MANUFACTURER	KONG	KONG	KONG	KONG	KONG	LACD
MODEL VARIANT Product code & data in the table is for the basic model	Ovalone ANSI 412LD..LH..LN..LI/LP	Ovalone StSt ANSI 512LD..LH..LN..LI/LQ	Ovalone DNA ANSI 414LH..LN..LI/LP	X-Large ANSI 411MD..MH..MN..MI/MP	X-Large StSt 511MD..MK..MR	biner Ov 1023..24-B
ORIGIN						
COST (inc Tax) for Screwgate or base model	£0 $0 €0	£0 $0 €0	£0 $0 €0	£16 $0 €0	£0 $0 €0	£13 $1821
WEIGHT min- max (see gatelock colour-coding)	200215220g 77.67.8oz	215230240g 7.68.18.5oz	220-230g 7.8-8.1oz	250-273g 8.8-9.6oz	250g 8.8oz	76 82g 2.6 2.9
MBS Minor Axis / Major Axis / Gate Open	15kN 3372lbf 40kN 8992lbf 00kN 00lbf	15kN 3372lbf 4027kN 89926069lbf 00kN 00lbf	15kN 3372lbf 40kN 8992lbf 00kN 00lbf	0kN 00lbf 50kN 11240lbf 00kN 00lbf	0kN 00lbf 35kN 7868lbf 00kN 00lbf	7kN 1573 25kN 562 7kN 157
SHAPE NOSE	Asymm Clean	Asymm Clean	Asymm Clean	Klettersteig Clean	Klettersteig Clean	Asymm
DIMENSIONS ht x w x depth	110 x 62.6mm 4.3 x 2.5"	110 x 62.6mm 4.3 x 2.5"	108 x 6365mm 4.3 x 2.52.6"	114 x 76.2mm 4.5 x 3"	114 x 76.2mm 4.5 x 3"	0 x 0m 0 x 0"
GATE OPENING	21mm 0.8"	21mm 0.8"	1917mm 0.7"	26mm 1"	26mm 1"	0mm
GATELOCK- SNAP SCREW MANUAL AUTO2 AUTO3 AUTO4-ACTIONS	■ ■ ■	■ ■ ■	■ ■	■ ■ ■	■ ■ ■	■ ■
CAPTIVE EYE (OPTIONAL ■)						-
MATERIAL	STEEL	STAINLESS STEEL	STEEL	12mm STEEL	12mm ST.ST STEEL	Alu
STANDARDS CE: work=■ sport=■	EAC CE■M ANSI	EAC CE■M ANSI	EAC CE■M ANSI	EAC CE■M ANSI	EAC CE■M	CE ■B
OTHER COLOURS	-	-	-	-	-	-
NOTES	ANSI in dbl & trpl lock. RFID option	ANSI in dbl & trpl lock. RFID option	RFID option. Helical shape	ANSI =steel only	ANSI =steel only	
WEBSITE	kong.it	kong.it	kong.it	kong.it	kong.it	lacd.d

Images NOT to Scale Various gate closure types shown but data is for screwgate or the most basic locking model (not snap-gate)						
MANUFACTURER	MAMMUT	MAMMUT	METOLIUS	METOLIUS	METOLIUS	METOLI
MODEL VARIANT	Sender 2040-02450	Workhorse HMS 2040-02560	Bravo -	CR (Corrosion-Resistant) -	Element II -	Gatekee -
ORIGIN						
COST (inc Tax) for Screwgate or base model	£1415 $1819 €1516	£18 $23 €19	£13 $13 €16	£0 $12 €0	£1416 $1518 €1720	£2223 $2325
WEIGHT min- max (see gatelock colour-coding)	53-56g 1.9-2oz	75g 2.6oz	46g 2.3oz	65g 2.3oz	73 74g 2.6oz	70 79g 2.46 2.8
MBS Minor Axis / Major Axis / Gate Open	9kN 2023lbf 26kN 5845lbf 10kN 2248lbf	12kN 2697lbf 27kN 6069lbf 8kN 1798lbf	7kN 1573lbf 24kN 5395lbf 10kN 2248lbf	7kN 1573lbf 22kN 4945lbf 7kN 1573lbf	89kN 17982023lbf 2428kN 53956300lbf 8kN 1798lbf	7kN 1573 22kN 494 7kN 157
SHAPE NOSE	Asymm Clean	HMS Clean	asymm Clean	asymm Clean	HMS Clean	HMS Cle
DIMENSIONS ht x w x depth	99 x 59.5mm 4 x 2.3"	118x 80mm 4.6 x 3.1"	92x 58mm 3.6 x 2.2"	102x 63.5mm 4 x 2.5"	103x 65mm 4 x 2.5"	118x 65 4.6 x 2.5
GATE OPENING	19mm 0.7"	28mm 1.1"	17mm 0.65"	17mm 0.68"	21mm 0.8"	21mm 0
GATELOCK- SNAP SCREW MANUAL AUTO2 AUTO3 AUTO4-ACTIONS	■ ■	■	■	■	■ ■	■ ■
CAPTIVE EYE (OPTIONAL ■)	-	-	-	-	-	■
MATERIAL	Alu	Alu	10mm Alu	10mm Alu	12mm Alu	10mm A
STANDARDS CE: work=■ sport=■	UIAA CE ■	UIAA CE ■	UIAA CE ■	UIAA CE ■	UIAA CE ■	UIAA CE
OTHER COLOURS	[■]		■		[■] [■■]	[■]
NOTES		Smart has a clip-over captive eye				
WEBSITE	mammut.com	mammut.com	metoliusclimbing.com	metoliusclimbing.com	metoliusclimbing.com	metoliusclimbi

CONNECTORS-LOCKING CARABINERS







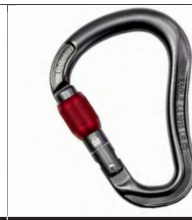

	LACD	LACD	LACD	LACD	LACD	MAMMUT	MAMMUT
val BU	D Screw 1253	HMS 1075..76-BU	HMS RB Belay 1240..41..96/97-BU	HMS steel 1030 1047	Oval Steel 1028	Classic HMS Smart -	Crag HMS 2040-02161
€1618	£12 $18 €16	£16 $2124 €1620	£14 $1822 €1620	£0 $0 €15	£0 $0 €13	£1519 $1923 €1620	£12 $16 €13
g oz	54g 1.9oz	76 82g 2.6 2.9oz	77-83g 2.7-2.9oz	212 218g 7.5 7.7oz	160g 5.6oz	63-69g 2.2-2.4oz	78g 2.75oz
3lbf 20lbf 3lbf	8kN 1798lbf 28kN 6294lbf 9kN 2023lbf	8kN 1798lbf 24kN 5395lbf 7kN 1573lbf	108kN 22481798lbf 22kN 4945lbf 6kN 1348lbf	0kN 00lbf 45kN 10116lbf 00kN 00lbf	7kN 1573lbf 23kN 5170lbf 7kN 1573lbf	9kN 2023lbf 24kN 5395lbf 8kN 1798lbf	10N 2248lbf 25kN 5620lbf 6kN 1348lbf
n	Klettersteig	HMS	Asymm	Oval	Oval	HMS Clean	HMS Clean
m	0 x 0mm 0 x 0"	120 x 60mm 4.7 x 2.4"	0 x 0mm 0 x 0"	0 x 0mm 0 x 0"	0 x 0mm 0 x 0"	109 x 69.5mm 4.3 x 2.7"	113 x 75mm 4.5 x 3"
0"	0mm 0"	0mm 0"	0mm 0"	0mm 0"	0mm 0"	23.5mm 0.9"	25mm 1"
	■	■ ■	■ ■	■ ■	■ ■	■ ■	■ ■
	-	-	■	-	-	■	-
	Alu	Alu	Alu	Steel	Steel	Alu	Alu
	CE ■B	CE ■B ■H	CE ■H	CE ■		UIAA CE■	UIAA CE ■
	-	-	■	-	-	[■] [■]	
			Belay=hinged captive eye.			Smart has a clip-over captive eye	
e	lacd.de	lacd.de	lacd.de	lacd.de	lacd.de	mammut.com	mammut.com







	METOLIUS	METOLIUS		NOTCH	NOTCH	NOTCH	NOTCH
US per	Rig -	Steel -		Absolute 54441	D 3600LB D3600 41458 41459	D 59114	HMS 59113
€2527	£1718 $1820 €1719	£0 $1519 €1418		£18 $23 €33	£26 $33 €31	£18 $23 €33	£18 $23 €33
g oz	76 82g 2.7 2.9oz	215 221g 7.6 7.8oz		94g 3.3oz	136g 4.8oz	82g 2.9oz	78g 2.75oz
lbf 5lbf 3lbf	9kN 2025lbf 28kN 6295lbf 8kN 1798lbf	15kN 1573lbf 40kN 5395lbf 18kN 2248lbf		12kN 2697lbf 25kN 5620lbf 7kN 1573lbf	15kN 00lbf 30kN 00lbf 15kN 00lbf	10kN 2697lbf 30kN 6744lbf 8kN 1798lbf	10kN 2697lbf 25kN 00lbf 8kN 1798lbf
ean	HMS Clean	Asymm Clean		Oval Clean	D Clean	Asymm Clean	HMS Clean
mm 5"	114x 72mm 4.4 x 2.8"	111x 66mm 4.3 x 2.6"		110 x 63mm 4.3 x 2.5"	117 x 73mm 4.6 x 2.8"	112 x 72mm 4.4 x 2.8"	106 x 73mm 4.2 x 2.9"
.8"	26mm 0.0"	21mm 0.8"		19mm 0.75"	25mm 1"	26mm 1"	24mm 0.94"
	■ ■	■ ■		■	■	■	■
	-	-		-	-	-	-
lu	10mm Alu	STEEL		Alu	Alu	Alu	Alu
E ■	UIAA CE ■	CE ■		CE ■	ANSI, CSA	UKCA CE ■B ANSI, CSA	UKCA CE ■ ANSI, CSA
	[■]	■		-	-	-	-
					D & offset oval discontinued	round bar HMS discontinued	round bar D discontinued
ing.com	metoliusclimbing.com	metoliusclimbing.com		notchequipment.com	notchequipment.com	notchequipment.com	notchequipment.com

Images NOT to Scale Various gate closure types shown but data is for screwgate or the most basic locking model (not snap-gate)						
MANUFACTURER	NRS RESCUE	NRS RESCUE	NRS RESCUE	OCUN	OCUN	OCUN
MODEL VARIANT Product code & data in the table is for the basic model	Master D 45197..	Nuq 45195..	Sliq 45192..	Condor -	Eagle -	Falcor -
ORIGIN						
COST (inc Tax) for Screwgate or base model	£27 $33 €31	£1618 $1618 €1820	£1314 $1415 €1516	£17 $21 €19	£13 $18 €16	£16 $21
WEIGHT min- max (see gatelock colour-coding)	127g 4.5oz	94g 3.3oz	55g 1.9oz	85-88g 3-3.1oz	73-76g 2.5-2.7oz	53g 1.9oz
MBS Minor Axis Major Axis Gate Open	9kN 2025lbf 40kN 8992lbf 8kN 1798lbf	8kN 1798lbf 28kN 6295lbf 9kN 2025lbf	8kN 1798lbf 25kN 6300lbf 9kN 2025lbf	7kN 00lbf 25kN 5620lbf 6kN 00lbf	10kN 2248lbf 25kN 5620lbf 7kN 1573lbf	9kN 202 25kN 562 9kN 202
SHAPE NOSE	D Clean	HMS Clean	HMS Clean	Assym Clean	HMS Clean	Assym Cl
DIMENSIONS ht x w x depth	129x 75mm 5 x 3.1"	116x 75mm 4.6 x 3.1"	98x 60mm 3.8 x 2.3"	122 x 74mm 4.8 x 3"	103 x 75mm 4 x 3"	101 x 59 4 x 2.3
GATE OPENING	26mm 0.8"	22mm 0.8"	18mm 0.8"	22mm 0.8"	23mm 0.9"	17mm 0
GATELOCK- SNAP SCREW MANUAL AUTO2 AUTO3 AUTO4- ACTIONS	■	■ ■	■ ■ ■ ■	■ ■ ■	■ ■ ■	■ ■
CAPTIVE EYE (OPTIONAL ■)	-	-	-	■	-	-
MATERIAL	Alu	Alu	Alu	Alu	Alu	Alu
STANDARDS CE: work=■ sport=■	NFPA-G	CE ■■	CE ■■	UIAA CE ■■	UIAA CE ■■	UIAA CE
OTHER COLOURS	■■	■■	■■	■■	■■■	■■
NOTES						
WEBSITE	nrsrescue.com	nrsrescue.com	nrsrescue.com	ocun.com	ocun.com	ocun.co

Images NOT to Scale Various gate closure types shown but data is for screwgate or the most basic locking model (not snap-gate)						
MANUFACTURER	OMEGA PACIFIC	OMEGA PACIFIC	OMEGA PACIFIC	OMEGA PACIFIC	OMEGA PACIFIC	PENSA
MODEL VARIANT	Phantom OPPHANS-GM	Standard D OPSTANQ3	XL -	MOAB OPMOABS	BAMF OPBAMFQ3S	A33 A3 A33 3PS... 7PS A35
ORIGIN						
COST (inc Tax/VAT) Screwg/basic	£12 $15 €14	£12 $1522 €14	£24 $30 €28	£23 $29 €27	£16 $2022 €17	£0 $0
WEIGHT Screwgate + heaviest	82g 2.9oz	68-72g 2.4-2.5oz	380g 13.4oz	272g 9.6oz	176-198g 6.2-7oz	99g 3.5oz
MBS Minor Axis Major Axis Gate Open	8kN 1798lbf 28kN 6294lbf 9kN 2023lbf	9kN 2023lbf 33kN 7418lbf 11kN 2472lbf	16kN 3597lbf 70kN 15736lbf 11kN 2472lbf	22kN 4945lbf 55kN 12364lbf 21kN 4720lbf	12kN 2697lbf 45kN 10116lbf 11kN 2472lbf	16kN 360 30kN 675 16kN 360
SHAPE NOSE	Asymm Clean	D Clean	Asymm Clean	D	Klett Clean	Asymm C
DIMENSIONS ht x w x depth	120 x 75mm 4.7 x 2.95"	108 x 60mm 4.2 x 2.4"	152 x 93mm 6 x 3.6"	122 x 51mm 4.6 x 2.8"	113 x 69mm 4.4 x 2.7"	113 x 888 4.4 x 3.
GATE OPENING	23mm 0.9"	19mm 0.7"	42mm 1.65"	30.5mm 1.2"	25.4mm 1"	16.521mm 0.
GATELOCK- SNAP SCREW MANUAL AUTO2 AUTO3 AUTO4- ACTIONS	■ ■	■ ■ ■ ■	■ ■	■	■	■ ■
CAPTIVE EYE (OPTIONAL ■)	-	-	-	-	-	□
MATERIAL	Alu	Alu	½" STEEL	STEEL	STEEL	Alu
STANDARDS		NFPA-G		NFPA-G		NFPA, ANS
OTHER COLOURS	■	■	-		-	■ ■
NOTES				sold via RockNRescue		Give A35 a se column (diff
WEBSITE	omega-pacific.com	omega-pacific.com	omega-pacific.com	rocknrescue.com	omega-pacific.com	pensafe.

CONNECTORS-LOCKING CARABINERS








	OCUN	OCUN	OCUN	OMEGA PACIFIC	OMEGA PACIFIC	OMEGA PACIFIC	OMEGA PACIFIC
	Harpy -	Hawk -	Osprey -	Apollo OPAPOLS Q3	Raider Tactical OPRAIDS	Caesar OPCAESS	Elite OPELITS
€14	£16 $0 €17	£16 $21 €14	£23 $30 €15	£12 $1519 €14	£12 $1418 €13	£12 $15 €14	£24 $28 €27
	92-97g 3.2-3.4oz	42g 1.5oz	70-73g 2.5oz	74g 2.6oz	77-85g 2.7-3oz	71g 2.5oz	130g 4.6oz
lbf 0lbf lbf	8kN 1798lbf 28kN 6294lbf 8kN 1798lbf	9kN 2023lbf 24kN 5395lbf 9kN 2023lbf	9kN 2023lbf 25kN 5620lbf 6kN 1348lbf	8kN 1798lbf 24kN 5395lbf 8kN 1798lbf	8kN 1798lbf 2423kN 53955170lbf 7kN 1573lbf	8kN 1798lbf 40kN 8992lbf 11kN 2472lbf	17kN 3821lbf 45kN 10116lbf 15kN 3372lbf
ean	HMS Clean	Assym Clean	Oval Clean	HMS	Oval Clean	D Clean	D Clean
mm "	122 x 88mm 4.8 x 3.4"	91 x 53mm 3.5 x 2.1"	110 x 62mm 4.3 x 2.4"	114 x 73mm 4.5 x 2.8"	109 x 65mm 4.3 x 2.5"	114 x 63mm 4.5 x 2.5"	128 x 78mm 5 x 3"
.7"	26mm 1"	15mm 0.6"	22mm 0.9"	22mm 0.8"	21mm 0.8"	18mm 0.7"	30.5mm 1.2"
	-	-	-	-	☐	-	-
	Alu	Alu	Alu	Alu	Alu	Alu	Alu
	UIAA CE	UIAA CE	UIAA CE				NFPA-G
						-	
				sold via RockNRescue	Tactical=black version with triple-lock gate		
om	ocun.com	ocun.com	ocun.com	rocknrescue.com	omega-pacific.com	omega-pacific.com	omega-pacific.com





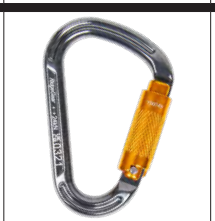



	PENSAFE	PENSAFE	PENSAFE	PENSAFE	PENSAFE	PENSAFE	PENSAFE
FE	A39 A393PS...7PS	A84 A843PS...7PS	A90 A903PS...7PS	C415 ----	C455 ----	C81 C812PS...3PS	C77 C77..2..5..7
€0	£0 $0 €0	£0 $0 €0	£0 $0 €0	£0 $0 €0	£0 $0 €0	£0 $0 €0	£0 $0 €0
	178g 6.3oz	113g 4oz	122g 4.3oz	178g 6.3oz	218g 7.7oz	238281g 8.49.9oz	260-285g 9.2-10.1oz
0lbf 0lbf 0lbf	16kN 3600lbf 30kN 6750lbf 16kN 3600lbf	16kN 3600lbf 30kN 6750lbf 16kN 3600lbf	16kN 3600lbf 30kN 6750lbf 16kN 3600lbf	16kN 3600lbf 30kN 6750lbf 16kN 3600lbf	16kN 3600lbf 22.2kN 5000lbf 16kN 3600lbf	16kN 3600lbf 45kN 10000lbf 16kN 3600lbf	16kN 3600lbf 45kN 10000lbf 16kN 3600lbf
lean	Asymm Clean	Klettersteig Clean	HMS Clean	Asymm Hook	Asymm Clean	Asymm Hook	Asymm Hook
7mm 4"	113 x 64mm 4.5 x 2.5"	117 x 77mm 4.6 x 3"	121.4 x 82.5mm 4.8 x 3.25"	105 x 58mm 4.14 x 2.3"	107 x 59mm 4.2 x 2.3"	113 x 62mm 4.45 x 2.44"	114 x 71mm 4.5 x 2.8"
65.83"	21mm 0.8"	20.5mm 0.8"	19.5mm 0.8"	16mm 0.6"	20mm 0.8"	18.516.5mm0.7.65"	24mm 0.95"
	☐	☐	☐	☐	-	-	☐
	Alu	Alu	Alu	STEEL	STEEL	STEEL	STEEL
I, CSA	CE NFPA, ANSI, CSA	CE ANSI, CSA	CE ANSI, CSA	CE ANSI, CSA	CE ANSI, CSA	[CE] [ANSI, CSA]	[CE] [[ANSI, CSA]]
	[]	[]	[]			-	
parate frame)							ADD C84 series
.ca	pensafe.ca	pensafe.ca	pensafe.ca	pensafe.ca	pensafe.ca	pensafe.ca	pensafe.ca

Images NOT to Scale Various gate closure types shown but data is for screwgate or the most basic locking model (not snap-gate)						
MANUFACTURER	PETZL	PETZL	PETZL	PETZL	PETZL	PETZ
MODEL VARIANT Product code & data in the table is for the basic model	Am'D M34A SL RL TL BL PL	Attache M38A SL	Bm'D M032AA..	Freino-Z Freino M42	OK M33A SL BL TL	Omni M37 SL
ORIGIN						
COST (inc Tax) for Screwgate or base model	£20 $19-24 €22	£17 $19 €18	£28 $36 €29	£45 $50 €45	£16 $19-24 €15	£2329 $444
WEIGHT min- max (see gatelock colour-coding)	70-7580g 2.5-2.62.8oz	56g 2oz	105g 3.7oz	85g 3oz	70-75g 2.5-2.6oz	86-92g 3-3.2o
MBS Minor Axis Major Axis Gate Open	8kN 1798lbf 27kN 6069lbf 7kN 1573lbf	7kN 1573lbf 22kN 4945lbf 6kN 1348lbf	16kN 00lbf 32kN 00lbf 10kN 2248lbf	10kN 2248lbf 25kN 5620lbf 9kN 2023lbf	8kN 1798lbf 25kN 5620lbf 7kN 1573lbf	15kN 337 20kN 449 7kN 157
SHAPE NOSE	Asymm Clean	Asymm Clean	Asymm Clean	Asymm Clean	Oval [D] Clean	Semi-Circ
DIMENSIONS ht x w x depth	113 x 68mm 4.5 x 2.7"	103 x 70mm 4.1 x 2.75"	113 x 70mm 4.5 x 2.75"	102 x 78mm 4 x 3.1"	111 x 63mm 4.4 x 2.5"	100 x 72 4 x 2.8
GATE OPENING	25mm 1"	24mm 0.9"	18mm 0.7"	18mm 0.7"	22mm 0.9"	22mm 0
GATELOCK- SNAP SCREW MANUAL AUTO2 AUTO3 AUTO4 ACTIONS						
CAPTIVE EYE (OPTIONAL ■)	-	* □	-	-	-	-
MATERIAL	Alu	Alu	Alu	Alu	Alu	Alu
STANDARDS **CE: work=■ sport=■**	UKCA CE ■■B NFPS-T, UIAA,EAC	UKCA CE ■H ■B NFPS-T, UIAA,EAC	CE ■ EAC ANSI NFPA-T CSA	UKCA CE ■- ■B UIAA	UKCA CE ■ ■ UIAA, EAC	UKCA CE ■ UIAA
OTHER COLOURS	■ ■ ■	■	■	-	-	-
NOTES	Pin-Lock version (shown) can only open with tool	* new nylon 'Bar' option clips from spine to gate		12mm opening Friction spur for assisted braking		Ideal hardware-t connecto
WEBSITE	petzl.com	petzl.com	petzl.com	petzl.com	petzl.com	petzl.co

Images NOT to Scale Various gate closure types shown but data is for screwgate or the most basic locking model (not snap-gate)						
MANUFACTURER	PROTEKT	PROTEKT	PROTEKT	PROTEKT	PROTEKT	PROTE
MODEL VARIANT	AZ12 KH218	AZ13 KH218	AZ14 KH218	AZ19 KH218	ooo KH218	AZ17 KH218
ORIGIN						
COST (inc Tax) for Screwgate or base model	£12 $0 €0	£0 $0 €0	£0 $0 €0	£0 $0 €0	£0 $0 €0	£0 $0 €
WEIGHT min- max (see gatelock colour-coding)	0g 0oz	0g 0oz	0g 0oz	86.5g 0oz	0g 0oz	0g 0oz
MBS Minor Axis Major Axis Gate Open	0kN 00lbf 00kN 00lbf 00kN 00lbf	0kN 00lbf 00kN 00lbf 00kN 00lbf	0kN 00lbf 00kN 00lbf 00kN 00lbf	10kN 00lbf 22kN 00lbf 8kN 00lbf	0kN 00lbf 00kN 00lbf 00kN 00lbf	0kN 00 00kN 00 00kN 00
SHAPE NOSE	Oval [D] Clean	Asymm	Asymm	Asymm	HMS	Oval
DIMENSIONS ht x w x depth	0 x 0mm 0 x 0"	0 x 0mm 0 x 0"	0 x 0mm 0 x 0"	118 x 0mm 0 x 0"	0 x 0mm 0 x 0"	0 x 0m 0 x 0"
GATE OPENING	0mm 0"	0mm 0"	0mm 0"	26mm 16101"	0mm 0"	0mm
GATELOCK- SNAP SCREW MANUAL AUTO2 AUTO3 AUTO4 ACTIONS						
CAPTIVE EYE (OPTIONAL ■)						
MATERIAL	Alu	Alu	Alu	Alu	STEEL	STEEL
STANDARDS **CE: work=■ sport=■**						
OTHER COLOURS	-	-	-	-	-	-
NOTES				RFID option		
WEBSITE	protekt.uk	protekt.uk	protekt.uk	protekt.uk	protekt.uk	protekt.

CONNECTORS-LOCKING CARABINERS

							expansion column
	PETZL	PETZL	PETZL	PETZL	PETZL	PETZL	
	Rocha M027AA..	Sm'D M39A SL RL	Vertigo M40A RLA WL/WL-PARK	William M36A SL BL TL	Oxan Int M72A SL TL TL/SL	Vulcan Int M073 CA00	
45 €28	£17 $20 €18	£18 $19-24 €17	£21 $35 €27	£23 $20-25 €18	£1218 $1620 €14	£2734 $3543 €3340	
g oz	45g 1.6oz	45-55g 1.6-1.8oz	100-95g 3.5 3.4oz	85-90g 3-3.2oz	185-230g 6.5-8.5oz	235-245g 8.3-8.6oz	
72lbf 96lbf 3lbf	8kN 1798lbf 27kN 6069lbf 8kN 1798lbf	8kN 1798lbf 22kN 4945lbf 7kN 1573lbf	10kN 2248bf 25kN 5620lbf 8kN 1798lbf	8kN 1798lbf 27kN 6069lbf 8kN 1798lbf	16kN 3596lbf 38kN 8542lbf 15kN 3372lbf	16kN 3596lbf 45kN 10116lbf 18kN 4046lbf	
Clean	Klett Clean	Asymm Clean	Asymm Clean	Klett Clean	Oval [D] Clean	Asymm Clean	
mm "	117 x 80mm 4.6 x 3.2"	98 x 62mm 3.85 x 2.4"	125 x 94mm 4.9 x 3.7"	117 x 80mm 4.6 x 3.2"	111 x 64mm 4.4 x 2.5"	126 x 75mm 5 x 3"	
0.9"	2827mm 1.1"	2018mm 0.80.7"	2524mm 10.95"	2827mm 1.1"	2220mm 0.90.8"	2926mm 1.21"	
	■ ■	■ ■ ■	■ ■	■ ■	■ ■	■ ■	
	-	-	-	-	-	□	
	Alu	Alu	Alu	Alu	STEEL	STEEL	
■K ■B	UKCA CE ■B/H ■B NFPA-T, UIAA,EAC	UKCA CE ■B ■B NFPA-T, UIAA,EAC	UKCA CE [■B/K] ■ UIAA,EAC	UKCA CE ■B/H ■B NFPA-T, UIAA,EAC	CE ■ EAC ANSI NFPA-T CSA	CE ■ EAC ANSI NFPA-T CSA	
	□	■ □	■	-	■	□	
o-harness or		RL=USA-only	WL (shown)Specific to Via-ferrata & Trac Pulley/Trolley		available as European AND International version	available as European AND International version	
om	petzl.com	petzl.com	petzl.com	petzl.com	petzl.com	petzl.com	
								
KT	PROTEKT	RIDGEGEAR	RIDGEGEAR	RIDGEGEAR	RIDGEGEAR	RIDGEGEAR	RIDGEGEAR
	AZ18 KH218	RGK1/A AT -	RGK4 -	RGK7 -	RGK1 2 -	RGK15 -	RGK3 -
€0	£0 $0 €0	£0 $0 €0	£0 $0 €0	£0 $0 €0	£0 $0 €0	£0 $0 €0	£0 $0 €0
	0g 0oz	8086g 0oz	83g 0oz	86.5g 0oz	160192g 0oz	315g 0oz	300g 0oz
lbf lbf lbf	0kN 00lbf 00kN 00lbf 00kN 00lbf	10kN 00lbf 24kN 00lbf 7kN 00lbf	- 24kN 00lbf -	10kN 00lbf 22kN 00lbf 8kN 00lbf	- 23kN 00lbf -	- 40kN 00lbf -	- 50kN 00lbf -
	Oval	Oval [D] Clean	Klett Clean	HMS Clean	Oval [D] Hook	D Hook	Klett Clean
m "	0 x 0mm 0 x 0"	111 x 0mm 0 x 0"	112 x 0mm 0 x 0"	118 x 0mm 0 x 0"	107 x 0mm 0 x 0"	104 x 0mm 0 x 0"	119 x 0mm 0 x 0"
0"	0mm 0"	19mm 0"	22mm 0"	26mm 1"	17mm 0"	12mm 0"	24mm 0"
		■ ■	■	■	■ ■	■	■
						■	
L	STEEL	Alu	Alu	Alu	STEEL	STEEL	STEEL
		CE ■ ■	CE ■	CE ■ ■	CE ■	CE ■ ANSI	CE ■ ANSI
	-	-	-	-	-	-	-
uk	protekt.uk	ridgegear.com	ridgegear.com	ridgegear.com	ridgegear.com	ridgegear.com	ridgegear.com

Images NOT to Scale Various gate closure types shown but data is for screwgate or the most basic locking model (not snap-gate)						
MANUFACTURER	ROCK EMPIRE	ROCK EMPIRE	ROCK EMPIRE	ROCK EMPIRE	ROCK EMPIRE	ROCK EM
MODEL VARIANT	Racer ZRC047	HMS Smart ZRC050 ..051 ..052	HMS Magnum ZRC031..032..033	2 Tap ZRC054..055..056	Opus ZRC058..059..060	HMS Magnu ZRC042..043
ORIGIN						
COST (inc Tax) for Screwgate or base model	£0 $0 €16	£0 $0 €0	£0 $22 €16	£0 $0 €22	£0 $0 €20	£0 $0 €
WEIGHT min- max (see gatelock colour-coding)	53.2g 0oz	68 77g 0oz	90 96g 0oz	84 92g 0oz	71 75g 0oz	246 254 0oz
MBS Minor Axis Major Axis Gate Open	9kN 00lbf 24kN 00lbf 8kN 00lbf	8kN 00lbf 24kN 00lbf 6kN 00lbf	10kN 00lbf 26kN 00lbf 8kN 00lbf	7kN 00lbf 24kN 00lbf 6kN 00lbf	10kN 00lbf 26kN 00lbf 7kN 00lbf	18kN 00 46kN 00 18kN 00
SHAPE NOSE	Asymm Keylock	HMS Keylock	Asymm Keylock	Asymm Keylock	Asymm Keylock	HMS Key
DIMENSIONS ht x w x depth	100 x 60mm 4 x 2.4"	105 x 73mm 4.1 x 2.9"	122 x 77mm 4.8 x 3"	123 x 75mm 4.8 x 2.95"	113 x 66mm 4.5 x 2.6"	122 x 77 4.8 x 3
GATE OPENING	17mm 0"	21mm 0"	24mm 0"	22mm 0"	24mm 0"	24mm
GATELOCK- SNAP SCREW MANUAL AUTO2 AUTO3 AUTO4 ACTIONS	■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■
CAPTIVE EYE (OPTIONAL ■)				■		
MATERIAL	Alu	Alu	Alu	Alu	Alu	STEEL
STANDARDS **CE: work=■ sport=■**	CE ■ ■	CE ■ ■	CE ■ ■	CE ■ ■	CE ■ ■	CE ■ ■
OTHER COLOURS	■ ■	■ ■	■ ■	■ ■	■	-
NOTES	RFID option. Helical shape					
WEBSITE	rockempire.cz	rockempire.cz	rockempire.cz	rockempire.cz	rockempire.cz	rockempir

Images NOT to Scale Various gate closure types shown but data is for screwgate or the most basic locking model (not snap-gate)						
MANUFACTURER	SALEWA	SALEWA	SALEWA	SALEWA	SAR PRODUCTS	SAR PROD
MODEL VARIANT	Hot G3 01724	HMS Pro 01521	HMS G2 S 01525	Belay 01718	Gecko 01718	Klet 01718
ORIGIN						
COST (inc Tax) for Screwgate or base model	£12 $0 €0	£16 $0 €0	£14 $0 €0	£25 $0 €0	£0 $00 €0	£0 $00
WEIGHT min- max (see gatelock colour-coding)	46g 1.6oz	81g 2.9oz	86-77g 3-2.7oz	92g 3.25oz	0g 0oz	0g 0oz
MBS Minor Axis Major Axis Gate Open	8kN 1798lbf 23kN 5170lbf 8kN 1798lbf	9kN 2023lbf 24kN 5395lbf 7kN 1573lbf	89kN 17982023lbf 2223kN 4945 5170lbf 97kN 20231573lbf	9kN 2023lbf 24kN 5395lbf 7kN 1573lbf	0kN 00lbf 00kN 00lbf 00kN 00lbf	0kN 00 00kN 00 00kN 00
SHAPE NOSE	Asymm Clean	HMS Clean	HMS Hook	HMS Clean	Asymm Hook	Asymm H
DIMENSIONS ht x w x depth	100 x 64mm 0 x 0"	105 x 74mm 0 x 0"	110100 x 7270mm 0 x 0"	114 x 75mm 0 x 0"	0 x 0mm 0 x 0"	0 x 0m 0 x 0"
GATE OPENING	0mm 0"	0mm 0"	0mm 0"	0mm 0"	0mm 0"	0mm
GATELOCK- SNAP SCREW MANUAL AUTO2 AUTO3 AUTO4 ACTIONS	■ ■	■	■	■	■	■
CAPTIVE EYE (OPTIONAL ■)				■		
MATERIAL	Alu	Alu	Alu	Alu	Alu	Alu
STANDARDS **CE: work=■ sport=■**	UIAA CE ■	UIAA CE ■	UIAA CE ■	UIAA CE ■		
OTHER COLOURS	■	■*	■ ■		-	-
NOTES		*second shade of green		being phased out		
WEBSITE	salewa.com	salewa.com	salewa.com	salewa.com	sar-products.com	sar-product

CONNECTORS-LOCKING CARABINERS

							
PIRE	ROCK EMPIRE	ROCK EMPIRE	ROCK EXOTICA	ROCK EXOTICA	ROCK EXOTICA	ROCK EXOTICA	ROCK EXOTICA
s Steel ..044	Steel O KL ZRC021..020..040..034	Steel D KL ZRC023..022..039..035	Pirate WireEye C1 S O T A/U WES	Rock D Lanyard-Pin C2 S O T A/U LTA	Rock O WireEye C3 S O T A/U WES	Rock Steel M31-SL TL	Rock D StSt M31-SL TL
€0	£1214 $0 €16	£1418 $0 €0	£2129 $2129 €3140	£2129 $2129 €3140	£2129 $2129 €3140	£0 $4448 €0	£0 $4553 €0
4g	172 174g 0oz	212g 0oz	80-89g 2.8-3.1oz	73-80g 2.6-2.8oz	73-84g 2.6-3oz	226-246g 8.1-8.8oz	206-263g 7.8-9.3oz
lbf lbf lbf	18kN 00lbf 28kN 00lbf 10kN 00lbf	18kN 00lbf 40kN 00lbf 18kN 00lbf	1112kN 24722697lbf 26kN 5845lbf 7kN 1573lbf	11kN 2472lbf 29kN 6519lbf 9kN 2023lbf	911kN 20232472lbf 24kN 5395lbf 6kN 00lbf	1416kN 31473597lbf 4550kN 00lbf 17kN 3821lbf	7kN 1573lbf 4540kN101168992lbf 1114kN24723147lbf
lock	Oval Keylock	Asymm Keylock	Asymm Clean	Asymm Clean	Oval [D] Clean	Asymm Clean	Asymm Clean
mm "	113 x 56mm 4.5 x 2.2"	114 x 72mm 4.5 x 2.8"	107 x 71mm 4.2 x 2.8"	114 x 71mm 4.5 x 2.8"	107 x 71mm 4.2 x 2.8"	125 x 75mm 4.9 x 2.95"	114 x 6468mm 4.5 x 2.52.7"
0"	1816mm 0"	24mm 0"	25mm 1"	25mm 1"	22mm 0.9"	30mm 0.5"	25.423.5mm 10.9"
L	STEEL	STEEL	12mm Alu	10mm Alu	11mm Alu	11mm STEEL	12mm ST. STEEL
	CE	CE	CE	CE	CE	CE NFPA-G [+ANSI]	CE [ANSI, CSA]
				[ ]			-
			WireEye=hinged Captive eye U=Uplift triple lock alt to A	LTA= fixed Captive eye. Orca=triple lock can act as snap	WireEye=hinged Captive eye U=Uplift triple lock alt to A		
re.cz	rockempire.cz	rockempire.cz	rockexotica.com	rockexotica.com	rockexotica.com	rockexotica.com	rockexotica.com
							
UCTS	SAR PRODUCTS	SAR PRODUCTS	SAR PRODUCTS	SIMOND	SIMOND	SIMOND	SIMOND
	Klet Steel 01718	Klet Lite 01718	Oval 01718	Goliath HMSSecure 8389464 8360271	3000 -	Rocky Mountain -	Spider HMSSecure 8058330
€0	£0 $00 €0	£0 $00 €0	£0 $00 €0	£1215 $0 €0	£9 $0 €0	£10 $0 €0	£1516 $1719 €0
	0g 0oz	0g 0oz	0g 0oz	83-86g 2.9-3oz	78g 2.75oz	45g 1.6oz	69-72g 2.4-2.5oz
bf lbf lbf	0kN 00lbf 00kN 00lbf 00kN 00lbf	8kN 00lbf 30kN 00lbf 10kN 00lbf	0kN 00lbf 00kN 00lbf 00kN 00lbf	10kN 2248lbf 25kN 5620lbf 7kN 1573lbf	10kN 2248lbf 30kN 6744lbf 10kN 2248lbf	8kN 1798lbf 22kN 4945lbf 7kN 1573lbf	9kN 2023lbf 21kN 4720lbf 6kN 1348lbf
look	Asymm Hook	Asymm Hook	Asymm Hook	HMS Clean	Asymm Clean	Asymm Clean	HMS Clean
m	0 x 0mm 0 x 0"	110 x 62mm 4.3 x 2.4"	0 x 0mm 0 x 0"	0 x 0mm 0 x 0"	0 x 0mm 0 x 0"	0 x 0mm 0 x 0"	0 x 0mm 0 x 0"
0"	0mm 0"	19mm 0.7"	0mm 0"	25 24mm 1 0.9"	19mm 0.7"	17mm 0.7"	21mm 0.8"
	STEEL	STEEL	STEEL	Alu	Alu	Alu	Alu
		CE B B		UIAA CE	UIAA CE	UIAA CE	UIAA CE
	-	-					-
			SAR-Prods also rebadges the ISC Gecko as K0001	Secure has hinged captive eye.			Secure=hinged captive eye.
s.com	sar-products.com	sar-products.com	sar-products.com	Simond.com	Simond.com	Simond.com	Simond.com

Images NOT to Scale Various gate closure types shown but data is for screwgate or the most basic locking model (not snap-gate)						
MANUFACTURER	SINGING ROCK	SINGING ROCK	SINGING ROCK	SINGING ROCK	SINGING ROCK	SINGING R
MODEL VARIANT	Bora GP K0107108119....107E/B...	Colt K0112....	Hector K011421....	Oxy K0122...	Ozone K00161718....	Via Ferra K5330..
ORIGIN						
COST (inc Tax) for Screwgate or base model	£15 $16 €1517	£9 $12 €13	£12 $18 €17	£13 $13 €12	£12 $14 €0	£14 $19
WEIGHT min- max (see gatelock colour-coding)	63-64-68g 2.2-2.25-2.4oz	48g 1.69z	83-89g 2.9-3.1oz	74-81g 2.61-2.86oz	80-85g 2.8-3oz	90g 3.1oz
MBS Minor Axis Major Axis Gate Open	8kN 1798lbf 23kN 5170lbf 8kN 1798lbf	8kN 1798lbf 26kN 5845lbf 11kN 2472lbf	9kN 2023bf 30kN 6744lbf 8kN 1798lbf	8kN 1798lbf 26kN 5845lbf 7kN 1573lbf	10kN 2248lbf 26kN 5845lbf 7kN 1573lbf	8kN 1798 30kN 674 9kN 202
SHAPE NOSE	HMS Clean	Asym Clean	HMS Clean	Oval [D] Clean	Oval [D] Clean	Klett Cle
DIMENSIONS ht x w x depth	105 x 75mm 4.1 x 3"	100 x 59mm 4 x 2.3"	121 x 80mm 4.7 x 3.1"	111 x 64mm 4.3 x 2.5"	110 x 60mm 4.3 x 2.3"	117 x 80 0 x 0"
GATE OPENING	22mm 0.87"	18mm 0.7"	26mm 1"	21mm 0.8"	21mm 0.8"	21mm 0
GATELOCK- SNAP SCREW MANUAL AUTO2 AUTO3 AUTO4 ACTIONS	■ ■ ■	■ ■	■ ■	■ ■ ■	■ ■ ■	■
CAPTIVE EYE (OPTIONAL ■)	■		□	□		
MATERIAL	Alu	Alu	Alu	Alu	Alu	Alu
STANDARDS CE: work=■ sport=■	UIAA CE ■■	UIAA CE ■■	UIAA CE ■■	CE ■■	CE ■■	CE ■
OTHER COLOURS	■ [□ □ □] [■] [■]	□ □ □	■	■	■	-
NOTES	GP-hinged captive eye black or grey only					
WEBSITE	singingrock.com	singingrock.com	singingrock.com	singingrock.com	singingrock.com	singingrock

Images NOT to Scale Various gate closure types shown but data is for screwgate or the most basic locking model (not snap-gate)						
MANUFACTURER	SKYLOTEC	SKYLOTEC	SKYLOTEC	SKYLOTEC	SKYLOTEC	SKYLOT
MODEL VARIANT	CT-XL-D H-30.8/9-SG 2C47900	CT Key Stak H-027	CT Lime 2C45800...000	CT Nimble Evo 2C39400	CT Oval/Pillar/Pro H-283-SG..6-WG..7-TG L HC	CT OV H-298/248-SG..
ORIGIN						
COST (inc Tax) for Screwgate or base model	£0 $0 €18	£0 $0 €24	£1213 $0 €0	£0 $0 €0	£0 $2025 €1722	£0 $0 €2
WEIGHT min- max (see gatelock colour-coding)	80 85g 2.8 3oz	100g 3.5oz	46 50g 1.6 1.8oz	48g 1.7oz	75-80g 2.7-2.8oz	60g 2.1oz
MBS Minor Axis Major Axis Gate Open	12kN 2697lbf 28kN 6294lbf 10kN 2248lbf	0kN 00lbf 22kN 4945lbf 00kN 00lbf	8kN 1798lbf 23kN 5170lbf 8kN 1798lbf	10kN 2248lbf 25kN 5620lbf 10kN 2248lbf	10kN 1798lbf 2425kN 53955620lbf 7kN 1798lbf	9kN 202 24kN 539 7kN 179
SHAPE NOSE	Klett Clean	Oval [D] Clean	Asymm Clean	Asymm Clean	Oval [D] Clean	Oval Cle
DIMENSIONS ht x w x depth	120 x 80mm 4.7 x 3.2"	123 x 71mm 4.8 x 2.8"	0 x 0mm 0 x 0"	0 x 0mm 0 x 0"	111 x 6264mm 4.4 x 2.42.5"	95 x 58 3.7 x 2.
GATE OPENING	29mm 1.1"	20mm 0.8"	1817mm 0.7"	20mm 0.8"	21mm 0.8"	17mm 0
GATELOCK- SNAP SCREW MANUAL AUTO2 AUTO3 AUTO4 ACTIONS	■ ■ ■	■ ■ ■	■ ■ ■	■ ■	■ ■ ■ ■	■ ■
CAPTIVE EYE (OPTIONAL ■)		■			■	
MATERIAL	Alu	Alu	Alu	Alu	Alu	Alu
STANDARDS CE: work=■ sport=■	CE ■B ■B	CE ■A+T ■B	UIAA CE ■B	UIAA CE ■B	UIAA CE ■B ■B	CE ■B
OTHER COLOURS	[■] [□]	-	[■ ■ □ ■] [□ ■ ■]	□	[■ □ ■] [□ □ ■] [■ ■]	[■ ■]
NOTES					L= Hinged Captive Eye HC=Hard Coated option(shown)	HC=Hard Coated optio
WEBSITE	skylotec.com	skylotec.com	skylotec.com	skylotec.com	skylotec.com	skylotec.c

CONNECTORS-LOCKING CARABINERS

ROCK	SINGING ROCK	SINGING ROCK	SKYLOTEC	SKYLOTEC	SKYLOTEC	SKYLOTEC	SKYLOTEC
ata	D Steel K4081	O Steel K4241ZO07	CT Aerial Pro 2C33300	CT Axis HMS H-310-SG..TG L	CT Concept HMS H-281/2-SG..WG..TG L..HC	CT D-Shape H-292-SG..WG..TG	CT K-Classic 2C53303SHB
€0	£11 $15 €12	£9 $12 €9	£14 $0 €0	£16 $32 €26	£1518 $2531 €2025	£0 $0 €1421	£0 $0 €0
	255-267g 9-9.4oz	176-195g 6.2-6.8oz	40g 1.4oz	80g 2.8oz	74-81g 2.61-2.8oz	75 80g 2.6 2.8oz	87g 3.1oz
8lbf 4lbf 3lbf	13kN 2922lbf 50kN 11240lbf 20kN 4496lbf	9kN 2023lbf 30kN 6744lbf 8kN 1798lbf	9kN 2023lbf 23kN 5620lbf 8kN 1798lbf	10kN 2248lbf 25kN 5620lbf 7kN 1798lbf	108kN 22481798lbf 23kN 5170lbf 7kN 1798lbf	10kN 2248lbf 30kN 6744lbf 10kN 2248lbf	10kN 2248lbf 30kN 6744lbf 10kN 2248lbf
ean	Klett Clean	Oval [D] Clean	Asymm Clean	HMS Clean	HMS Clean	Asymm Clean	Asymm Clean
mm	117 x 80mm 4.6 x 3.2"	109 x 58mm 4.3 x 2.3"	0 x 0mm 0 x 0"	121 x 82mm 4.8 x 3.2"	105 x 73mm 4.1 x 2.9"	110 x 62mm 4.3 x 2.4"	0 x 0mm 0 x 0"
.8"	25mm 1"	18mm 0.7"	18mm 0.7"	24mm 0.95"	21mm 0.8"	2019mm 0.8"	22mm 0.87"
	STEEL	STEEL	Alu	Alu	Alu	Alu	Alu
	CE	CE	UIAA CE B	CE B+T H	CE B H	CE B B	CE K
	-	-		-	[ ] [ ]	[ ] [ ]	
				L= Hinged Captive Eye	L= Hinged Captive Eye HC=Hard Coated option		
k.com	singingrock.com	singingrock.com	skylotec.com	skylotec.com	skylotec.com	skylotec.com	skylotec.com

EC	SKYLOTEC	SKYLOTEC	SKYLOTEC	SKYLOTEC	SKYLOTEC	SKYLOTEC	SKYLOTEC
X 35-TG HC	CT Snappy H-288..-SG 291-TG	CT Warlock HMS 2C40500XPI	Ovaloy H-036..069	Oval 2.0/Double O H-212C..208C..209C..211/2C	PassO H-137-SC..TW..	CT D-Shape H-295-SG..TG 297SG	CT Large H-305-SG..TG..287SG
128	£0 $0 €1524	£0 $25 €2025	£24 $0 €24	£33 $0 €1633	£0 $0 €2123	£0 $0 €1121	£0 $0 €1625
	90g 3.2oz	56g 2oz	90100g 3.2oz	80-90g 2.8-3.2oz	90-100g 3.2-3.5oz	180-200g 6.4-7.1oz	250-280g 8.8-9.9oz
3bf 5lbf 8lbf	10kN 2248lbf 23kN 5170lbf 9kN 2023lbf	12kN 2697lbf 23kN 5170lbf 8kN 1798lbf	0kN 00lbf 25kN 5620lbf 00kN 00lbf	7kN 1798lbf 25kN 5620lbf 7kN 1798lbf	10kN 2248lbf 22kN 4945lbf 7kN 1798lbf	10kN 00lbf 303550kN786811240lbf 8kN 00lbf	15kN 3372lbf 50kN 11240lbf 20kN 4496lbf
ean	HMS Clean	HMS Clean	Oval [D] Hook	Oval [D] Clean	HMS Clean	AsymmCleanHook	Klett Clean
nm 3"	112 x 73mm 4.4 x 2.9"	0 x 0mm 0 x 0"	108 x 5860mm 4.25 x 2.3"	113 x 0mm 4.5 x 0"	112 x 76.5mm 4.4 x 3"	110 x 63mm 4.3 x 2.5"	119 x 78mm 4.7 x 3.1"
.7"	22mm 0.87"	24mm 0.95"	19mm 0.7"	20mm 0.8"	30mm 1.2"	2019mm 0.80.7"	25mm 1"
	Alu	Alu	Alu	Alu	Alu	STAINLESS STEEL	STAINLESS STEEL
B	CE B H	CE H	CE B	UIAA CE B B	CE B H	CE B [+ANSI*]	CE M
	[ ]		-		[ ]	-	-
on for auto3	all silver S/G=€14			Double-O barrel twists both ways		*ANSi=alt Triple lock version H296-TG €20	
com	skylotec.com	skylotec.com	skylotec.com	skylotec.com	skylotec.com	skylotec.com	skylotec.com

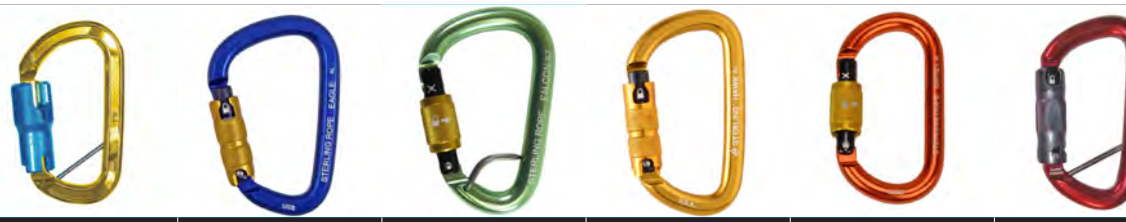
Images NOT to Scale Various gate closure types shown but data is for screwgate or the most basic locking model (not snap-gate)						
MANUFACTURER	SKYLOTEC	SKYLOTEC	SKYLOTEC	SKYLOTEC	SKYLOTEC	SKYLOT
MODEL VARIANT Product code & data in the table is for the basic model	CT Pillar H-287-SG..TW..TG	CT Snappy H-291-SG..TG	HMS Steel KH218	Steel D H-129TW..132-TG	Steel O H-037	Steel Ov H-038
ORIGIN						
COST (inc Tax) for Screwgate or base model	£0 $0 €1117	£0 $0 €1824	£0 $22 €0	£0 $0 €2634	£20 $0 €12	£0 $0 €
WEIGHT min- max (see gatelock colour-coding)	180g 6.4oz	237250g 8.48.8oz	0g 0oz	260g 0oz	170g 0oz	200g 0oz
MBS Minor Axis Major Axis Gate Open	15kN 3372lbf 30kN 6744lbf 10kN 2248lbf	15kN 3372lbf 40kN 8992lbf 15kN 3372bf	10kN 2248lbf 50kN 11240lbf 20kN 4496lbf	16kN 3597lbf 41kN 9217lbf 00kN 00lbf	9kN 2023lbf 25kN 5620lbf 8kN 1798lbf	0kN 00l 20kN 449 00kN 00
SHAPE NOSE	Oval [D] Clean	HMS Clean	Asymm Hook	Asymm Hook	Oval [D] Hook	Oval [D] H
DIMENSIONS ht x w x depth	110 x 61mm 4.3 x 2.4"	119 x 78mm 4.7 x 3.1"	0 x 0mm 0 x 0"	110 x 67mm 4.3 x 2.6"	109 x 57mm 4.3 x 2.2"	110 x 60 4.3 x 2.4
GATE OPENING	20mm 0.7"	22mm 0.87"	0mm 0"	20mm 0"	17mm 0"	20mm
GATELOCK- SNAP SCREW MANUAL AUTO2 AUTO3 AUTO4- ACTIONS	■ ■ ■ ■	■ ■		■	■	■ ■
CAPTIVE EYE (OPTIONAL ■)						
MATERIAL	STEEL	STEEL	STEEL	STEEL	STEEL	STEEL
STANDARDS **CE: work=■ sport=■**	CE ■M ■B	UIAA CE ■M ■H		CE ■B ANSI CSA	CE ■B	CE ■B
OTHER COLOURS	-	-	-	-	-	-
NOTES	Hard Coated option					
WEBSITE	skylotec.com	skylotec.com	skylotec.com	skylotec.com	skylotec.com	skylotec.c

Images NOT to Scale Various gate closure types shown but data is for screwgate or the most basic locking model (not snap-gate)						
MANUFACTURER	SMC	SMC	SMC	SMC	SMC	SMC
MODEL VARIANT	Force Jake 63011..21	Force Oval 61015/6.	Kinetic NFPA10300x	Lite NFPA100000x102200..300	Lite ANSI NFPA102100	Lite Stainles NFPA10000
ORIGIN						
COST (inc Tax) for Screwgate or base model	£1719 $2123 €2022	£14 $17 €16	£1920 $2325 €2224	£3843 $4754 €4450	£35 $43 €40	£48 $60 €
WEIGHT min- max (see gatelock colour-coding)	96 105g 3.4 3.7oz	71g 0oz	79 90g 2.8 3.2oz	187 199g 6.6 7oz	254g 8.9oz	170g 6oz
MBS Minor Axis Major Axis Gate Open	10kN 2248lbf 23kN 5170lbf 7kN 1574lbf	8kN 1798lbf 22kN 5170lbf 6kN 1349lbf	9kN 2023lbf 25kN 5620lbf 8kN 1798lbf	12kN 2697lbf 45kN 10116lbf 11kN 2473lbf	16kN 3597lbf 45kN 10116lbf 11kN 2473lbf	10kN 224 33kN 741 8kN 179
SHAPE NOSE	HMS Clean	Oval Hook	Asymm Clean	Asymm Hook	Asymm Hook	Asymm H
DIMENSIONS ht x w x depth	114 x 80mm 4.5 x 3.15"	107 x 56mm 4.2 x 2.2"	116 x 72mm 4.57 x 2.85"	114 x 70mm 4.52 x 2.76"	116 x 73mm 4.6 x 2.9"	114 x 68 4.52 x 2.
GATE OPENING	*2826mm 1.2 1"	28mm 0.6"	24mm 1"	2322mm 0.94 0.88"	25mm 1"	23mm 0.9
GATELOCK- SNAP SCREW MANUAL AUTO2 AUTO3 AUTO4- ACTIONS	■ ■	■ ■	■ ■	■ ■ ■	■	■
CAPTIVE EYE (OPTIONAL ■)					□	
MATERIAL	Alu	Alu	Alu	STEEL	STEEL	STAINLESS
STANDARDS **CE: work=■ sport=■**			NFPA-T	NFPA-G	ANSI, NFPA-G	NFPA-G
OTHER COLOURS	-	■	■ ■	[■]		■
NOTES	originally produced by/for OP. *Diag-swing gate.					
WEBSITE	smcgear.com	smcgear.com	smcgear.com	smcgear.com	smcgear.com	smcgear.c

			
EC	SMC	SMC	SMC
val	Crossover NFPA20550x..560x..700x	D 1850x	Force D 62012/5/6
30	£3237 $4046 €3844	£18 $22 €21	£15 $19 €18
	145g 5.1oz	74g 2.6oz	96 105g 3.4 3.7oz
bf 6lbf lbf	16kN 3597lbf 40kN 8992lbf 18kN 4046lbf	7kN 1574lbf 27kN 6070lbf 7kN 1574lbf	9kN 2023lbf 31kN 6969lbf 9kN 2023lbf
Hook	Asymm Clean	Asymm Hook	D Hook
mm 4"	140 x 85mm 5.5 x 3.4"	111 x 65mm 4.37 x 2.56"	107 x 55mm 4.2 x 2.15"
0"	25mm 1"	20mm 0.82"	16mm 0.6"
	Alu	Alu	Alu
	NFPA-T	option-NFPA-T	
		NFPA version=$25	
com	smcgear.com	smcgear.com	smcgear.com

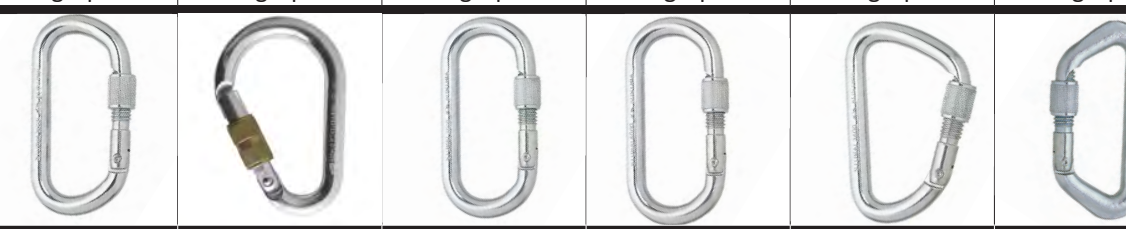
			
	SMC	SMC	SMC
s Steel 01x	Large ANSI HT D NFPA2100x2150121002	Large Stainless D NFPA2400x	XL D NFPA20003
€56	£3843 $48254 €4550	£64 $80 €74	£45 $56 €52
	300 325g 10.6 11.5oz	309g 10.9oz	346g 12.2oz
8lbf 8lbf 8lbf	16kN 3597lbf 4675kN 16860lbf 1118kN2473 4046lbf	18kN 4046lbf 46kN 10341lbf 11kN 2473lbf	13kN 2,922lbf 54kN 12139lbf 14kN 3147lbf
ook	D Hook	D Hook	Klett Hook
mm 70"	128 x 75mm 5 x 3"	128 x 75mm 5 x 3"	144 x 89mm 5.7 x 3.5"
94"	30mm 1.2"	30mm 1.2"	36mm 1.45"
STEEL	STEEL HT STEEL	STAINLESS STEEL	STEEL
G	NFPA-G [ANSI]	NFPA-G	
			-
	HT=Heat Treated ANSI=triple-cation gate		
com	smcgear.com	smcgear.com	smcgear.com

Images NOT to Scale
Various gate closure types shown but data is for screwgate or the most basic locking model (not snap-gate)



MANUFACTURER	STERLING ROPE	STERLING ROPE	STERLING ROPE	STERLING ROPE	STERLING ROPE	STERLING
MODEL VARIANT Product code & data in the table is for the basic model	ASD HWANSIDAL	Eagle ELP	Falcon Talon falc HWFALCONSLT	Hawk -	Osprey -	SafeD -
ORIGIN						
COST (inc Tax) for Screwgate or base model	£40 $50 €47	£1923 $2329 €2227	£1920 $2325 €2224	£1520 $1925 €1824	£2023 $2529 €2724	£32 $40
WEIGHT min- max (see gatelock colour-coding)	111.9g 4oz	92.9g 3.3oz	85.7g 3oz	78.1g 2.75oz	77.6g 2.7oz	99.8g 3.5oz
MBS Minor Axis Major Axis Gate Open	7kN 1574lbf 25kN 5620lbf 7kN 1574lbf	7kN 1574lbf 25kN 5620lbf 7kN 1574lbf	7kN 1574lbf 25kN 5620lbf 7kN 1574lbf	7kN 1574lbf 28kN 6295lbf 7kN 1574lbf	7kN 1574lbf 23kN 5170lbf 6kN 1349lbf	11kN 247 28kN 629 9kN 202
SHAPE NOSE	HMS Clean	HMS Clean	HMS Clean	Assym Clean	Oval Clean	Assym Cl
DIMENSIONS ht x w x depth	114 x 71mm 4.5 x 2.8"	117 x 79mm 4.6 x 3.1"	107 x 71mm 4.2 x 2.8"	114 x 63.5mm 4.5 x 2.5"	112 x 61mm 4.4 x 2.4"	114 x 63. 4.5 x 2.
GATE OPENING	16mm 0.6"	27mm 1.1"	24mm 0.94"	23mm 0.9"	22mm 0.9"	26mm
GATELOCK- SNAP SCREW MANUAL AUTO2 AUTO3 AUTO4- ACTIONS	■	■ ■	■ ■	■ ■	■ ■	■
CAPTIVE EYE (OPTIONAL ■)	■		■			□
MATERIAL	Alu	Alu	Alu	Alu	Alu	Alu
STANDARDS CE: work=■ sport=■	ANSI NFPA-T					NFPA
OTHER COLOURS		■	■	■	■	■
NOTES			Talon Autolock-only & has hinged captive eye			comes with rem CE pin
WEBSITE	sterlingrope.com	sterlingrope.com	sterlingrope.com	sterlingrope.com	sterlingrope.com	sterlingrope

Images NOT to Scale
Various gate closure types shown but data is for screwgate or the most basic locking model (not snap-gate)



MANUFACTURER	STUBAI	STUBAI	STUBAI	STUBAI	STUBAI	STUBA
MODEL VARIANT	3000 EL 982001	HMS EL 987704	2500 EL 982003	Oval 40 EL 982502	3400 EL 985002	SUPER 5 9780
ORIGIN						
COST (inc Tax) for Screwgate or base model	£0 $24 €0	£45 $33 €0	£0 $35 €0	£0 $35 €0	£0 $33 €0	£0 $51
WEIGHT min- max (see gatelock colour-coding)	244g 8.6oz	252g 8.9oz	240g 8.5oz	305g 10.75oz	228g 8oz	240g 8.5oz
MBS Minor Axis Major Axis Gate Open	9kN 2023lbf 30kN 6744lbf 8kN 1798lbf	12kN 2697lbf 26kN 5845lbf 6kN 1348lbf	9kN 2023lbf 25kN 5620lbf 8kN 1798lbf	12kN 2697lbf 40kN 8892lbf 15kN 3372lbf	10kN 2248lbf 34kN 7643lbf 10kN 2248lbf	10kN 224 50kN 112 35kN 786
SHAPE NOSE	Oval [D] Clean	HMS Clean	Oval Clean	Oval Clean	Asymm Clean	Asymm H
DIMENSIONS ht x w x depth	120 x 63mm 4.7 x 2.5"	115 x 73mm 4.5 x 2.8"	122 x 63mm 4.8 x 2.5"	130 x 72mm 5.1 x 2.8"	112 x 71mm 4.4 x 2.8"	112 x 71 4.4 x 2.
GATE OPENING	18.5mm 0.7"	24mm 0.9"	21mm 0.8"	27mm 1"	26mm 1"	16mm 0
GATELOCK- SNAP SCREW MANUAL AUTO2 AUTO3 AUTO4- ACTIONS	■	■	■	■	■	■
CAPTIVE EYE (OPTIONAL ■)						
MATERIAL	STEEL	STEEL	STEEL	13mm STEEL	STEEL	STEEL
STANDARDS CE: work=■ sport=■	UIAA CE ■■	UIAA CE ■■	UIAA CE ■■	UIAA CE ■■	UIAA CE ■■	UIAA CE
OTHER COLOURS	-	-	-	-	-	-
NOTES	Also called Asymmetirc Oval hook nose discontinued	hook nose discontinued	hook nose discontinued	hook nose discontinued	Also called Asymm/Mod D hook nose discontinued	
WEBSITE	stubai-sports.com	stubai-sports.com	stubai.com	stubai-sports.com	stubai.com	stubai.c

CONNECTORS-LOCKING CARABINERS

		expansion column					
ROPE	STERLING ROPE		STUBAI	STUBAI	STUBAI	STUBAI	STUBAI
	Steel HWSTEELAL		Alpha PRO EL 9775..95	Alpha 2.0 900085	Atomy 2.0 90008.	HMS Pico 977785	HMS Pro 977781
€37	£46 $57 €53		£1723 $2830 €2027	£14 $19 €15	£14 $19 €15	£16 $24 €17	£14 $25 €15
	260.3g 9.2oz		98g 3.5oz	80g 2.8oz	45g 1.6oz	59g 2oz	98g 3.5oz
3lbf 5lbf 3lbf	1516kN 3372359 7lbf 45kN 10116lbf 6kN 1349lbf		10kN 2248lbf 30kN 6744lbf 12kN 2697lbf	8kN 1798lbf 30kN 6744lbf 8kN 1798lbf	8kN 1798lbf 24kN 5395lbf 8kN 1798lbf	8kN 1798lbf 21kN 5720lbf 7kN 1574lbf	11kN 2473lbf 25kN 5620lbf 8kN 1798lbf
ean	Assym Clean		HMS[Asymm] Clean	HMS[Asymm] Clean	Asymm Clean	HMS Clean	HMS Clean
5mm 5"	125 x 71mm 4.9 x 2.8"		113 x 72mm 4.4 x 2.8"	113 x 72mm 4.4 x 2.8"	95 x 54mm 3.7 x 2.1"	97 x 65mm 3.8 x 2.5"	115 x 73mm 4.5 x 2.9"
0"	30mm 1.2"		23mm 0.9"	22mm 0.9"	11mm 0.4"	20mm 0.8"	23mm 0.9"
	STEEL		Alu	Alu	Alu	Alu	Alu
	[ANSI] NFPA-G		UIAA CE	UIAA CE	UIAA CE	UIAA CE H	UIAA CE
			-	-			
novable							
e.com	sterlingrope.com		stubai.com	stubai-sports.com	stubai-sports.com	stubai-sports.com	stubai-sports.com

	expansion column						
AI		TRANGO	TRANGO	TRANGO	TRANGO	TRANGO	TRANGO
000		Reaction	Physic	Superfly Evo	Regulock HMS	HMS K	Oval K
€0		£0 $12 €0	£0 $1417 €0	£0 $1315 €0	£0 $1417 €0	£0 $13 €0	£0 $12 €0
		50g 1.8oz	79g 2.8oz	53 55.2g 1.9 1.95oz	87 91g 3 3.2oz	88g 3.1oz	71g 3.2oz
8lbf 40lbf 8lbf		8kN 2473lbf 25kN 5620lbf 9kN 2023lbf	12kN 2697lbf 25kN 5620lbf 11kN 2472lbf	11kN 2473lbf 24kN 5395lbf 9kN 2023lbf	8kN 2473lbf 25kN 5620lbf 7kN 1574lbf	8kN 2473lbf 27kN 5395lbf 8kN 2023lbf	8kN 2473lbf 25kN 5620lbf 7kN 1574lbf
look		Asymm Clean	HMS Clean	Asymm Clean	HMS [Klett] Clean	HMS Clean	Oval Clean
mm 8"		100 x 59mm 4 x 2.3"	105 x 67mm 4.1 x 2.6"	94 x 59.2mm 3.7 x 2.3"	113 x 76mm 4.5 x 3"	120 x 73mm 3.7 x 2.3"	110 x 60mm 4.3 x 2.4"
.6"		17mm 0.7"	20mm 0.8"	20 18mm 0.8 0.7 "	22 23mm 0.9"	24mm 0.95"	21mm 0.8"
		Alu	Alu	Alu	Alu	Alu	Alu
							CE B
					[discontinued]		
		previoulsy 'React'	pink=screwlock only				
om		trango.com	trango.com	trango.com	trango.com	trango.com	trango.com

Images NOT to Scale Various gate closure types shown but data is for screwgate or the most basic locking model (not snap-gate)				expansion column		
MANUFACTURER	TREEHOG	TREEHOG	TREEHOG		TREE RUNNER	TREE RUN
MODEL VARIANT Product code & data in the table is for the basic model	THK003 -	THK006 -	THK002 -		HMS Evo Belay 56-562563-01	SOE HM 56-247-0
ORIGIN	UK	UK	UK		DE	DE
COST (inc Tax) for Screwgate or base model	£22 $0 €0	£24 $0 €0	£25 $0 €0		£1214 $1618 €1416	£11 $16
WEIGHT min- max (see gatelock colour-coding)	0g 0oz	91g 0oz	86g 0oz		68g 2.4oz	68g 2.4oz
MBS Minor Axis Major Axis Gate Open	0kN 0lbf 30kN 0lbf 0kN 0lbf	0kN 0lbf 23kN 0lbf 0kN 0lbf	0kN 0lbf 23kN 0lbf 0kN 0lbf		11kN 2473lbf 24kN 5395lbf 6kN 1348lbf	8kN 1798 22kN 494 7kN 157
SHAPE NOSE	Asymm Clean	HMS Clean	Oval Clean		HMS Clean	HMS Cle
DIMENSIONS ht x w x depth	0 x 0mm 0 x 0"	112 x 73mm 4.4 x 2.9"	110 x 69mm 0 x 0"		114 x 78mm 4.5 x 3.1"	119 x 82 4.7 x 3.
GATE OPENING	0mm 0"	0mm 0"	19mm 0"		24mm 0.95"	2621mm 0.
GATELOCK- SNAP SCREW MANUAL AUTO2 AUTO3 AUTO4- ACTIONS	■	■	■		■ ■	■
CAPTIVE EYE (OPTIONAL ■)						
MATERIAL	Alu	Alu	Alu		Alu	Alu
STANDARDS		CE ■B	CE ■B		CE ■■	CE ■■
OTHER COLOURS	-	-	-			
NOTES						
WEBSITE	treehog.co.uk	treehog.co.uk	treehog.co.uk		gube.eu	gube.e

Images NOT to Scale Various gate closure types shown but data is for screwgate or the most basic locking model (not snap-gate)						
MANUFACTURER	WILD COUNTRY	WILD COUNTRY	WILD COUNTRY	WILD COUNTRY	WILD COUNTRY	WILD COU
MODEL VARIANT	Ascent 40-ASCENTHMS	Ascent Lite Belay 40-ASCENTLTBLY	Eos 40-EOS	Session 40-..1000	Wild Screw 40-..0014	Xenon HMS 40-..1001/
ORIGIN	US	US	US	US	US	US
COST (inc Tax) for Screwgate or base model	£22 $18 €24	£1419 $1722 €23	£18 $21 €19	£13 $21 €13	£14 $14 €14	£1820 $22
WEIGHT min- max (see gatelock colour-coding)	74g 2.6oz	67 70g 2.6 2.5oz	53.5g 1.9oz	45g 1.6oz	48g 1.7oz	71 73g 2.5 2.6
MBS Minor Axis Major Axis Gate Open	8kN 1798lbf 26kN 5845lbf 7kN 1574lbf	8kN 1798lbf 26kN 5845lbf 7kN 1574lbf	7kN 1573lbf 24kN 5395lbf 9kN 2023lbf	8kN 1798lbf 23kN 5170lbf 8kN 1798lbf	9kN 2023lbf 23kN 5170lbf 10kN 2248lbf	7kN 1798 24kN 539 7kN 179
SHAPE NOSE	Asymm Clean	Asymm Clean	Asymm Clean	Asymm Clean	Asymm Clean	HMS Cle
DIMENSIONS ht x w x depth	112.5 x 77.5mm 4.4 x 3"	105 x 69mm 4.1 x 2.7"	110 x 60mm 4.3 x 2.4"	98 x 59mm 3.9 x 2.4"	100 x 59mm 4 x 2.4"	106 x 73 4.2 x 2.
GATE OPENING	23.5mm 0.93"	21mm 0.8"	22mm 0.87"	18mm 0.7"	18mm 0.7"	21mm 0
GATELOCK- SNAP SCREW MANUAL AUTO2 AUTO3 AUTO4- ACTIONS	■	■	■ ■	■	■ ■	■ ■
CAPTIVE EYE (OPTIONAL ■)						■
MATERIAL	12mm Alu	12mm Alu	12mm Alu	Alu	Alu	Alu
STANDARDS	CE ■H	CE ■H	CE ■B			CE ■H
OTHER COLOURS	-	-	-	■ ■	-	[■]
NOTES		discontinued				triple-lock gate belay can be S
WEBSITE	wildcountry.com	wildcountry.com	wildcountry.com	wildcountry.com	wildcountry.com	wildcountr

CONNECTORS-LOCKING CARABINERS

						expansion column	expansion column
INER	TREE RUNNER	TREE RUNNER	TREE RUNNER	TREE RUNNER	TREE RUNNER		
MS 2	Oval 71-250 249	Small Curved 71-244	Large Curved 71-243	HMS 71-256 255	Oval 71-287 01		
€14	£1112 $1316 €1214	£14 $18 €16	£13 $17 €15	£1112 $1316 €1214	£12 $13 €12		
	76 83g 2.7 2.9oz	72g 2.5oz	101g 3.6oz	210 230g 7.4 8.1oz	180g 6.3oz		
3lbf 5lbf 3lbf	7kN 1573lbf 20kN 4496lbf 7kN 1573lbf	0kN 00lbf 25kN 5620lbf 0kN 00lbf	0kN 00lbf 26kN 5845bf 0kN 00lbf	10kN 2248lbf 45kN 10116lbf 14kN 3147lbf	8kN 1798lbf 2325kN 5170 5620lbf 8kN 1798lbf		
an	Oval[D]Clean	Asymm Clean	Klett Clean	HMS[Asymm]Clean	Oval Clean		
mm 2"	110 x 60mm 4.3 x 2.4"	108 x 70mm 4.25 x 2.6"	120 x 88mm 4.7 x 3.5"	110 x 72mm 4.3 x 2.8"	110 x 60mm 4.3 x 2.4"		
60.8"	1918.5mm 0.750.7"	22mm 0.9"	23.2mm 0.9"	2521mm 10.8"	18.7mm 0.7"		
	■ ■	■	■	■ ■	■ ■		
	Alu	Alu	Alu	STEEL	STEEL		
■	CE ■B	CE ■B	CE ■B	CE ■B	CE ■B		
	■	-	-	-	-		
u	gube.eu	gube.eu	gube.eu	grube.eu	gube.eu		

CONNECTORS
CAPTIVE EYE CARABINERS

Carabiners produced with an integral eye forged or cast into the construction as a fully load-bearing element as distinct from the removable pin or bar that many standard carabiners have (see previous guide) that is simply a means of restricting the rope to the strongest part of the carabiner.

Apart from the obvious integral eye, these are otherwise recognisable as modified carabiners though often a little larger and certainly bulkier though not in the same 'bulk' league as the scaffold/firefighter snap hooks in the following guide.

These are intended to be used as longer-term anchor attachments to rope and lanyards where the fixed eye and asymmetric design ensures categorically that the load will always be directed down the spine and cannot migrate to cross load the gate. These eyes will also withstand loading in any direction unlike pins which are not designed to have load directly on them. These all have a conventional carabiner style gate lock ranging from snap to screwgate to double, triple and quadruple action. Any that have a double-action, palm-opening gate-release on the back of the spine intended for frequent clipping and unclipping are listed in the next category - scaffold/firefighter snap hooks. There will also be a **swivel-eye carabiner/hook** guide being added later in 2024.

Images NOT to Scale Various gate closure types shown but data is for screwgate or the most basic locking model (or snap-gate if that is the only model)			
MANUFACTURER	DMM	DMM	DMM
MODEL VARIANT Product code & data in the table is for the basic model	C/E Alloy ANSI C912..913..917.. ANSI	Director A652..653..657..	Director Yok A622..623..62
ORIGIN			
COST (inc Tax) for Screwgate or base model	£0 $0 €0	£0 $0 €0	£42 $53 €5
WEIGHT min- max (see gatelock colour-coding)	105-125g oz	59-65g oz	6876g 3oz
MBS Minor Axis / Major Axis / Gate Open	16kN 0lbf / 30kN 0lbf / 0kN 0lbf	7kN 1573lbf / 26kN 5845lbf / 9kN 2023lbf	7kN 1573 / 26kN 584 / 9kN 2023
SHAPE NOSE	Asymm -	Asymm -	
DIMENSIONS Length x width	0 x 0mm 0 x 0"	0 x 0mm 0 x 0"	98 x 64m 3.8 x 2.5
GATE OPENING	2419mm 00"	1716mm 00"	1716mm 0
GATELOCK- SNAP SCREW MANUAL AUTO2 AUTO3 AUTO4- ACTIONS	■ ■ ■	■ ■ ■	■ ■
CAPTIVE EYE SIZE	0mm 00"	0mm 00"	
MATERIAL	Alu	Alu	Alu
STANDARDS CE: work=■ sport=■	CE ■T	CE ■T	CE ■T ■
OTHER COLOURS	[■][■■][■■]	[■][■][■]	[■][■][■
NOTES	ANSI = Cyan(dbl) and Gold (triple) barrels		not a pulley sh
WEBSITE	dmmwales.com	dmmwales.com	dmmwales.c

Images NOT to Scale Various gate closure types shown but data is for screwgate or the most basic locking model (not snap-gate)			
MANUFACTURER	--	--	-
MODEL VARIANT	-- -	-- -	-- -
ORIGIN			
COST (inc Tax) for Screwgate or base model	£0 $0 €0	£0 $0 €0	£0 $0 €0
WEIGHT min- max (see gatelock colour-coding)	g oz	g oz	g oz
MBS Minor Axis / Major Axis / Gate Open	0kN 0lbf / 0kN 0lbf / 0kN 0lbf	0kN 0lbf / 0kN 0lbf / 0kN 0lbf	0kN 0lbf / 0kN 0lbf / 0kN 0lbf
SHAPE NOSE	Asymm -	Asymm -	Asymm
DIMENSIONS Length x width	0 x 0mm 0 x 0"	0 x 0mm 0 x 0"	0 x 0mm 0 x 0"
GATE OPENING	0mm 00"	0mm 00"	0mm 00
GATELOCK- SNAP SCREW MANUAL AUTO2 AUTO3 AUTO4- ACTIONS	■ ■ ■	■ ■ ■	■ ■
CAPTIVE EYE (OPTIONAL■)	0mm 00"	0mm 00"	0mm 00"
MATERIAL	Alu STEEL	Alu STEEL	Alu STEE
STANDARDS CE: work=■ sport=■	CE ■T	CE ■T	CE ■T
OTHER COLOURS			
NOTES			
WEBSITE	.com	.com	.com

CONNECTORS-CAPTIVE- EYE CARABINERS

							
	--	--	Grivel	--	ISC	ISC	--
ke SG 27..	-- -	-- -	Vlad-	-- -	KH300 ANSI -	KH301 ANSI -	-- -
458	£0 $0 €0	£0 $0 €0	£0 $0 €0	£0 $0 €0	£0 $0 €32	£20 $0 €0	£0 $0 €0
	g oz	g oz	g oz	g oz	87g 3oz	287g 10oz	g oz
lbf 5lbf lbf	0kN 0lbf 0kN 0lbf 0kN 0lbf	0kN 0lbf 0kN 0lbf 0kN 0lbf	0kN 0lbf 0kN 0lbf 0kN 0lbf	0kN 0lbf 0kN 0lbf 0kN 0lbf	n/a 30kN 6744lbf n/a	n/a 50kN 11240lbf n/a	0kN 0lbf 0kN 0lbf 0kN 0lbf
	Asymm -	Asymm -	Asymm -	Asymm -	Asymm -	Asymm -	Asymm -
m "	0 x 0mm 0 x 0"	0 x 0mm 0 x 0"	0 x 0mm 0 x 0"	0 x 0mm 0 x 0"	0 x 0mm 0 x 0"	135x 74mm 0 x 0"	0 x 0mm 0 x 0"
00"	0mm 00"	0mm 00"	0mm 00"	0mm 00"	20mm 00"	1817mm 0.75"	0mm 00"
	0mm 00"	0mm 00"	0mm 00"	0mm 00"	20mm 0.75"	20mm 0.75"	0mm 00"
	Alu STEEL	Alu STEEL	Alu STEEL	Alu STEEL	Alu	STEEL	Alu STEEL
T	CE	CE	CE	CE	UKCA CE	UKCA CE	CE
]							
eave							
com	.com	.com	grivel.com	.com	iscwales.com	iscwales.com	.com
							
	PENSAFE	PENSAFE	--	--	--	--	--
	-- A913..17	-- C332..335..335-35	-- -	-- -	-- -	-- -	-- -
0	£0 $0 €0	£0 $0 €0	£0 $0 €0	£0 $0 €0	£0 $0 €0	£0 $0 €0	£0 $0 €0
	118g 4.2oz	g oz	g oz	g oz	g oz	g oz	g oz
f f	16kN 3600lbf 30kN 6750lbf 0kN 0lbf	0kN 0lbf 0kN 0lbf 0kN 0lbf	0kN 0lbf 0kN 0lbf 0kN 0lbf	0kN 0lbf 0kN 0lbf 0kN 0lbf	0kN 0lbf 0kN 0lbf 0kN 0lbf	0kN 0lbf 0kN 0lbf 0kN 0lbf	0kN 0lbf 0kN 0lbf 0kN 0lbf
-	Asymm -	Asymm -	Asymm -	Asymm -	Asymm -	Asymm -	Asymm -
	135.5 x 81.5mm 0 x 0"	0 x 0mm 0 x 0"	0 x 0mm 0 x 0"	0 x 0mm 0 x 0"	0 x 0mm 0 x 0"	0 x 0mm 0 x 0"	0 x 0mm 0 x 0"
"	20mm 00"	0mm 00"	0mm 00"	0mm 00"	0mm 00"	0mm 00"	0mm 00"
"	22mm 00"	0mm 00"	0mm 00"	0mm 00"	0mm 00"	0mm 00"	0mm 00"
L	Alu STEEL	Alu STEEL	Alu STEEL	Alu STEEL	Alu STEEL	Alu STEEL	Alu STEEL
	CE ANSI. CSA	CE	CE	CE	CE	CE	CE
		C335-35 version is black PVC coated.					
	pensafe.ca	.com	.com	.com	.com	.com	.com

NEW-COMPILING Q2 '24

CONNECTORS

SCAFFOLD/ FIREFIGHTER SNAP HOOKS

Not to be confused with firefighter 'ceiling' hooks that are poles for pulling down combustible or combusting materials. These are much larger than standard carabiners and in their 'scaffold' hook form are designed to clip straight over a large diameter scaffold bar, rail or ladder rung. They typically have a captive eye, a very large gate opening and working area and most have a palm-release double action gate lock - your palm squeezes a sprung, flat plate on the rear of the spine which allows the snap gate to release and push inwards as it contacts the rung or scaffold bar and then immediately locks on release.

Some, like the ISC snaphook on the right (see the swiv-el-carabiner/hook guide being added later this year) have an additional gate release on the front, beneath the gate.

All are intended to be used on cowstails/lanyards either a a progression tool or a single safety restraint. Variations on this theme include FOIN's twistlock gate that is held closed by a hinged keeper that ou push down with your lower finger(s) when grasp-ing the spine, still a two stage, technically a 3-stage release.

At least 2 further spreads required.....

CT/Skylotec= Snaps= Shelter Evo/Steel, Hook-It, K Advance + Fire/Scaff= Jumbo, Big & Giant

SKYLOTEC= FS51, Attack + FF/Scaff= FS90, FS92, FS90ST, FS110 FS64

KONG= Queedy

KRATOS= FA50, FA50Steel, + 3x Tower Hooks, Huka, Rebar

NOTCH=54650

PENSAFE= 3 Firefighter + 8 Snap/Scaff Hooks

Images NOT to Scale Various gate closure types shown but data is for screwgate or the most basic locking model (or snap-gate if that is the only model)			
MANUFACTURER	AT HEIGHT	BEAL	BEAL
MODEL VARIANT Product code & data in the table is for the basic model	--	Air Hook L	Air Hook
ORIGIN			
COST (inc Tax) for Screwgate or base model	£20 $0 €0	£40 $0 €0	£122 $0
WEIGHT min- max (see gatelock colour-coding)	g oz	475g oz	475g oz
MBS Major Axis	0kN 0lbf	22kN 0lbf	22kN 0lbf
SHAPE NOSE	Asymm Clean	Asymm Clean	Asymm Cl
DIMENSIONS Length x width	0 x 0mm 0 x 0"	240 x 120mm 0 x 0"	360 x 165 0 x 0"
GATE OPENING	0mm 00"	60mm 00"	60mm 00
GATELOCK- SNAP SCREW PALM AUTO2 AUTO3 AUTO4-ACTIONS	■ ■ ■	■ ■ ■	■ ■
CAPTIVE EYE SIZE	0mm 00"	0mm 00"	0mm 00
MATERIAL	Alu STEEL	Alu STEEL	Alu STEE
STANDARDS CE: work=■ sport=■	CE ■A	CE ■A	CE ■A
OTHER COLOURS			
NOTES			
WEBSITE	atheightuk.com	beal-planet.com	beal-planet.c

Images NOT to Scale Various gate closure types shown but data is for screwgate or the most basic locking model (not snap-gate)			
MANUFACTURER	JSP	KONG	KRATO
MODEL VARIANT	Alu Scaffold Hook FAR0901	Tango	Dielectric Scaf
ORIGIN			
COST (inc Tax) for Screwgate or base model	£0 $0 €0	£0 $0 €0	£74 $0 €
WEIGHT min- max (see gatelock colour-coding)	480g oz	g oz	g oz
MBS Major Axis	22kN 0lbf	0kN 0lbf	23kN 0lbf
SHAPE NOSE	Asymm - Clean	Asymm Clean	Asymm Cl
DIMENSIONS Length x width	246 x 0mm 0 x 0"	0 x 0mm 0 x 0"	243 x 120 0 x 0"
GATE OPENING	60mm 00"	0mm 00"	55mm 0
GATELOCK- SNAP SCREW PALM AUTO2 AUTO3 AUTO4-ACTIONS	■	■	■
CAPTIVE EYE SIZE	29mm 00"	0mm 00"	0mm 00
MATERIAL	Alu St.STEEL	Alu STEEL	Polymer-coate
STANDARDS CE: work=■ sport=■	CE ■A/T	CE ■A	CE ■T
OTHER COLOURS		■	
NOTES			14kv elec resist
WEBSITE	.com	kong.it	kratos.co

CONNECTORS-SCAFFOLD/FIREFIGHTER HOOKS

	CMC RESCUE	HEIGHTEC	ISC	ISC	ISC	ISC	ISC
XL	ProSeries XL ANSI 300241..253..273	-- -	Fireman's 'biner KH307 KH307	Iron Wizard Large KH415	Scaffold Hook KH407	Scaffold Hook KH407	Scaffold Hook SH906
€0	£00 $7480 €00	£0 $0 €0	£0 $0 €0	£0 $0 €0	£0 $0 €0	£0 $0 €0	£21 $0 €0
	266-322g 9.4-11.36oz	500g oz	336400g 1314oz	540g 19oz	514g oz	514g oz	144g 5oz
	40kN 0lbf	22kN 0lbf	40kN 8992lbf	70kN 15736lbf	22kN 0lbf	22kN 0lbf	28kN 6294lbf
ean	Asymm Clean	Asymm Clean	Asymm -	Asymm ?	Asymm ?	Asymm Clean	Asymm Clean
mm	190 x 0mm 0 x 0"	0 x 0mm 0 x 0"	173 x 95mm 0 x 0"	180 x 102mm 7 x 4"	264 x 127mm 0 x 0"	264 x 127mm 0 x 0"	141 x 72mm 0 x 0"
0"	53mm 2.1"	0mm 00"	4944mm 00"	33mm 1.25"	65mm 00"	65mm 00"	23mm 0.9"
"	-	0mm 00"	Option Pin	NO	Option Pin	0mm 00"	20mm 0.78"
EL	Alu	Alu St.St	STEEL ST.STEEL	STEEL	STEEL	Alu & St.St	Alu & St.St
	NFPA	CE A	CE A/T NFPA-G	CE B	CE A/T	CE A/T	CE T
	manual-is dbl & snap-gate. XL version=fire/scaff-hook						
com	cmcpro.com	heightec.com	iscwales.com	iscwales.com	iscwales.com	iscwales.com	iscwales.com

	KRATOS	KRATOS	FOIN/HONEYWELL	PETZL	PETZL	PETZL	SKYLOTEC
S							
f Hook	Dielectric Snap Hook -	AluSteel Scaff Hook -	Lg Al Scaff Hook 4367	EasHook -	MGO Open 60 -	MGO Open 110 -	ANSI Scaff Hook -
€0	£53 $0 €0	£32 $0 €0	£46 $0 €0	£50 $0 €0	£108 $0 €0	£0 $0 €0	£74 $0 €0
	g oz	g oz	260g oz	g oz	690g oz	930g oz	g oz
	0kN 0lbf	22kN 0lbf	32kN 0lbf	0kN 0lbf	28kN 0lbf	23kN 0lbf	0kN 0lbf
ean	Asymm Clean	Asymm Clean	Asymm Clean	Asymm Clean	Asymm Clean	Asymm Clean	Asymm Clean
mm	165 x 70mm 0 x 0"	236 x 110mm 0 x 0"	245 x 112mm 0 x 0"	0 x 0mm 0 x 0"	0 x 0mm 0 x 0"	0 x 0mm 0 x 0"	0 x 0mm 0 x 0"
0"	0mm 00"	6055mm 00"	60mm 00"	0mm 00"	64mm 00"	110mm 00"	0mm 00"
			*				
"	0mm 00"	0mm 00"	0mm 00"	0mm 00"	0mm 00"	0mm 00"	0mm 00"
d steel	Polymer-coated steel	Alu	Alu	Alu STEEL	Alu	Alu	Alu STEEL
	CE A	UIAA CE T K/T	CE T	CE A	EAC CE A ANSI CSA	EAC CE A ANSI CSA	CE A
tance			*Twistlock plus hinged gate-keeper=Auto3				
m	kratos.com	kratos.com	lyonequipment.com	petzl.com	petzl.com	petzl.com	skylotec.com

UPDATED Jan '24

AUTOLOCKING/BRAKE ASSIST

RESCUE-CAPABLE DESCENDERS

RULE NUMBER ONE

Always maintain grip of the rope tail, use it judiciously to control speed and create smooth restarts under high load

This class of hardware is all about the standards and specifically the EN (European product performance) standards which are, by far, the most comprehensive of world standards and well worth checking out. We'll come to specifics later but first we'll cover the basics of this category which is that **when the rescuer removes hands from the trail-rope and the handle, the device maintains position on the rope**. This used to be called 'Auto-Locking' but the term 'Assisted-Braking' has now crept in which we'll discuss shortly.

The definition of a 'rescue device' is open to much interpretation since Rescuers as individuals gaining access to a casualty/strandee or undertaking a search or facilitating access can obviously use any device that their agency or team allows them to. This includes a multitude of lighter weight, mostly sport oriented devices like the *GriGri, Lori* and *Druid* some of which we have included in this Guide. The rest of these lighter devices feature in the ***Tactical/Lightweight Descenders*** Guide on page 66 . This article focuses mainly on descenders where the manufacturer has either designed and marketed the device specifically for rescue, or where there is clear information provided on the devices for potential use in rescue situations. Those that do not meet this criterion but could still be of interest to rescuers for access have the product name highlighted in red.

Many of the descenders listed in the GUIDE meet more than one performance standard, including one based on use with the dynamic ropes normally associated with mountaineering. This Guide also includes any devices meeting ANSI/ASSE Z359.4 and/or NFPA G and L but not E(escape) which may not have a CE at all if they're not intended to be sold within the EU. We have NOT included Escape devices as they are, by design, very lightweight, personal use devices, often with a reduced Working Load Limit and are included in next guide on p66. We have only included devices that stop your descent when your hands are taken off the device.

AUTOLOCKING is a commonly used term with descenders but can be misunderstood. Typically, it means that if you take your hands off the trail rope and the descender entirely, you will not descend, but instead will hold at your current position, This is

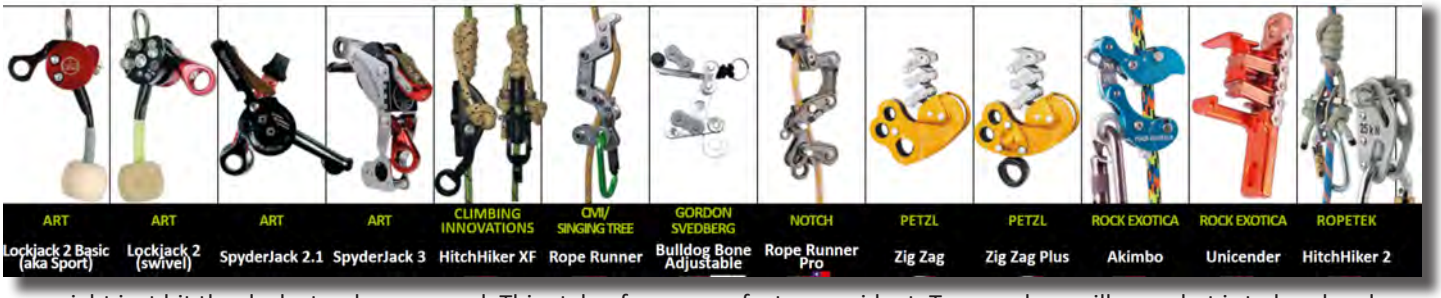
the ideal, but the reality is that many factors can reduce the effectiveness of the brake (rope condition, wear in the device, loads applied for example). This is why many manufacturers prefer the term 'brake assist' rather than Autolocking.
Having said that, contrast this potential limitation with a purely manual descender like a figure 8 or a rack where release of the trail rope will result in you going into freefall unless you can regain control of the trail rope, and the need to be tied off (hard-locked with a knot) in order to hold-station while attending to a casualty or rigging etc. and there are very few reasons for choosing to use a manual device over an autolocking device for descending/abseil/rappelling.

There are some specific rescue tasks, such as LOWERING which we'll come to next and where there may be a case for Brake Bar Racks and some other manual devices as part of the system but again NOT figure 8's . They really should be consigned to the rescue-descender museums but familiarity, low cost and tradition will continue to ensure that figure 8 descenders will always be around for personal use and sport climbing/ caving even though they impart twist to the rope, have no safe recovery if the trail rope is accidentally released and often very little heat-sink so that stopping during a high speed long descent could also be catastrophic as it melts through the rope.

We've been firmly in the autolock camp since they were first invented in the form of the *Petzl Stop* and the *Troll ALLP* so we're a bit biased but even though it's taken 30 or 40 years, if you look at the direction that ALL the major players including iconic US names like *CMC* and *Rock Exotica* have taken, they've all arrived at the autolock as the standard device for descending rather than as a niche, expensive and exotic-looking alternative to a fig-8.

PANIC GRAB ?

We feel this term, often described as 'anti-panic' in descender instructions, to be somewhat insulting to rescuers who are presumably at the top of their game and not prone to panicking. Climbing Technology's Sparrow calls it an 'Extraordinary Braking System' which is perhaps more appropriate to expert users who then don't have to admit to having panicked but instead simply had an 'extraordinary moment'. To keep everyone happy let's think of it as a double or secondary brake to protect against accidental activation that might put you into a free-fall such as pressure from webbing or rigging against the handle.
The 'panic' term has come about because a climber's reaction to an unexpected and maybe scary occurrence is to hang on more tightly to whatever you're already holding, in this case the handle of the descender. It was often the case with single action brakes that having grasped the handle and gone into virtual free-fall this further inclined you towards hanging on tighter rather than the unnatural reaction to let go of everything in order to arrest your fall. So double braking devices arrived and were sold on the ability to mitigate that grab reaction when something goes wrong.
Some devices like the *Petzl I'D* and *ISC D4* will 'lock' when the handle goes beyond a certain point, then need to be reset before you continue descent; while others like the *SRTe* (now *DB Sala*) *Stop* style devices only slowed you up while you grabbed the handle too hard. In some cases, you need to push/ grasp the handle so hard to initiate a brake that it's tantamount to a wilful rather than an inappropriate self-preservation action and could be relatively ineffective in arresting the fall,



you might just hit the deck at a slower speed. This style of secondary brake, however, is much better suited to tactical and high-speed descents where a sudden arrest, if you overcook the handle, could be disastrous whereas a temporary slowing could be easily dealt with. Some professional access workers too disliked what they felt as unnecessary bulk and complication of the original I'D and ended up getting their own version, the RIG which had no secondary brake and was a bit smaller, making it popular with tactical users at the same time. *C.A.M.P.'s Druid* has taken a similar option and offers the *Druid Pro* with no secondary brake.

ROPE BRAND SPECIFIC

Most of the performance standards relating to descenders require devices to be tested on ropes that meet a specific performance standard of their own such as EN1891 type A, Manufacturers carry out loads of internal testing whilst developing a product, checking that their devices perform appropriately within the rope diameter ranges they have decided. When it gets to external testing, they will present the devices with the ropes they know will work well and have the tests done on these ropes. They then list these ropes in the product instructions. In some cases, the specific standard requires the hardware / rope combination to be formally named because the standard is written for an 'assembly', not just one half of the package.
In either case, these lists of 'tested' ropes can be quite small as testing is expensive and there are hundreds of ropes out there. Does this mean that only listed ropes can be used in a device? Not necessarily. It is up to the manufacturer to decide how restrictive it wants/needs to be. If they are comfortable that the product works on any rope that meets a specific standard, then it will probably say so – it makes the device more useful and sells more of it!

A word of warning, EN (European) standard ropes have a different construction and performance compared to ANSI / NFPA (American) ropes. An ANSI / NFPA only certified descender fed an EN standard rope might not work as expected. The same is true for EN descenders on ANSI / NFPA ropes – always check with the manufacturer, assume nothing.

ARBORIST DEVICES

This is a category of descenders worth mentioning in this GUIDE though most are not included in the tables (See **ARBORIST EQPT BUYERSGUIDE** for Hybrid Descenders as pictured above). In recent years the arb sector has driven innovation in rope work in a way we haven't seen in Rescue since the 80s resulting in a wave of new descent devices. These are often from brand names you're already familiar with - Petzl and Rock Exotica - but also some that may be new to you like ART and Singing Tree. These devices are specifically NOT designed for rescue but nevertheless WILL be used for exactly that in the event of a tree accident. Tree workers will use what is to hand and what they are familiar with and the tree world is an unforgiving and dangerous environment so rescues are frequent. Who knows, their particular quirkiness might be just what you're after as a personal descender. The two most likely candidates are the *Petzl ZIGZAG* and the *Rock Exotica Unicender*. The former because it has grown in size and capacity in its 2019 version and specifically allows a two-person rescue, the *Unicender* because it is a solid, bombproof device well capable of handling high loads. There has been a vague theme to the design of these key arb descenders and that theme is 'chain'. As in motorcycle chain. This was started by *Rock Exotica* with their *Unicender* and then taken up by the *ZigZag. Singing Rock*'s *Rope Runner*, *Bulldog's Bone* and *Rock Exotica*'s *Akimbo* (developed by an arborist rather than R.E) stretched that chain link into manufactured, individual side-plates but they still operate primarily as a concertina locking mechanism. These are hands-free and auto-locking in that if you remove your hands from the device and trail rope you will hold position on the rope. Because it is rated for use with a 2 person load, we have included the *Unicender,* but be aware that this and the *ZigZag* are designed specifically for tree work and the instructions describe their rescue applications in this context.

KROK DEVICES - This is one of three prolific Russian brands including *USHBA* and *ICE ROCK* that we usually have in our Guides. We have omitted allrussian models during these times of sanctions following the invasion and indiscriminate bombing in Ukraine, now unfortunately copied in Gaza but *KROK* have such unusual models they deserve discussion. *Krok* has largely developed equipment in isolation and are among the strongest but heaviest on the market. There are clearly some devices that have been copied from existing popular models and at least one law suit is currently underway for breach of patent, but for the most part this is a comprehensive and interesting range with plenty of technical information and test data but no actual standards for use outside of Russia. Some of the designs are truly inspired, seeming to address obvious problems we've lived with for years. As with the Chinese models we'll come onto next, we can't recommend the brands and have no hands-on experience of their functionality; we simply include them because there are so many interesting and relevant products that may be worth investigating if only for personal interest - until *Krok* widely certify their equipment to recognised world standards as *Ice Rock* are doing now.

Russian gear is subject to trade embargoes although it would be madness if that included 'rescue' equipment. But 'Madness seems to rule these days so who knows. Of note are the double rope models . *SRTe* Australia had an effective double rope, double brake descender (right) that we used for stretcher rescue for over a decade, so this isn't new but the fact remains that few venture into double rope devices.

Anthron(now *Skylotec)* had a double rope version of the *DRD* called *Rescue, Anpen* had the interesting looking *P16* (pic right) for a while before withdrawing it and *Krok* have the *Freya* pic right) . The issue with such devices is that the cams need to operate independent of each other so that if one rope fails, the cam will still grip the remaining rope rather than the now much fatter severed rope (fatter because there is no longer any load on it). Another interesting design is the model below right that tries to address our *Rule Number One* mentioned on the title page - keeping hold of the trail rope. This model combines control of the trail rope with speed control. The hand that normally grasps the trail rope has a friction-adjustment handle as well as a cam and bobbins on the main descender body. In theory they say that you do away with the trail- hand and control this with just one hand. If it works, and we imagine it takes some getting used to, it would be of particular interest to tactical users requiring a free hand for their gun or rescuers wanting to tend to a casualty during descent. Again, we're not recommending this, simply pointing out its existence. Finally, for quirkiness, Krok supply at least three of their descenders in left handed and right-handed options - that will please the high proportion of 'lefties'.

CHINESE DEVICES

After discussions with three specific companies in China we have decided to include them in our GUIDES until or unless we find something amiss. These are *ASAT Safety* which differs from the other two in producing only its own bespoke equipment. *ANPEN* and *XINDA* (which we have previously listed in conjunction with another company/distributor *SOB*). L have a number of products are obviously styled on market leaders outside of China and some in suspiciously similar livery. Often they continue to make designs that have been superseded but they have enough unique features and entire products to warrant inclusion and importantly they have websites, detailed specifications and can be contacted. We can't ignore the importance of Chinese manufacturing even though there are still question marks about appropriate standards and there will always be rogue counterfeiters so you need to thoroughly verify the certification claims especially when they simply state 'CE' but there are also some relevant Chinese standards to check out. Hopefully, we'll be putting a spotlight on their products that requires they stand on their own performance merits. To be clear, we cannot advocate *any* of these devices above the obvious pedigree of the key established brands but cost and proximity to market for Asian teams in particular is a reason for their consideration and inclusion plus they already make products for well known European and North American brands so the chances are, you've been seeing their products for years under other brand names.

AUTOLOCK DESCENDERS

DESCENT SPEEDS

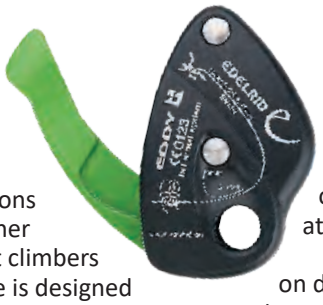
A part of many descender performance standards is a requirement that when descending the device does not get so hot that it can damage the rope it is moving down. This is evaluated by measuring the temperature of the rope contact faces after a decent at a set speed with a set mass over a set distance. This testing is why you see markings such as 150Kg/200m on devices. It does not mean that you can only descend 200m, just that with a mass of 150Kg at a normal, steady descent speed by the time you get 200m in its going to be pretty warm. Travel slower or with a lighter mass and you create less descent energy and therefore potentially less heat from friction.

Petzl's Stop continues to evolve and separate it from some of the very similar alternatives, the latest version of the Stop has an extended, sprung handle.

Some descenders have short handles or release mechanisms that have little mechanical advantage, meaning that the user quickly tires and lets go for a rest. This limits the descent energy very nicely and means that the device does not warm up. Longer handles and more mechanical advantage make it much easier to release the rope, giving finer control but at the risk of allowing a rapid, temperature rising descent. The big advantage of a handle with decent mechanical advantage is when coping with 'rescue' loads. The extra control makes the initial start smoother and less dramatic and enables the user to maintain the descent for longer without getting cramps in the hand. Always check the instructions for info on braking connectors, brake spurs and additional friction options. As handles get longer these additional friction options seem to play a bigger role.

HEAVY-DUTY 'TEAM' DEVICES

Our first Guide to Descenders in TECHNICALRESCUE#75 included the*CMC MPD* as the stand-alone heavy duty device with a one-way ratcheting cam to act as a more efficient lowering/ hauling device. . Since then the concept, if not the sheer brute strength, has been taken up by *Petzl* with their *Maestro*, *CMC/Harken* with the *Clutch* and *ASAT* with the *RD2* These all have faceted stainless sheaves able lock in one direction or to be a free-running pulley as well as, of course, a descender though they are cumbersomely large compared to other models. They are most at home as your primary lowering/raising device in a rescue or work situation.



SPORT BELAY DEVICES

Some models have different design specifications and are marketed for sport climbing belay rather than professional use. This isn't because sport climbers are expendable, it is either because the device is designed specifically for dynamic ropes like the Fixe Sum (which seems to be no more) or because it is so small and lightweight. Unlike the sturdy *Edelrid Eddy (right)*, which is probably the best known incarnation of the *Anthron Lory*, the *Beal Birdie*, *Mad Rock Lifeguard* and the *Trango Vergo* have such little mass that heat build-up would be too great with the higher loads and greater distances required for rescue. *All* autolocking belay devices will function as descenders and as personal-use rescue devices. Although it is not included here at Petzl's request, the Petzl *GriGri* and *Anthron Lory* families are proven as access as well as belay devices in rescue. However, , care needs to be taken with higher loads used on these lighter devices. The *Anpen P18* is in this guide because it meets a specific fire-rescue standard in China and has quite high load specifications despite its diminutive size. The Trango Cinch seemed to be up there too for a while but was replaced by the lighter weight *Vergo*. Belay devices tend to have more specific 'sweet' spots and you will often find their rope ranges categorised to show the most favourable rope diameter as with the *Beal Birdy* pictured in the middle-right. The Birdie may not have much material to provide a heat-sink but it is steel rather than all-alloy and with a weight of 200g could easily argue the case for being included alongside the *Lory* and the similar looking (but on closer inspection quite different) *Anpen P18*. It's probably more the case that we should have left out the *P18* and *Lory* as we have with the *GriGri* instead of including even more belay devices. We often used to put the mk1 and Mk2 *GriGri* against standard descenders for rescue because, in high-load and high-impact testing on low stretch ropes it out-performed many of the regular bobbin descenders in this list so it could probably easily hold its own. The current *GriGri* is technically the Mk3 and is smaller than earlier versions but we assume it has just as good if not better functionality with higher loads.

CE STANDARDS

In Europe, descenders CE marked for rescue were historically tested to EN 341:1992 Personal fall protection equipment. Descender devices for rescue were revised and reissued in 2011. This is no longer a harmonised standard so cannot be used to CE mark a descender. It was originally written from the perspective of descenders being used for evacuation purposes in emergency. The 2011 revision states clearly that it 'does not specify requirements for descender devices that are used for descending in mountaineering, rope access and work positioning systems'. Descenders for these specific tasks are now tested in Europe to EN12841:2006/C.

The EN 341 standard includes test procedures that require a series of high-level descent tests to assess the product's ability to perform satisfactorily after repeated use. The standard categorises descenders into two types: 'automatic', which incorporates a braking system that requires no intervention by the user once the descent has commenced, and 'manually-operated' products with a braking system that requires the user to take action. EN 341 refers to these as 'Type 1' and 'Type 2' respectively - ***ALL of the devices in this article are Type 2*** which are manual because you must do something to make the brake operate, even if that is simply letting go of the handle. The I'D is a 2A device. Automatic descenders would be more like a TRUEBLUE auto belay in that you jump out / off and it decides how fast you go, you do nothing at all.

It also includes a classification system ('A' to 'D'), based on descent energy the device is capable of withstanding in Joules:

A Up to 7.5 x 106J
B Up to 1.5 x 106J
C Up to 0.5 x 106J
D For only one descent – descent energy depends on the maximum descent height and the maximum rated load.

Most of the testing in EN341:2011 is required to be carried out on the same device without any changes being made between tests. Following multiple descents, the device should still retain an acceptable safety factor.
EN341:2011 includes general requirements which call for manufacturers to specify the minimum and maximum rated load, the latter being at least 100kg. It also includes requirements for design, materials and construction – such as a line (rope) integrity test, so that appropriate materials are used in the production of the device.

EN12841:2006 Personal fall protection equipment. Rope access systems. Rope adjustment devices is the other European standard that appears heavily in the guide listings. The market for most of these descenders is industrial rope access use and meeting EN12841 type C is essential for sales. Pertinent to us, within the standards scope it states that devices 'may be defined for the use of one person, or in case of rescue, for two persons simultaneously'.

Useful sections to note are the requirements for a hands-free locking element, a minimum resistance to slippage, a static strength of at least 12kN and dynamic testing to a fall factor of 1 with a mass of the maximum rated load that includes confirmation that the anchor line (rope) is not damaged.
Other standards you will see in this guide include two that are not overly relevant - EN 358 pertaining to rope lanyards with adjustment devices incorporated, and EN15151 which is a relatively new belay device standard utilising dynamic ropes and we are really only concerned with low stretch/static ropes for the purposes of this article. Two standards that are relevant are the NFPA-G (for general) or T (for Technical), the latter being the lighter loading of the two and perceived as requiring more technical knowledge to operate safely. ANSI/ ASSE Z359.4 is another relevant US standard but neither NFPA or ANSI are a legal requirement as they are non-governmental bodies but North American readers would do well to adhere to them where possible. Finally, you probably won't have come across GA494-2004 which is a Chinese standard for Fire service Fall Protection equipment. No idea what's required for that but it does show the doubters that there is some kind of relevant domestic test procedure for Chinese products.

IN THE FOLLOWING TABLES:.....

COST: as always is a rough guide only - it can vary due to exchange rates, taxes etc. and we usually round the price up. Chinese and Russian devices may need import duty added.
ORIGIN: The main flag refers to the manufacturer's home country, but this may not be where the device is made. If we know, we show an inset flag and you will notice a number of 'rebadged' devices like *SAR Products' AB* Descender made for them by *ISC* and *ISC's D4* which is so popular it's been bought and badged by companies who make their own stuff so they

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BlueWater's 11mm NFPA-G rated low elongation line features:

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Diameter:	11mm
Tensile Strength:	9,447 lbf. (42 kN)
Grams Per Meter:	93
Elongation	@ 300 lbf. = 2.6% @ 600 lbf. = 4.7% @ 1000 lbf. = 6.8%

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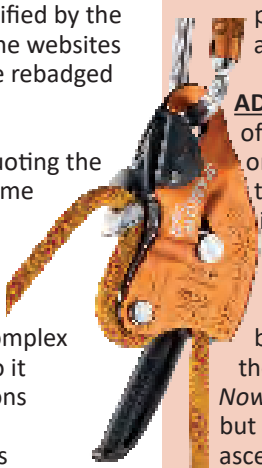
must think quite highly of the *D4* to badge it under their own names. The popularity of the *D4* and *D5* amongst companies that you might normally assume were competitors is down to their robust, no-nonsense design, they're tough as old boots with a clean, smooth appearance although some would say a little bulky. Also notice the *Anthron DSD* and *Lory* rebadged by several including *Singing Rock* and *Skylotec* but *Skylotec* actually bought *Anthron* (and *Climbing Technology*) so they can justify rebadging it. The figures in this Guide are verified by the manufacturer but you will see different spec on some websites for suppliers and for some manufacturers that have rebadged a model. No idea why!

DIMENSIONS: Mainly height by width with some quoting the depth (or thickness) of the device. Be aware that some manufacturers might be quoting the length of the body rather than the maximum length (or height) including the handle.



MBL/MBS Minimum Breaking Load/Sterngth is a complex area and it is not quoted by some, including Petzl so it is best to read the manufacturers product instructions thoroughly to make sure that you really understand what your device is capable of. Generally, the MBL is the minimum figure before failure that will be achieved by the device when used in a specific configuration. Some manufacturers bizarrely use the MBL figure that must be met in the relevant standard test - regardless of the fact that their device is capable of much more than that, for instance ***many will quote 12kN because it's the required minimum while others use the figure at which the device is just about, but not actually going to fail, making the device appear 'stronger' than a competitors product.*** Rarely, you might see a few MBL's marked on the same product or in the instructions; in these cases, they may relate to each of the configurations described or the separate individual standards tested to. On some products where a belay function is incorporated, the MBL may define the maximum load that can be held in a limited dynamic event (FF0.3) where the true applied force is significant. I said it was confusing. MRL: Maximum Rated Load can be just as confusing as MBL's. Some performance standards require devices to indicate the maximum rated load that can be applied during that specific application. The trouble is that the MRL may be different for each standard and some manufacturers again do things literally and only test to the minimum figure stated in the standard. This means some devices have differing MRL's marked on them and the MRL marked is actually less than the manufacturer is willing to allow you to apply! Yes, you read that right….

WLL: Working Load Limit (Safe Working Load) The **MAXIMUM figure for the larger rope in the device's range for EN 12841/C and may be for specialist/rescue use-only. Standard, single -person loads may be half the max figures shown in this Guide.** Smaller ropes meeting **EN 341** also have a lower WLL.

DOUBLE BRAKE/ANTI-PANIC: In addition to braking when you let go of everything this is a secondary brake which engages either fully, shown as ■ or proportional to the grip-pressure, shown as ■. A fully engaged brake like the *Petzl I'D* means you are safely held until you reset. A proportional brake may never fully stop you depending on how much grip pressure you apply, often they only slow you but that may be enough to remind you to let go completely in order to fully arrest your descent.

LOAD ROPE WHILE ATTACHED: The carabiner can be clipped in while the rope is loaded into the device. There is therefore no danger of dropping the device during rope installation or removal. Some, like the *Anthron, AMS, MPD* and options of the *Safe-Tec Evo* have solid eyes without the hinged gate present on most devices. In the case of the *Heightec Quadra* and *Safet-Tec Evo* this feature is an option because it is aimed at use in pre-rigged kits and specifically limits firefighters' ability to detach the device from the kit.

ADD FRICTION?: refers to an ancillary piece of metal, often hook-shaped or an extra post or bobbin around which you can pass the trail-rope and impart extra friction. This is particularly useful when trying to lower or descend with a heavy weight. *CT's Sparrow* (left) has a neat, low profile post that can be bypassed or it will hinge out from the body if you need to add friction. *Noworries* has a post that swings out but this is to better redirect rope for ascending rather than adding friction. *Petzl's ID*s have optional posts (options shown as an outline square ☐) that can be added or removed but come as standard on the *ID Evac* (right) which is oriented more for lowering than descending. *Ferno's FDU* (below) has a version with an additional 'rack' for added friction.

SLIPPAGE: is the force/mass at which the rope will begin to move through the device with the autolock applied. It will be slow and at pretty high loads, we used to call it 'creep' and on early devices might occur at relatively low body weights, hence the need to hard-lock or tie off your device to ensure a complete halt. These days, slippage figures will be around 450kg to 800kg applied mass, given as a figure of force, kN 4.5-8 kN. This figure depends on the rope diameter and ambient conditions but if a range is shown it will be for the minimum rope diameter to the maximum rope diameter for that device.

ROPE DIAMETERS: a figure in black is the full range of ropes that the device will work on. Orange text indicates the only diameters that can be used for rescue and in some cases a specific rope brand is also indicated. We only include low stretch/static ropes in the MIN DIAMETER column, NOT dynamic ropes which are often half a mil smaller than the static minimum diameter

EYE DIAMETER: refers to the harness or anchor connection eye as distinct from some secondary eyes that are effectively beckets for inclusion in a pulley system such as can be seen on the *CMC MPD*. This is an important figure because some eyes are quite small and would struggle to take some of the larger rescue carabiners and the forged, profiled cross-sections, having been designed originally with round bar section carabiners in mind.

USES: Remember: ALL of these devices can be used for **LOWERING** as well as abseil/Rappel but some are clearly more efficient than others as indicated by the introduction by *Petzl* of the *ID Evac* which is specifically oriented for lowering implying that standard orientations of some descenders can be awkward to control and of course the user has to get their brain around operating the descender upside down.

BELAY/ LIFELINING: For this GUIDE we are ONLY considering the devices approved for use with low-stretch/static rope NOT just dynamic climbing rope although we have listed the EN 15151 standard which specifically relates to dynamic ropes. Lifelining is not necessarily the same thing as a belay where you could end up with the device taking a severe dynamic load. Lifelining may simply mean horizontal or low angle edge restraint which would impart minimal fall factor to the device in the event of activation. In theory all of these devices could work as a top-belay/lifelining device if you are careful not to permit a potential fall factor of more than 0.3 and preferably 0 ! Some do it better than others so marginal devices in this category are shown in a black circle ●=OK but not brilliant.
Some devices will specifically tolerate a rescue belay load of 200kg fall factor third 0.3 and these are shown as an orange square■. Virtually all devices will lifeline or top-belay but very few will state that they can arrest a rescue load.
ASCENDER: Most descenders can be used in a reasonably efficient hauling system as a second ascender where a more conventional handled ascender provides the top ascender. Two descenders or a descender and a prusik cord/Purcell could also work well enough over short distances. The thing about using a descender instead of an ascender is that, while it imparts more friction during any ascent it does give you the option of an immediate switch to descent rather than trying to downclimb on ascenders or switch systems from ascenders to descender. It's already there.
HAULING/PROGRESS CAPTURE: If a device can be used as an ascender, which most of these can, it's already functioning as a Progress Capture Device (PCD) but some will work better than others and some manufacturers may prefer you don't use it that way, hence inclusion of this column.
INTERVENTION: This is where the double brake can be a positive liability. High speed intervention descents for either tactical purposes or suicide intervention need to give free run for as long as you have the descender 'wide-open'. The Rig and Druid Pro are examples of descenders that have dispensed with the double lock, ostensibly for access users tired of kicking into secondary locks unintentionally but tactical users can also benefit. If a device has a total lockout requiring reset (■in the *Double lock* column) we have NOT listed it as suitable for intervention but a proportional brake works OK.

COLOURS different colour options are separated by a comma. CAPITALS indicate the primary colour or colours if they are half and half. Secondary colour(s) on the same device are in lower case and separated by a forward slash /.

MATERIALS: Note that many shown as Alloy or Steel have a comfort cover of rubber or plastic etc.

DES

INDY EVO PLUS

PIRATA

- Two models for different demands
- Light weight and compact size
- Durable stainless steel cams
- Low maintenance and easy inspec
- For use on 10 – 12 mm static kern
- Self-braking and auto-locking hand

HIGH QUALITY SAFETY EQUIPMENT

SCENDERS!

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images NOT to scale	MODEL VARIANT	COMPANY	ORIGIN	COST	WT	DIMENSIONS	MATERIALS: FRAME / CAM / HANDLE	DOUBLE BRAKE	MA BECKET
	PO2	ANPEN		£101 $140 €115	350g 12.4oz	228x48mm 9x1.9"	Alloy / Alloy / Plastic	■	-
	P18	ANPEN		£111 $150 €125	223g 7.9oz	96x68mm 3.8x2.7"	Alloy / Alloy / Alloy	-	-
	RD2	ASAT		£386 $474 €473	790g 1.75lb	160x 140 x 60mm 6.3 x5.5 x 2.4"	Alu / Alu / Stainless Steel	■	■
	Druid 2232	C.A.M.P.		£160 $220 €145	280g 9.9oz	118x76x46mm 4.7x3x1.8"	Alloy / Stainless Steel / Alloy	■	-
	Druid-Pro 2233	C.A.M.P.		£143 $240 €120 AU$183	280g 9.9oz	118x76x46mm 4.7x3x1.8"	Alloy / Stainless Steel / Alloy	-	-
	Giant 0997	C.A.M.P.		£200 $290 €234 AU$265	540g 19.1oz	189x91x45mm 7.4x3.6x1.8"	Alloy / Stainless Steel / Nylon	■	-
	MPD 11mm	CMC		£950 $735 €1083	1200g 2.6lb	190 x 140mm 7.4 x 5.5"	Alloy / Alloy / Alloy	■	■
	MPD 13mm	CMC		£950 $735 €1083	1200g 2.6lb	190 x 140mm 7.4 x 5.5"	Alloy / Alloy / Alloy	■	■
	Clutch 11mm 335011	CMC/ HARKEN		£720 $750 €825	836g 1.84lb	208x112x47mm 8.2 x 4.4 x 1.9"	Alloy / Alloy / Alloy	■	■
	Clutch 13mm 335013	CMC/ HARKEN		£720 $750 €825	836g 1.84lb	208x112x47mm 8.2 x 4.4 x 1.9"	Alloy / Stainless Steel / Alloy	■	■
	Rollgliss Noworries 8700387 (8700388)	DB SALA/ 3M		$267 $318 AU$480	822g 29oz	228 x102x56mm* 9 x 4 x 2.2"	Alloy / Stainless Steel / Alloy	■	-
	MegaWatt	EDELRID		£175 $230 €190	495g 1.1lb	123 x 75mm 4.8 x 3"	Alloy/Steel / Stainless Steel / Alloy	■	-

NOTES: COST: Approx & include local tax/VAT DOUBLE BRAKE: ■=Lock requires reset. □=proportional on squeeze pressure. FRICTION POST: o

AUTOLOCK DESCENDERS

MINs being added Q3 '24

LOAD ROPE WHILE CONECTED	ADD FRICTION?	SLIPPAGE	MBS/ MBL	MIN MAX WLL	STANDARDS (COLOUR DENOTES SPECIFIC ROPE - see ROPE RANGE)	ROPE RANGE	EYE DIAMETERS	USES: BELAY/LIFELINING	USES: ASCENDING	USES: HAULING/PCD	USES: INTERVENTION	OTHER COLOURS	NOTES	WWW.
■	-	5.5kN 1236lbf	16kN 3597lbf	250kg 551lb	EN341/A	10-12mm 25/64-1/2"	14mm 0.55"	■	-	-	■		PO1 discontinued	anpen.net
■	-	7.2kN 1618lbf	20kN 4496lbf	250kg 551 lb	GA494-2004	10-13mm 25/64-1/2"	17mm 0.7"	■	■	■	■	■ ■		anpen.net
■	-	-	-	30-200kg* 66-441lb	CE	10.5-11mm 13/32 -7/16"	12mm 13mm 1/2"	-	-	-	-		*rescue only - work WLL 140kg/308lb	asatsafe.com
■	-	-	15kN 3372lbf	200kg 441lb	EN 12841/C EN 341/2A* EN 15151-1	10-11mm 25/64 -7/16" 10-11mm 25/64 -7/16" ?	19mm 0.75"	■ ■	■	■	-			camp.it
■	-	-	15kN 3372lbf	200kg 441lb	EN 12841/C EN 341/2A* EN 15151-1	10-11mm 25/64 -7/16" 10-11mm 25/64 -7/16" ?	19mm 0.75"	■ ■	■	■	■	■	*Druid Pro* is single -lock only - no panic-grab	camp.it
■	-	-	20kN 4496lbf	250kg 551lb	EN 12841/B/C EN 12841/B/C EN 341/2A* EN 15151-1 ANSI Z359.4*	210kg10-10.9mm 250kg11-11.5mm 200kg10.5mm 9.9-11mm 25/64 -7/16" 11mm 7/16"	13mm 0.5"	■ ■	■	■	-	■	* Camp Iridium	camp.it
■	■	-	44kN 9892lbf	240kg 500lb	CE** NFPA T	11mm 7/16"	20mm 18mm 0.8"	■ ■	□	■	-		*11mm Certified as 'G' in pulley mode but 'T' in lowering/Belay mode. **CE version not in US	cmcpro.com
■	■	-	44kN 9892lbf	280kg 617lb	NFPA G	13mm 1/2"	20mm 18mm 0.8"	■ ■	□	■	-		* 'G' for pulley and lowering modes. Force limiting function when used with CMC ropes to prevent overload damage	cmcpro.com
■	-	-	40kN 8992lbf	272kg 600lb	CE ANSI NFPA	10.5-11mm 13/32 - 7/16"	12mm 13mm 1/2"	■ ■	■	■	-		becket=22kN	cmcpro.com
■	-	-	40kN 8992lbf	272kg 600lb	ANSI NFPA	12.5-13mm 1/2"	12mm 13mm 1/2"	■ ■	■	■	-		becket=22kN	cmcpro.com
■	■	5kN 1124 lbf 11kn	30kN 6744lbf	300kg 661lb	AS/NZS 4488 EN 12841/C EN 341/B ANSI NFPA T (G)	10.5-12mm 3/8 - 1/2" 12.5-13.5mm 1/2"	16mm 0.6"	■ ■	■	■	■	■	* size includes handle at shortest extension. Stainless Steel version discontinued. Extra friction bollard pivots out	3m.com capitalsafety.com
■		-	-	200kg 441lb	EN 12841-C EN 341-2A EN 15151-1/8 ANSI	8.9-11.8mm 3/8 -15/32"	19mm 0.75"	■ ■	■	■	-		Steel inserts on high-wear areas. Embedded RFID	edelrid.com

ptional use of ancillary friction post/hook. ROPE RANGE: dynamic ropes shown in blue USES: ○= OK BUT NOT IDEAL

images NOT to scale		MODEL VARIANT	COMPANY	ORIGIN	COST	WT	DIMENSIONS	MATERIALS: FRAME CAM HANDLE	DOUBLE BRAKE	MA BECKET
		FDU 100 FDU 200	FERNO		£260 $ € AU$499 AU$465	950g 730g	250x135x45mm 9.8 x 5.3 x 1.8"	Alloy Stainless Steel Alloy	■	-
		Powerlock D321	HEIGHTEC		£207 $270 €243	740g 26oz	206 x 175*x32mm 8.1 x 6.9 x 1.25"	Alloy Stainless Steel Alloy	■	-
		Prism D31	HEIGHTEC		£182 $221 €214	500g 18oz	218 x 77 x 32mm 8.6 x 3 x 1.25"	Alloy Stainless Steel Alloy	■	-
		Quadra DO12 DO11	HEIGHTEC		£200 $159 €235	520g 18oz	211 x 89 x 32mm 8.3 x 3.5 x 1.25"	Alloy Stainless Steel Alloy	■	-
		Quadra DO1	HEIGHTEC		£187 $245 €220	700g 25oz	185 x 92 x 30mm 7.3 x 3.6 x 1.2"	Stainless Steel Stainless Steel Stainless Steel	■	-
		D4 RP880 D4Pro RP881	ISC		£190 $260 €185	678g 24oz	140 x 82mm 5.5 x 3.25"	Alloy Stainless Steel Alloy	■ (no)	-
		D5 RP885 D5 Pro RP886	ISC		£210 $300 €255	818g 29oz	146/190x94x 80mm 5.75/7.5x3.7x 3.15"	Alloy Stainless Steel Alloy	■	-
		RAD	ISC		£133 $170 €175	306g 10oz	112 x 73 x 34mm 4.4x2.8x1.4"	Alloy Stainless Steel Alloy	-	-
		A-B RP810	ISC		£140 $188 €165	452g 16oz	206 x 65 x36mm 7.4 x 2.4 x 1.4"	Alloy Stainless Steel Alloy	■	-
		Indy Evo (NFPA)	KONG		£120 $160 €140	450g 16oz	195 x 58 x 30mm 7.8 x 2.3 x 1.2"	Alloy Stainless Steel Nylon	■	-
		Indy Evo Plus 801040	KONG		£140 $180 €160	480g 17oz	201 x 57 x 44mm 7.9 x 2.2 x 1.7"	Alloy Stainless Steel Nylon	■	-
		Pirata	KONG		£120 $151 €135	420g 14.8oz	177 x 61 x 40mm 7 x 2.4 x 1.6"	Alloy Stainless Steel Nylon	■	

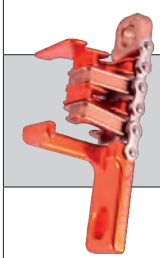
NOTES: POST: Approx & **include** local tax/VAT DOUBLE BRAKE: ■=Lock requires reset. □=proportional on squeeze pressure. FRICTION POST: c

AUTOLOCK DESCENDERS

MINs being added Q2 '24

LOAD ROPE WHILE CONECTED	ADD FRICTION?	SLIPPAGE	MBS/ MBL	MIN MAX WLL	STANDARDS (COLOUR DENOTES SPECIFIC ROPE - see ROPE RANGE)	ROPE RANGE	EYE DIAMETERS	USES: BELAY/LIFELINING	USES: ASCENDING	USES: HAULING/PCD	USES: INTERVENTION	OTHER COLOURS	NOTES	WWW.
■	■*	6kN 1349 lbf	21kN 4721 lbf	400kg 882 lb	AS/NZS 4488.1:1997	11mm* 7/16"	16mm 0.6"	■	□	□	-		*FDU200 does not have extra friction o the option. See FDU100 pic in intro 	ferno.com.au
■	-	-	-	200kg 441 lb	EN 12841/C EN 341/B	11mm 7/16" 11mm 7/16"	17mm 0.7"	-	■	■	-	-	Specifically designed as a pick-off device. 100m descent limit. *Width is due to handle not folding flat.	heightec.com
■	-	-	-	200kg 441 lb	EN 12841/C EN 341/B	10.5-11.5mm 13/32 - 7/16" 10.5-11.5mm 13/32 - 7/16"	17mm 0.7"	-	■*	■	-	-	*Secondary brake can be bypassed to facilitate ascending. Ego =discontinued	heightec.com
■*	-	-	-	200kg 441 lb	EN 12841/C	10.5-11mm 13/32 - 7/16"	17mm 0.7"	■	■	■	-	-	Folding handle D011 version shown. only D012 has hinged carabiner gate.	heightec.com
-	-	-	-	200kg 441 lb	EN 12841/C	10.5-11mm 13/32 - 7/16"	17mm 0.7"	■	■	■	-	-	Can only be threaded with carabiner removed. Folding handle.	heightec.com
■	-	5kN 1124lbf	16 kN 3597lbf	240kg 529 lb	EN 12841/C NFPA T ANSI*	10.5-11.5mm 13/32 - 7/16"	20mm 0.8"	■	■	■	(■)	■	*Pro version without 'Panic' Brake cannot fully meet ANSI. Wear indicator on cam.	iscwales.com
■	-	9kN 2023lbf	22kN 4945lbf	240kg 500lb	EN 12841/C NFPA G ANSI	12.5-13mm ½"	20mm 0.8"	■	■	■	(■)	■	*Pro version without 'Panic' Brake cannot fully meet ANSI. Wear indicator on cam. Length with handle	iscwales.com
-	-	4kN 899 lbf	16kN 3957lbf	200kg 441 lb	EN 12841/C EN15151 EN 358	10.5-12.7mm 13/32 -½" 9.9-11mm 10.5-12.7mm 13/32 -½"	15mm 0.6"	■ ■	■	■	■	■	Certified as part of a lanyard system for EN358 with SAR Products rope. Handle folds down.	iscwales.com
■	-	4.5-8kN 1012 -1798lbf	12kN 2697lbf	300kg 661 lb	EN 12841/C EN 341/B	10.5-12.5mm 13/32- ½"	13mm 0.5"	■ ■	■	■	■	■	Designed by *SAR Products*. Handle in two halves, extension flips down for easier control of higher loads	iscwales.com
■	-	-	>14kN >3147lbf	200kg 441 lb	EN 12841/C EN 12841/C EN 341/2A* NFPA-E-T-G	100kg10-12mm 200kg11-12mm 10.5-11mm 13/32 - 7/16" 10-13mm	15mm 0.59"	■	■	■	-	■	May be Discontinued *Kongline Also sold as *Singing Rock Indy Evo*	Kong.it
■	-	-	>14kN >3147lbf	200kg 441 lb	EN 12841/C EN 12841/C EN 341/2A* NFPA-E-T-G	100kg10-12mm 200kg11-12mm 10.5-11mm 13/32 - 7/16" 10-13mm	15mm 0.59"	■	■	■	-	■	*Kongline Folding handle for easier stowage, greater leverage and greater control under high loads	Kong.it
■			>14kN >3147 lbf	200kg 441 lb	EN 12841/C	10-12mm 25/64 - ½"	17mm 0.69"	■	■	■				Kong.it

optional use of ancillary friction post/hook. ROPE RANGE: dynamic ropes shown in blue USES: ○= OK BUT NOT IDEAL

images NOT to scale		MODEL VARIANT	COMPANY	ORIGIN	COST	WT	DIMENSIONS	MATERIALS: FRAME CAM HANDLE	DOUBLE BRAKE	MA BECKET
		GRIP FA7002100	KRATOS SAFETY		£170 $225 €185	450g 16oz	140x75mm 5.5x3"	Alloy Alloy Alloy	■	-
		ID L	PETZL		£240 $330 €260	600g 21oz	200 x 80 x 55mm 7.9 x 3.2 x 2.2"	Alloy Stainless Steel Nylon	■	-
		ID S	PETZL		£240 $330 €260	600g 21oz	200 x 80 x 55mm 7.9 x 3.2 x 2.2"	Alloy Stainless Steel Nylon	■	-
		ID EVAC	PETZL		£246 $360 €264	615g 22oz	200 x 80 x 70mm 7.9 x 3.2 x 2.75"	Alloy Stainless Steel Nylon	■	-
		RIG	PETZL		£175 €182 $275	400g 14oz	180 x 70 x 54mm 7 x 2.75 x 2.1"	Alloy Stainless Steel Nylon	-	-
		STOP	PETZL		£126 $150 €126	350g 12.3oz	200 x 70 x 38mm 7.9 x 2.75 x 1.5"	Alloy Stainless Steel Plastic	-	-
		MAESTRO	PETZL		£504 $600 €495	1100g 2.4 lb	220 x150 x 85mm 8.7 x 5.9 x 3.3"	Alloy No Toothed Cam Stainless Steel	■	■
		MAESTRO	PETZL		£504 $600 €495	1100g 2.4 lb	220 x150 x 85mm 8.7 x 5.9 x 3.3"	Alloy No Toothed Cam Stainless Steel	■	■
		RE Descender	ROCK EMPIRE		£75 $100 €90	340g 12oz	235x55x32mm 9.25x2.2x1.25"	Alloy Stainless Steel Alloy	-	-
		Unicender RG50	ROCK EXOTICA		£408 $400 €490	310g 10.9oz	155x76x51mm 6.1x3x2"	Alloy Alloy Alloy	-	■
		A-B	SAR PRODUCTS		£170 $220 €200	452g 16oz	210x73mx36mm 8.3x2.9x1.4"	Alloy Stainless Steel Alloy	■	-

NOTES: COST: Approx & include local tax/VAT DOUBLE BRAKE: ■=Lock requires reset. ☐=proportional on squeeze pressure. FRICTION POST: c

AUTOLOCK DESCENDERS

MINs being added Q3 '24

LOAD ROPE WHILE CONECTED	ADD FRICTION?	SLIPPAGE	MBS/ MBL	MIN MAX WLL	STANDARDS (COLOUR DENOTES SPECIFIC ROPE - see ROPE RANGE)	ROPE RANGE	EYE DIAMETERS	USES: BELAY/LIFELINING	USES: ASCENDING	USES: HAULING/PCD	USES: INTERVENTION	OTHER COLOURS	NOTES	WWW.
■	-		16kN 3957 lbf	30-150kg 66-441 lb	EN 12841/C EN 341/2B	11mm 7/16" 10.5-12mm 13/32 - 1/2"	13mm 0.5"	■	■	■	-			kratossafety.com
■	□			272kg 600 lb	EN 12841/C EN 341/2A* NFPA-G. EAC ANSI Z359.4	12.5-13mm 1/2" 12.5mm 1/2" 12.5-13mm 1/2" 12.5-13mm 1/2"	15mm 0.6"	●	■	■	-	■	*Petzl Vector 12.5 Anti-error catch. Steel wear edge. *for 2 person rescue	petzl.com
■	□			150kg 331lb- 280kg* 616lb*	EN 12841/C EN 341/2A* EN 15151-1 NFPA-T. EAC ANSI Z359.4	10-11.5mm 25/64-7/16" 10.5-11.5mm 13/32 - 7/16" 9-10.5mm 3/8-13/32" 10-11.5mm 25/64-7/16" 10-11.5mm 25/64-7/16"	15mm 0.6"	●	■	■	-	■	*Petzl Parallel 10.5 * Petzl Axis 11.5 Anti-error catch. Steel wear edge *for 2 person rescue	petzl.com
■	■			150kg 331 lb- 250kg* 551lb*	EN 12841/C EN 341/2A* EN 15151-1 NFPA-T. EAC ANSI Z359.4	10-11.5mm 25/64-7/16" 10.5-11.5mm 13/32 - 7/16" 9-10.5mm 3/8-13/32" 10-11.5mm 25/64-7/16" 10-11.5mm 25/64-7/16"	15mm 0.6"	■	●	■	-	■	For Hauling/Lowering Anti-error catch prevents using with rope upside-down. Steel wear edge. *for 2 person rescue	petzl.com
■	-			150kg 331lb- 200kg* 441lb	EN 12841/C EN 341/2A* EN 15151-1 NFPA-T. EAC ANSI Z359.4	10-11.5mm 25/64-7/16" 10.5-11.5mm 13/32 - 7/16" 9-10.5mm 3/8-13/32" 10-11.5mm 25/64-7/16" 10-11.5mm 25/64-7/16"	15mm 0.6"	■	■	■	■	■	Steel wear edge. Lacks the double brake and anti-error catch of other IDs. *for 2 person rescue	petzl.com
■	-			150kg 331 lb	EN 15151-1 UIAA	8.5-11mm 3/8-7/16"	15mm 0.6"	-	■	■	■		Latest version pictured has fold-down handle for increased leverage and greater control.	petzl.com
-	■		36kN 8093lbf	250kg 551lb	EN 12841/C EN 341 NFPA-T EAC	10.5-11.5mm 13/32 - 7/16"	30mm 1.2" 24mm 0.9"	■	●	■	-			petzl.com
-	■		36kN 8093lbf	280kg 617lb	EN 12841/C EN 341 NFPA-G EAC	11.5-13mm 7/16-1/2"	30mm 1.2" 24mm 0.9	■	●	■	-			petzl.com
■	-	6kN 1349 lbf	16kN 3957 lbf	150kg 331 lb	EN 341/A	10-12mm 25/64 - 1/2"	18mm 0/7"	-	■	■	-	■		rockempire.cz
■	■ □*		31kN 6969lbf	140kg 308lb		11-13mm 7/16 - 1/2"		■	●	■	-		*SRT Barrel attachment option to improve frictional adjustment	rockexotica.com
■	-	4.5-8kN 1012 -1798 lbf	12kN 2697lbf	300kg 661 lb	EN 12841/C EN 341/B	10.5-12.5mm 13/32 - 1/2"	13mm 0.5"	■ ■	■	■	■	■	Handle in two halves, extension flips down for easier control of higher loads. ProAlpTech is DISCONTINUED	sarproducts.com

optional use of ancillary friction post/hook. ROPE RANGE: dynamic ropes shown in blue USES: ○= OK BUT NOT IDEAL

images NOT to scale		MODEL VARIANT	COMPANY	ORIGIN	COST	WT	DIMENSIONS	MATERIALS: FRAME CAM HANDLE	DOUBLE BRAKE	MA BECKET
		RAD	SAR PRODUCTS		£107 $140 €126	306g 10oz	112x73x34mm 4.4x2.8x1.4"	Alloy Stainless Steel Alloy	-	-
		Double Stop Plus K031DSD00	SINGING ROCK		£125 $180 €145	421g 14.9oz	199x87x28mm 7.8x3.4x1.1"	Alloy Fe Alloy Alloy	■	-
		SIR K032SIR00	SINGING ROCK		£153 $190 €150	358g 12.6oz	134 x 71 x 35mm 5.3 x 2.8 x 1.4"	Alloy Fe Alloy Alloy	■	-
		DSD Plus Mk1 Plus A-031 Mk1 Tactical	SKYLOTEC		£171 $175 €148	421g 14.9oz	199 x 87 x 28mm 7.8 x 3.4 x 1.1"	Alloy Fe Alloy Alloy	■	-
		DSD Rescue -	SKYLOTEC		N/A	1080g* 2.4lb	199 x 87 x 55mm 7.8 x 3.4 x 2.2"	Alloy Fe Alloy Alloy	■	-
		Lory A-040 Lory Smart	SKYLOTEC		£147 $210 €145	361g 12.7oz	134 x 71 x 35mm 5.3 x 2.8 x 1.4"	Alloy Fe Alloy Alloy	■	-
		Lory Pro A-041 Lory Safe	SKYLOTEC		£132 $180 €135	370g 13oz	134 x 71 x 35mm 5.3 x 2.8 x 1.4"	Alloy Fe Alloy Alloy	■	-
		CT Sparrow 2D646	SKYLOTEC		£131 $175 €161	520g 18.3oz	179 x 87 x 51mm 7 x 3.4 x 2"	Alloy Alloy Nylon	■	-
		CT Sparrow 200R A-060	SKYLOTEC		£200 $225 €180 AU$374	530g 18.7oz	179 x 87 x 51mm 7 x 3.4 x 2"	Alloy Alloy Nylon	■	-
		Sirius A-050 Spark A-056	SKYLOTEC		£246 $315 €245	510g 18oz	175 x 79 x 47mm 6.9 x 3.1 x 1.8"	Alloy Steel Alloy	■	■
		Spider	SMC		£145 $181 €170	562g 19.8oz	219 x 85 x 39mm 8.6 x 3.3 x 1.5"	Alloy Alloy Alloy	-	-
		Flow D06/DO7 (DO5)	S-TEC		£156 R$1750	515g 17.5oz	161 x 105 x 56mm 6.3 x 4.1 x 2.2"	Alloy Stainless Steel Nylon	(■)	-

NO[illegible]S. C[illegible]: Approx & **include** local tax/VAT DOUBLE BRAKE: ■=Lock requires reset. ☐=proportional on squeeze pressure. FRICTION POST: [illegible]

AUTOLOCK DESCENDERS

MINs being added Q3 '24

LOAD ROPE WHILE CONECTED	ADD FRICTION?	SLIPPAGE	MBS/ MBL	MIN MAX WLL	STANDARDS (COLOUR DENOTES SPECIFIC ROPE - see ROPE RANGE)	ROPE RANGE	EYE DIAMETERS	USES: BELAY/LIFELINING	USES: ASCENDING	USES: HAULING/PCD	USES: INTERVENTION	OTHER COLOURS	NOTES	WWW.
-	-	4kN 899lbf	16kN 3957lbf	200kg 441lb	EN 12841/C EN15151 EN 358	10.5-12.7mm 13/32 -1/2" 9.9-11mm 3/8 -7/16" 10.5-12.7mm 13/32 -1/2"	15mm 0.6"	■ ■	■	■	■		Certified as part of a lanyard system for EN358 with *SAR Products* rope. Handle folds down.	sarproducts.com
-	-	6kN 1349lbf	16kN 3597lbf	30-200kg 66-441lb	EN 12841/C EN 341	9-12mm 3/8 - 1/2" 11mm 7/16"	18mm 0.7"	■	●	■	■		Cam has wear indicator. Anti-error cam stops upside down loading. Handle can be fully lifted for freefall	singingrock.com
-	-	5kN 1124lbf	21kN 4721lbf	225kg 496lb	EN 12841-C EN 341*	9-12mm 3/8 - 1/2" 11mm 7/16"	18mm 0.7"	■ ■	■	■	-		*SingingRock R44 30-180kg	singingrock.com
-	-	6kN 1349lbf	15kN 3372 lbf	30-200kg 66-441lb	EN 12841/C EN 341/A* ANSI Z359.4	9-12mm 3/8 - 1/2" 11mm 7/16" 11mm 7/16"	18mm 0.7"	■	□	■	■		* Teufelberger Patron-DSD. Skylotec Cam wear indicator. Anti-loading error cam. Handle can be fully lifted for freefall.	skylotec.com anthron.si
-	-	6kN 1349 lbf			EN 12841/C EN 341/A* ANSI Z359.4	9-12mm 3/8 - 1/2" 11mm 7/16" 11mm 7/16"	18mm 0.7"	-	-	-	-		DISCONTINUED (Formerly *Anthron*) Double handles & independent cams. *inc. integral delta-shaped steel carabiner	skylotec.com anthron.si
-	-	5kN 1124 lbf	21kN 4721 lbf	225kg 496lb	EN 12841/C EN 341/A* EN 15151-1 EN795/B	10-12mm 25/64 -1/2" 11mm 7/16" 9-12mm 3/8 - 1/2" 10.5-11mm 13/32 - 7/16"	18mm 0.7"	■ ■	■	■	-		(Formerly *Anthron*) Pays out rope for belay more easily than 'Pro' version. Was also sold as *Edelrid Eddy*	skylotec.com anthron.si
-	-	5kN 1124 lbf	21kN 4721 lbf	225kg 496lb	EN 12841/C EN 341/A* EN795/B EN 358 ANSI Z359.4	10-12mm 25/64 -1/2" 11mm 7/16" 10.5-11mm 13/32 - 7/16" 10.5-11mm 13/32 - 7/16" 11mm 7/16"	18mm 0.7"	■	■	■	-		(Formerly *Anthron*) Also sold as *Bornack Lory, Rollgliss R250, Deltaplus TC007* and *Lory Universe*	skylotec.com anthron.si
■	■			190kg 419lb	EN 12841 EN 341/A*	10.5-11mm 13/32 - 7/16" 11mm 7/16"	13mm 0.5"	■	■	■	-	□	*Teufelberger Patron+	skylotec.com climbingtechnology.com
■	■			210kg 463lb	EN 12841 EN 341/A*	10.5-11mm 13/32 - 7/16" 11mm 7/16"	13mm 0.5"	■	■	■	-	■	* Tec-Static Pro Higher load capacity version of Sparrow, Black version $€5extra	skylotec.com climbingtechnology.com
-	-			250kg 550lb	ANSI EN 12841-C EN 15151-1 EN 341/A	9-12mm 3/8 -7/16"	20mm 0.9"	■	-	■	■		Spark lacks the secondary 'anti-panic' brake	skylotec.com
■	-		13.5kN 3174lbf		NFPA T	10-12.5mm 5/16 - 1/2"		■	■	■	■	■		smcgear.net
■	-	4kN 899 lbf		200kg 441lb	EN 12841/C	10.5-11mm 13/32 - 7/16"		■	■	■	■	■ ■	Available with (D05) and without (D06/7) anti-panic brake.D05 NOT for intervention	safetecbr.com.br

optional use of ancillary friction post/hook. ROPE RANGE/STANDARDS: dynamic ropes shown in blue USES: ○= OK BUT NOT IDEAL

images NOT to scale	MODEL VARIANT	COMPANY	ORIGIN	COST	WT	DIMENSIONS	MATERIALS: FRAME CAM HANDLE	DOUBLE BRAKE	MA BECKET
	**Evo** D02 (D04 Blue)	**S-TEC**		£120 R$430 (R$407)	310g 11oz	160 x 70 x 35mm 6.3 x 2.75 x 1.4"	Alloy Stainless Steel Nylon	-	■
	Evo Bronze D01 (D03 Red)	**S-TEC**		£143 R$545 (R$535) AU$260	315g 11.1oz	160 x 70 x 35mm 6.3 x 2.75 x 1.4"	Alloy Stainless Steel Nylon	■	■
	**Lov 2** **Lov 3**	**TAZ**		£196226 $275 €200	353g 380g 12.4oz 13.4oz	140 x 95 x 50mm 150 x 80 x 40mm 5.5 x 3.75 x 2" 6 x 3.2 x 1.6"	Alloy Stainless Steel Nylon		■
	**D4** ISCD4	**YATES**		£190 $270 £185	678g 24oz	140 x 82mm 5.5 x 3.25"	Alloy Stainless Steel Alloy	■	-
	**D5** ISCD5 **D5Y** ISCD5Y	**YATES**		£210 $300 £255	818g 29oz	146 x 94 x 80mm 5.75x3.7x3.15""	Alloy Stainless Steel Alloy	■	-
	**King Kong** XD-D9314	**XINDA**		£95 $130 €120	314g 12oz	235 x63mm 8.7 x 2.2"	Alloy Stainless Steel Alloy	-	-
	XD-8618	**XINDA**		£117 $150 €135	368g 13oz	245 x 55mm 9.6 x 2.2"	Alloy Alloy Alloy	■	-

NOTES: **COST:** Approx & **include** local tax/VAT **DOUBLE BRAKE:** ■=Lock requires reset. ☐=proportional on squeeze pressure. **FRICTION POST:** c

AUTOLOCK DESCENDERS

MINs being added Q3 '24

LOAD ROPE WHILE CONECTED	ADD FRICTION?	SLIPPAGE	MBS/ MBL	MIN MAX WLL	STANDARDS (COLOUR DENOTES SPECIFIC ROPE - see ROPE RANGE)	ROPE RANGE	EYE DIAMETERS	USES: BELAY/LIFELINING	USES: ASCENDING	USES: HAULING/PCD	USES: INTERVENTION	OTHER COLOURS	NOTES	WWW.
■	-	4kN 899 lbf	25kN 5620 lb	220kg 485lbf	EN 12841/C	10.5-11mm 13/32 - 7/16"		■	●	■	■		Top eye for use in a pulley system. Also available without carabiner gate (Blue)	safetecbr.com.br
■	-	4kN 899 lbf	25kN 5620 lb	220kg 485lbf	EN 12841/C	10.5-11mm 13/32 - 7/16"		■	●	■	-		Top eye for use in a pulley system. Also available without carabiner gate (D03 Red)	safetecbr.com.br
■	-	6kN 1349 lbf	15kN 3372 lbf	200kg 441 lb	EN 358 EN 12841/A-C EN15151	10-11mm 25/64 -7/16"	15mm 0.6"	■	■	■	■		also operates on tensioned diagonal ropes. Lov3= gated version	taz3d.fr
■	-	5kN 1124 lbf	16 kN 3597 lbf	240kg 500 lb	EN 12841/C NFPA T ANSI Z359.4	10.5-11.5mm 13/32 - 7/16"	20mm 0.8"	■	■	■	-	■	Wear indicator on cam.	yatesgear.com
■	-	9kN 2023 lbf	22kN 4945 lbf	240kg 500 lb	EN 12841/C NFPA G ANSI Z359.4	12.5-13mm ½" (BW 12mm)	20mm 0.8"	■	■	■	-		Y version unique to Yates operates on *BW 12mm Armortech*. Wear indicator on cam.	yatesgear.com
■	-			150kg 331lb	EN15151	9-12mm ⅜ - ½"	15mm 0.6"	■	■	■	■		double check standards on this, Cert shown is for slings!	xindaoutdoor.com
■	-				-	10-13mm 25/64 - ½"		■	■	■	-	■	XD-8618 & XD-8604 DISCONTINUED also rebadged as *Canmal* and others	xindaoutdoor.com

optional use of ancillary friction post/hook. ROPE RANGE: dynamic ropes shown in blue USES: ○= OK BUT NOT IDEAL

AUTOLOCKING ESCAPE/BAIL-OUT/MINI DESCENDERS

Manually controlled, superlight, autolocking descenders

We discussed the principles of 'auto-locking' (or 'brake assist' as it's now becoming known) in the previous section on AUTOLOCKING RESCUE DESCENDERS that are designed, or at any rate used, for two-person rescues. We will use some of the same editorial in this article albeit modified to relate specifically to Escape/mini devices where necessary.

Escape devices are a special class in NFPA descender standards (E) and in European Norms where they meet EN341 but intended ONLY for single person emergency evacuation. Even though autolocking is now the norm, there are still some manual 'escape' devices that are simply small and friction-imparting, mandating the user to maintain strong and constant control of the trail rope. This guide is ONLY concerned with smaller *autolocking* devices, that is, devices which will lock and hold-position when the user lets go of everything. These devices are now so small and with such varied activation options that we feel they are the only type of descender you should consider though there are some that feel there is a risk of becoming 'stuck' with an autolocking device. We make the 'manual' distinction because there is another genre of escape devices; the fully automatic 'controlled descent' devices which are inertia brakes requiring no active participation of the user other than stepping off and waiting while the device lowers you to safety at a set speed. There is at least one range of hybrid devices (*Deus Rescue/Skylotec*) that we have included because they offer hands free automatic, bi-directional descent AND manual control. Such devices could become so small as to take over the escape market entirely but we're not there yet and, as we'll see shortly, there are other considerations when choosing a device or kit.

Escape descenders were originally called 'Bail-out' devices because the primary driver for this genre was firefighters trying to get out of a burning building in a rush. In effect, they were *bailing out* of the building by jumping out of a window or off a balcony. At its most basic, a planned 'escape' could simply mean grasping a rope with a gloved hand ala military fast-roping and sliding down to safety. This dispenses with the need for a harness, of which more later, but in terms of this rudimentary escape system it only dispenses with the smallest component of an escape system - the descender. It's the rope that needed to be reduced in size because a gloved hand needs quite a thick rope to be able to grasp with any degree of control. Reducing the rope size enables rescuers to be able to carry the kit at all times relatively unencumbered but to achieve this the hardware had to be reduced in size to fit smaller kits and latterly the use of ever smaller diameter cords and even webbing. . Many companies sell 'escape' kits with regular size rope and regular sized descenders in a regular sized bag but these are more correctly 'Evacuation' kits even if they use the term 'personal'. However, the point of bail-out devices in this GUIDE is that they need to be small, easy to use and they need to have an efficient low-load payout to actually

enable you to make it from the anchor to the window simply by pulling the rope through before your full weight comes onto the rope to help speed things along. One device, the *QRAB*, allows ultra quick detachment at the bottom simply by pressing a button but only when there is no load on it. In our Working Load Limit (WLL) column the minimum load (where given) might give some indication of how hard it will be to pull rope through. The *Skylotec* (*Deus)* system is again one of the exceptions because they're not really that small or light and maybe not that intuitive without instruction. But in auto mode they operate by inertia brake so rope will feed easily at low speed. They are specifically designed as escape devices with the option of manual or fully automatic operation which is not to be sniffed at in a dire emergency because you could effectively throw an unconscious colleague out of a window safe in the knowledge the device will make the descent while you then do the same. The alternative with regular escape devices is having to hang around in a rapidly deteriorating situation while you lower your unconscious colleague to safety.

Petzl's EXO device based on the *GriGri* wasn't the first bespoke 'bail-out' system to use a more conventional lightweight descender but it was the initial market leader adopted across entire fire services following New York Fire Departments lead because it offered hands-free bail-out in a well tried and tested system. It remains a key player in its Mk3 form because it s a well-proven performer able to take a lot of abuse and still function well. It too now uses the current move towards fire retardant fibres like Aramid and Technora in diameters of only 5 to 7.5mm. Such diminutive diameters make it possible to have much smaller kits for the industry standard 50ft/15.1m than was impossible with the previous 10mm+ ropes.

PANIC GRAB or DOUBLE BRAKE?

See page 46 for our discussion of the term 'anti-panic'. Some double brake devices like the *Petzl EXO* and *ISC D2* will 'lock' when the handle goes beyond a certain point, they then need to be reset before you continue descent; while others like the *Sterling FCX* style devices will go into a second, overpressure' lock but you will only stay locked for as long as you maintain sufficient pressure or remember to let go altogether. In some cases, you need to push/grasp the handle so hard to initiate a brake that it's tantamount to a wilful rather than an inappropriate self-preservation action and could be relatively ineffective in arresting the fall but you will hit the deck at a slower speed. This style of secondary brake, however, is much better suited to tactical and high-speed descents where a sudden arrest, if you overcook the handle, could be disastrous whereas a temporary slowing could be easily dealt with. *C.A.M.P.'s Druid* for instance offers both options with the Druid Pro having no secondary 'panic' brake.

VERSATILITY...if you're allowed...

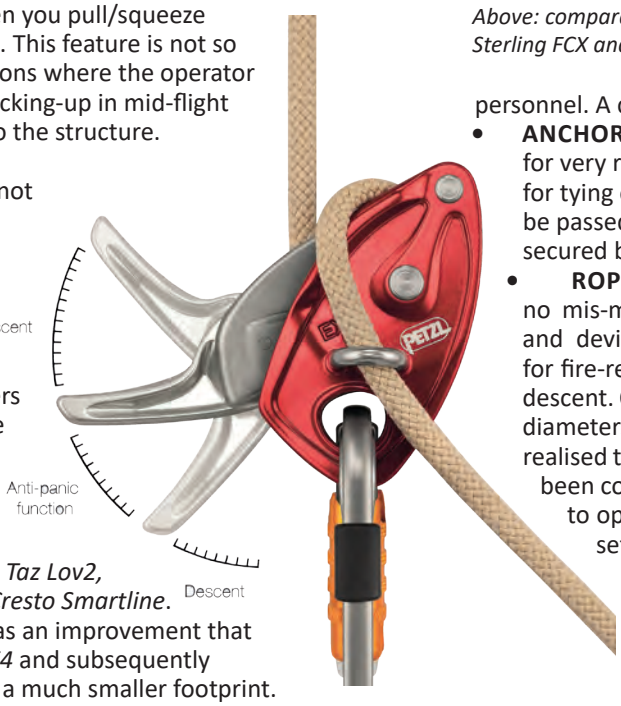
Perhaps the most versatile device in this selection is the *Taz Lov 2* sold as a multi-role device and unusual in this selection because it will operate on an incline ie. with the trail rope loaded, an action that would halt the progress of evacuees on every other device. This diagonal evacuation line might be particular useful if you need to avoid obstructions below. Given more time and equipment, rope rescuers would simply set up a tensioned offset on regular gear but as a quick, emergency option the *Taz Lov2* gives you that option with the kit already to hand - you just need someone on the ground to know that they are able to grab and deviate the rope for you!

The *Exo* (or *GriGri*) pictured above also demonstrates the versatility of a more conventional,manual escape devices over the fully automatic inertia devices mentioned earlier because they are effectively a modification of a descender that also ascends, belays, lifelines, lowers, work positions and restrains from falling off edges. Virtually all descender escape devices will also do all these things, perhaps not all - ***belaying*** and ***ascending*** are activities that we've listed separately, not because any that have NFPA-E or EN341 won't be capable of taking a shock load since that is part of each standard or that you couldn't ascend a rope, eventually, in some fashion with these devices, it's more the efficiency with which they achieve it. If it can be used as an ascender then it can also function in a haul system but only devices that allow you to pull through slack easily can do this. Other than these specific functions all escape devices can perform lowering (rather than abseil/rappel), work positioning/edge restraint and even guy tensioning This makes them potentially extremely versatile kits to have readily to hand. However, their very nature as an emergency bail-out system MAY mean that you are mandated by service protocols or by the manufacturer to ONLY use it in an emergency escape situation rather than during the course of less life-threatening access and rescue situations. Indeed, systems like the *EXO* are sold as SINGLE-USE systems and you are expected to purchase separate training sets in order to become familiar with its operation. Our own feeling is that rescuers should be able to maintain their own kit properly and assess the risk of using it for other access and rescue purposes versus having it immediately available for a bail-out and that it is too useful an asset to sit on your belt waiting for a once in a career emergency. However, we can certainly understand the thinking behind such a restrictive policy and why some kits/devices are now geared specifically to one-time use only. The problem is of course, that not all firefighters trained in the use of a bail-out kit will be familiar with rope access and rescue procedures that would be second-nature to rope technicians.

We've included only devices which lock when you take hands off because the principle of a bail-out is that you could literally be bailing out of a window at speed and in a relatively uncontrolled manner in an effort to escape rapidly impending doom. There's little point in doing that if you have to use both hands on the device and rope in order to negate going into freefall. Once you start freefalling on a friction-only device like the fig8 or rack it's very hard to recover your position though firefighters have an advantage because they're likely to be wearing substantial gloves. That's why some

Above: comparative sizes of three Escape devices , the CMC LEVR, Sterling FCX and Cresto Smartline X.

of the original friction-only devices sold and used as escape devices were simply very small pieces of metal with various arrangements of rope-threading. *PMI's PED* (pic right)is a typical example and this concept has evolved into at least four models in this Guide because the *Sterling FX* and *F4*, *Fire Innovation's Core* and *RPI's Phoenix*,all use the principle of threading and combine it with a handle for leverage which, when released causes the device to lock up. As already discussed, in the case of some devices, like the *EXO*, there is a DOUBLE brake action, in other words it will brake when you let go of everything AND when you pull/squeeze too hard on the handle. This feature is not so good for tactical situations where the operator cannot risk suddenly locking-up in mid-flight and slamming back into the structure.



The *EXO*'s success was not only due to being one of the first devices to identify and address a need for smaller bail-out options, it also incorporated a feature that many others have also adopted - the fold-down handle for a lower profile/size when stowed. We see this in the *CAMP Druid*, *Ice Rock Gnome*, *Taz Lov2*, *Ensa Ape Exreme* and *Cresto Smartline*. *Sterling* identified this as an improvement that could be made to the *F4* and subsequently produced the *FCX* with a much smaller footprint. We see it increasingly in full size descenders where it is as much about decreasing the snag-hazard of a protruding handle as it is about saving space. The same is partly true here but there's no doubt that occupying less space in the kit is a key design feature. We even see devices like the *Cresto SmartLine X* pictured above and the *Protección Técnica Escapettor* pictured over the page, able to be stowed with the attachment carabiner wrapped around the body of the descender

HARNESSES

A word about harnesses. We said originally that the rope and gloves bail-out dispensed with a harness and descender but harnesses are becoming much more fundamental to the basic fire kit. In Europe, Pompier belts have been used forever in some countries but their more body-friendly alternative, the sit-harness is now either worn by many services throughout any off-the-ground or high rise deployment or is readily available in a minimalistic, low-bulk form or already seamlessly integrated into fire clothing like the *Lion Apparel* systems.

KITS

Since their first introduction, bail-out devices have been sold as complete kits rather than individual descenders. That's not to say that expert users can't still purchase some of these and configure them to their own needs, but most are assuming that these will be allocated across ALL personnel likely to be entering a high-rise structure not just rope-rescue trained personnel. A complete kit usually includes:

- **ANCHOR**, a hook and/or a carabiner. A hook can be used for very rapid placement or used as a modified carabiner for tying off at an anchor. Sling and/or the rope can simply be passed around any sized (appropriate) anchor and secured back to itself with a carabiner
- **ROPE.** Often a very specific rope so that there can be no mis-marriage of size and performance between rope and device and increasingly a heat-retardant rope both for fire-resistance and to resist the heat-build up of a rapid descent. Originally, escape devices used fairly standard rope diameters at around 10-11mm 7/16" but as soon as it was realised that the small diameter Aramid-type cords that had been common in yachting for decades, could be modified to operate within the various rope access disciplines, it set off a chain reaction of new development. Most now operate on 5-8mm high-strength, abrasion and heat-resistant cords or even webbing flat like the *LEVR* and *RSS AL2 &4*. The usual minimum length is 50ft or 15m (15.24 to be exact) but some, kits (and therefore the kit price we've quoted) differ from this like the *Skylotec* pack opposite with it's only kit being 25m/82ft
- **DESCENDER**. The device itself may be 'bolted' into the rope like the *EXO* or able to be easily disengaged and used for other purposes like the *D2*. The vast majority are designed to be used ONLY within a specified kit. Most are connected to your harness via a carabiner but there are three or four that have an integral length of Nomex or similar fire-retardant webbing like the *LEVR, Core* and *RSS-AL* device. One device, the *Phoenix*, has an integral swivel for a carabiner which would seem a useful design feature.
- **PACK**. To contain all of the above but also needs to be easy to access, easy to stow on your harness, belt or clothing and easy to deploy and repack after use. Most are Cordura packs with *Velcro* closures that will tar open easily but remain secure during normal activities. Our tables have a column to reflect whether the descender can be purchased separately (black square), or as part of a kit (orange square) or both.

STANDARDS

No point in wasting effort - this section is modified from the same section in the previous guide...Traditionally called 'Auto-Locking' the term 'Assisted-Braking' has now crept in.

Although aimed primarily at rescuers this 'escape/evacuation' genre has now evolved to include all at-height workers and in

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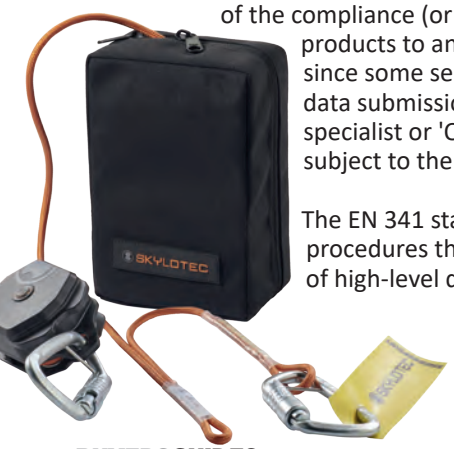
particular rope access workers. In Europe especially, the now enormous wind turbine market is driving a lot of development towards escape and evacuation systems though diminutive kit-size is not as important to wind turbine workers as it is to firefighters. The definition we had in the last Guide as a 'RESCUE' device doesn't really apply here since these are for personal use-only. However, if you were magnanimous enough, you could simply switch out your kit, anchor the descender and lower somebody else down instead of escaping yourself. This then would be a rescue device and indeed ALL of these devices could rightly be described as Rescue ***and*** Escape devices. Many of the descenders listed in the GUIDE meet more than one performance standard. Unlike the last issue's mainstream autolocking descenders meeting ANSI/ASSE Z359.4 and/or NFPA 1983 (2017) G, L and T, these devices mostly meet NFPA 1983 E (for escape) and requires a ire-resistant rope/ webbing and may not have a CE at all if they're not intended to be sold within the EU. Unusually, this NFPA E 'standard' is the most specific of world standards, more specific even than European standards which normally subdivide equipment into their most finite functions. ENs still cover escape devices of course but generally in addition to other functions so that, for instance *Kong's Indy Evo Plus* descender could be described as a personal evacuation/Escape device as well as a rescue descender and general descender. In contrast NFPA E tends to rule out G and L devices as being too large/heavy and requiring of larger diameter ropes though their specific wording for E versus T hardware is exactly the same. NFPA defines 'Escape' as....

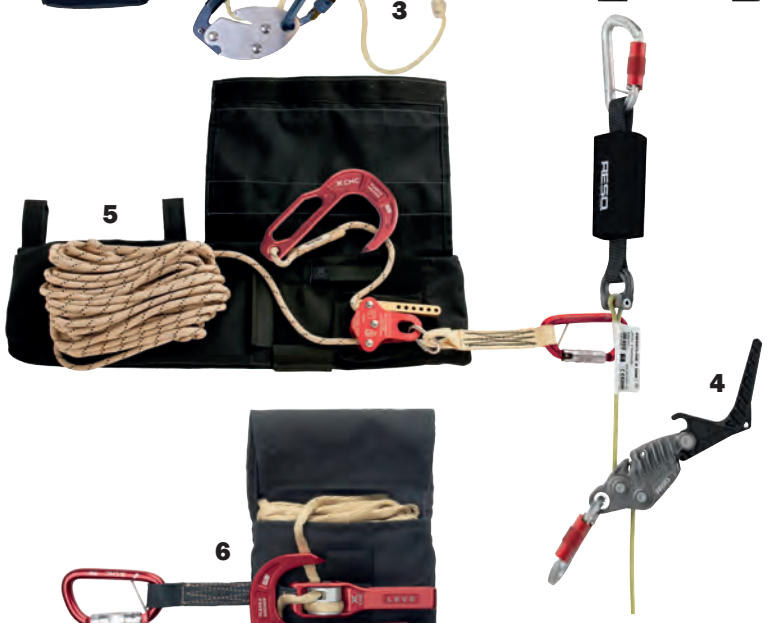
Immediate self-rescue of a single fire or emergency services person from a life-threatening emergency situation, generally above ground, using system components or manufactured systems designed for self-rescue escape.
Some of the non-US devices in this list therefore would NOT satisfy this definition because they are designed for other purposes of which escape is an alternate use. Be sure that the device you're considering, adheres to your service or agency's standards requirements.

In Europe, descenders were historically tested to EN 341:1992 Personal fall protection equipment which actually was originally written from the perspective of descenders being used for evacuation purposes in an emergency. The 2011 revision states clearly that it 'does not specify requirements for descender devices that are used for descending in mountaineering, rope access and work positioning systems'. Descenders for these specific tasks are now tested in Europe to EN12841:2006/C. NB: For reasons of space we have not included the revision year - you will need to satisfy yourself of the compliance (or otherwise) of all these products to any of their stated standards since some seem to contradict their own data submissions-perhaps by including specialist or 'Other use' not necessarily subject to the same standards.



The EN 341 standard includes test procedures that require a series of high-level descent tests to assess the product's ability to perform satisfactorily after repeated use. The

BELOW:
1) Sterling FCX system
2) Petzl EXO system
3) Cresto Smartline system (Discontinued. Replaced by X version)
4) Cresto Smartline X system
5) CMC Escape Artist system (with rope)
6) CMC LEVR system (with webbing)
7)RPI Phoenix system
8)



standard categorises descenders into two types: 'automatic', which incorporates a braking system that requires no intervention by the user once the descent has commenced [so-called 'true-blue' devices], and 'manually-operated' products with a braking system that requires the user to take action. EN 341 refers to these as 'Type 1' and 'Type 2' respectively - *ALL of the devices in this article are Type 2* which are manual because you must do something to make the brake operate, even if that is simply letting go of the handle. but two are additionally type 1 since they are hybrids. It also includes a classification system ('A' to 'D'), based on descent energy the device is capable of withstanding in Joules:

A Up to 7.5 x 106J
B Up to 1.5 x 106J
C Up to 0.5 x 106J
D For only one descent which is often the case for ESCAPE devices.

Descent energy depends on the maximum descent height and the maximum rated load. See Issue 75 for further discussion of general Descender Standards, terminology and function.

One other thing to note on standards is the use of open anchor hooks like Sterling's Lightning and GT. These meet NFPA -E 9as does a suitable locking carabiner) but it does not meet any European Norm. A kit will therefore only meet EN if it has a locking carabiner or hook.

RPI's Phoenix is one of several lever-style devices (hence CMC's LEVR name for their device) where the body becomes the handle. This particular model is unique in our selection because it incorporates an integral swivel

DESCENT SPEEDS/DISTANCES

A part of many descender performance standards is a requirement that when descending the device does not get so hot that it can damage the rope it is moving down. This is evaluated by measuring the temperature of the rope contact faces after a decent at a set speed with a set mass over a set distance. This testing is why you see markings such as 150Kg/200m on devices. It does not mean that you can only descend 200m, just that with a mass of 150Kg at a normal, steady descent speed by the time you get 200m in its going to be pretty warm. Travel slower or with a lighter mass and you create less descent energy and therefore potentially less heat from friction. The *CMC LEVR BT* version is specifically designed to lower off a casualty before self-bailing (with additional straps and a double-opening bag) so this needs to dissipate more heat. Some descenders have short handles or release mechanisms that have little mechanical advantage, meaning that the user quickly tires and lets go for a rest. This limits the descent energy very nicely and means that the device does not warm up. Longer handles and more mechanical advantage make it much easier to release the rope, giving finer control but at the risk of allowing a rapid, temperature rising descent. Unlike full-size rescue descenders, escape devices don't tend to have larger handles with better mechanical advantage/leverage though this is still a benefit where it can be incorporated to make the initial start smoother and less dramatic and it enables the user to maintain the descent for longer without getting cramps in the hand. In the case of the *LEVR* and *Core*, the handle is longer because it is specifically used as a lever.

TACTICAL/JUMPER INTERVENTION: This is where certain types of double brake can be a positive liability and we have ***not*** included a column for this. Instead, choose a device that shows a square in the ASCENDER column but not an orange square ■ in the DOUBLE BRAKE column. If a device has a total lockout requiring reset it is NOT suitable for intervention. However, a proportional brake requiring you to maintain squeeze pressure to slow or halt (indicated by a black square ■, works OK.

Most importantly check the ROPE specifications for models that suit your specific needs. High speed intervention descents for either tactical purposes or suicide intervention need to give free run for as long as you have the descender 'wide-open' and this causes rapid heat build up on a small device. Luckily, most escape devices use heat and abrasion-resistant rope. The *Druid Pro* is an example of a descender that has dispensed with the double lock of its basic DRUID brother, ostensibly for rope-access users tired of kicking into secondary locks unintentionally but tactical users can also benefit.

IN THE FOLLOWING TABLES:.....

ORIGIN: The main flag refers to the manufacturer's home country, but this may not be where the device is made. If we know, we show an inset flag and you will notice a number of 'rebadged' devices like *ISC*'s *D2*.

COST: Kit prices are shown in **green** and may be the only price if the device is not sold separately. Kit prices are for the shortest standard length - usually around 15m/50ft but may be up to 30m. Prices are a rough guide only - it can vary due to exchange rates, taxes etc. and we usually round the price up. £$€ in orange are a currency conversion only and will need import duty, tax and shipping etc. added.

WEIGHT: for the individual descender in black and for a full, basic kit in green. The kit weight may vary as even a carabiner change will make a difference but as a rough guide it is for the 15m/50ft KIT (or smallest available kit) with rope in a bag. Std kit's may or may not include a hook instead of, or, as well as, a carabiner especially in the US.

DIMENSIONS: of the device itself - not the kit . This is mainly given as height by width with some quoting the depth (or thickness) of the device. The length should include the handle in stowed position but some may be quoting length with the handle extended or possibly not including the handle at all.

MATERIALS: ALLOY refers to ALUMINIUM ALLOY or ALUMINUM ALLOY unless otherwise shown. Note that many with an Alloy (alu) or Steel handle, may also have a comfort cover of rubber or plastic etc. Some models, like the *Deus/ Skylotec 3000*s don't have a handle, just a rotating 'stop-Go' knob allowing for fully automatic descent or control only via the trail rope. Others like the Core use the body as the handle.

MBL: Minimum Breaking Loads (MBL's) are a complex area and it is always best to read the manufacturers product instructions thoroughly to make sure that you really understand what your device is capable of. Generally, the MBL is the minimum figure before failure that will be achieved by the device when used in a specific configuration. Some manufacturers bizarrely use the MBL figure that must be met in the relevant standard

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test - regardless of the fact that their device is capable of much more than that, for instance ***many will quote around 12kN because it's the required minimum while others use the figure at which the device is just not actually going to fail, about, but making the device appear 'stronger' than a competitors product.*** Rarely, you might see a few MBL's marked on the same product or in the instructions; in these cases, they may relate to each of the configurations described or the separate individual standards tested to. On some products where a belay function is possible, the MBL may define the maximum load that can be held in a limited dynamic event (FF0.3) where the true applied force is significant. **MRL**: **Maximum Rated Load** can be just as confusing as MBL's. Some performance standards require devices to indicate the maximum rated load that can be applied during that specific application. The trouble is that the MRL may be different for each standard and some manufacturers again do things literally and only test to the minimum figure stated in the standard. This means some devices have differing MRL's marked on them and the MRL marked is actually less than the manufacturer is willing to allow you to apply!

WLL: Working Load Limit (Safe Working Load) The MINIMUM indicates the lowest weight that will be able to descend or that you can lower. This can also be an indication of how easily rope will pull through the device. **MAX**IMUM figure for the larger rope in the device's range. This figure is not as specific as an MBL and can vary depending on the standard, for instance ropes meeting **EN 341** often have a lower WLL than those meeting ANSI or CSA.

DOUBLE BRAKE/ANTI-PANIC: In addition to braking when you let go of everything this is a secondary brake which engages either fully, shown as ■or proportional to the handle grip-pressure, shown as ■. A fully engaged brake like the *Petzl EXO* means you are safely held until you resume pressure on the handle. A proportional brake may never fully stop you depending on how much grip pressure you apply, often they only slow you but that may be enough to remind you to let go completely in order to fully arrest your descent.

LOAD ROPE WHILE ATTACHED: The carabiner can be clipped in while the rope is loaded into the device. There is therefore no danger of dropping the device during rope installation or removal. Some have fixed top-plate without the hinged safety gate normally present on autolock descenders. In some cases like the *EXO*, this feature is an option or differs from its normal configuration because it is aimed at use in pre-rigged kits only and specifically limits firefighters' ability to detach the device from the kit.

KIT/DEVICE-ONLY?: a square in black means that the device can be purchased separately from the rope/webbing. A solid green square indicates that the device is ONLY available as part of a kit which includes rope and anchor options.

ROPE DIAMETERS: Escape devices are often very specific about the diameter of ropes that can be used and there may not be a range but rather one specific rope.

EYE DIAMETER: refers to the harness or anchor connection eye as distinct from any secondary eyes intended as beckets for inclusion in a pulley system but this is not the norm for escape devices. This is an important figure because although many kits will provide a specific carabiner it is the one element of a kit that might be interchanged regardless of the manufacturers' intention. In this respect, some eyes are quite small and would struggle to take some of the larger rescue carabiners and the forged, profiled cross-sections, having been designed originally with round bar section carabiners in mind.

USES: ALL of these devices can be used for LOWERING somebody else as well as abseil/Rappel-escaping yourself but make sure you practice this upside-down configuration because it can be awkward to control if you are only ever used to pulling it out of a kit and evacuating yourself.

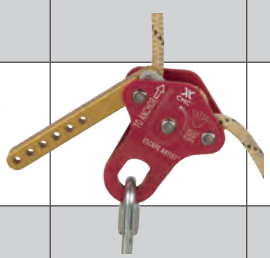
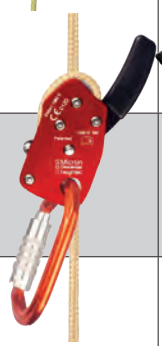
BELAY/ LIFELINE: For this GUIDE we are ONLY considering the devices approved for use with low-stretch/static rope NOT dynamic climbing rope. Lifelining is not necessarily the same thing as a belay where you could end up with the device taking a severe dynamic load. Lifelining may simply mean horizontal or low angle edge restraint which would impart minimal fall factor to the device in the event of activation. In theory all of these devices could work as a top-belay/lifelining device but in contrast to lowering where the load is constant you must be careful in belaying, not to permit a potential fall factor of more than 0.3 and preferably 0 ! Some do it better than others so marginal devices in this category are shown in a black circle ●= OK but not brilliant.

Some devices will specifically tolerate a rescue belay load of 200kg, fall factor third (0.3) and these are shown as an orange square■. Virtually all escape devices will lifeline or top-belay but very few, if any, will state that they can arrest a rescue load which is taken to be between 200 & 250kg/441-551 lb.

ASCENDER: Most standard, autolocking descenders can be used in a reasonably efficient hauling system as a second ascender where a more conventional handled ascender provides the top ascender. Two descenders or a descender and a prusik cord/Purcell could also work well enough over short distances. The thing about using a descender instead of an ascender is that, while it imparts more friction during any ascent it does give you the option of an immediate switch to descent rather than trying to downclimb on ascenders or switch systems from ascenders to descender. It's already there. This may be particularly applicable to 'Escape' devices being used as mini- multi-purpose devices by tactical teams where one small device to perform a range of tasks adequately is preferable to a half -a-ton of different specialist devices that perform their tasks in the best possible manner. However, rack-style escape devices will rarely be usable as an ascender except in the most dire of last resorts. HAULING/PROGRESS CAPTURE: If a device can be used as an ascender, which many of these can, it's already functioning as a Progress Capture Device (PCD) but some will work better than others and some manufacturers may prefer you don't use it that way and especially for escape devices likely to be integrated into a kit so we have not included this as a separate column.

OTHER COLOURS Usually this is simply a black variant for tactical use!.

NFPA-E compliant escape kits offer an open hook for rapid anchorage like the *Crosby*, the *Lightning* left or a host of their own versions. But if you have the time they can be connected to an anchor in a variety of more secure ways with some, like the Lightning above incorporating sprung, carabiner-style gate.

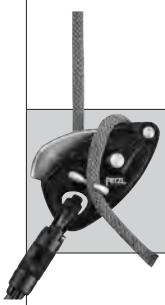
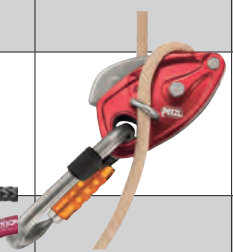
images NOT to scale		MODEL	COMPANY	ORIGIN	ITEM COST KIT COST	WT KIT WT	DIMENSIONS of DEVICE	MATERIALS: FRAME CAM HANDLE	DOUBLE BRAKE REQUIRES RESET
		Druid	C.A.M.P.		£145 $220 €123	280g 9.9oz	118 x 76 x 46mm 4.7 x 3 x 1.8"	Alloy Stainless Steel Alloy	■
		Druid-Pro	C.A.M.P.		£135 $220 €160	280g 9.9oz	118 x 76 x 46mm 4.7 x 3 x 1.8"	Alloy Stainless Steel Alloy	■
		Quickie Descender (QD)	CTOMS		$70	95g 3.3oz	60 x 100 x 26mm 2.4 x 4 x 1"	Alloy Stainless Steel Nylon	
		LEVR LEVR BT	CMC		$489 €1083	190g 6.7oz 1.1kg 2.4 lb	158 x 38 x 31mm 6.25 x 1.5 x 1.25"	Alloy - Alloy	
		Escape Artist	CMC		$215 $650	184g 6.5oz 1.4kg 3.1lb	190 x 140mm 7.4 x 5.5"	Alloy Alloy Alloy	
		SmartLine X	CRESTO		£385 €435	190g 6.7oz	140 x 90 x 32mm 5.5 x 3.5 x 1.25"	Alloy Alloy Plastic	■
		Core	FIRE INNOVATIONS		$125	193g 6.8oz	152 x 50 x25mm 6 x 2 x 1"	Alloy - Alloy	■
		Micron D33	HEIGHTEC		£239 $255 €269	860g 1.9lb	135 x 65mm 5.3 x 2.6"	Alloy Alloy Alloy	■
		QRAB	HIGHNOVATE		n/a	150g 5oz	120 x 50 x 40mm 4.7 x 2 x 1.5"	Alloy Stainless Steel Alloy	■
		D2	ISC		£157 $260 €181	0g 0oz 2kg 4.4lb	mm "	Alloy Stainless Steel Alloy	■
		Gnome IR0318	ICE ROCK		€110	275g 9.7oz	107 x 57 x 38mm 4.2 x 2.2 x 1.5"	Alloy Steel Alloy	■

COST: Approx & **include** local tax/VAT £$€+Currency Conversion Only DOUBLE BRAKE: ■=Lock requires reset. ☐=proportional on squeeze

ESCAPE/MINI DESCENDERS

LOAD ROPE WHILE CONECTED	KIT/DEVICE-ONLY	MBS/ MBL	MIN MAX WLL	STANDARDS	ROPE RANGE	KIT ROPE LENGTHS MAX DROP HEIGHT	EYE DIAMETER	OTHER USES BELAY/LIFELINE	OTHER USES ASCENDING	OTHER COLOURS	NOTES	WWW.
	■	12kN 2697lbf	200kg 441lb	EN 341/2A	10-11mm 7/16"	-	19mm 0.75"	■	■			camp.it
	■	12kN 2697lbf	200kg 441lb	EN 341/2A	10-11mm 7/16"	-	19mm 0.75"	■	■		*Druid Pro* is single -lock only - no panic-grab	camp.it
■	■ ■	15kN 3372 lbf	n/a	-	6mm 1/4" Technora/nylon	16m 52ft	19mm 0.75"	■ ■	■	■	Basic TRACE Kit includes 2x ascenders and a pulley as well as the QD and rope	toms.ca
	■	13.5kN 3035lbf	280kg 617lb	NFPA E	11mm / 7/16" Technora Tube webbing	15m 50ft	*	■			*Uses integral tape extension to a carabiner Kit available with gated or standard hook. BT=kit configured to lower cas then bailing out=$658	cmcpro.com
	■ ■	13.5kN 3035lbf	280kg 617lb	NFPA E	7.5mm 5/16" or Technora Tube webbing	15m 50ft	35mm 1.38"	■			3 kits available, 7mm cord with hook, Fire webbing and 7mm cord with no hook	cmcpro.com
	■	-	140kg 310lb	EN341-D	5.5mm 1/4" Aramid	15, 40m 50ft 200m 656ft	15mm 0.6"	●				crestogroup.com
	■	13.5kN 3035lbf	-	NFPA-E	7.5mm 5/16" CoreTech, Fire-Tech2, TSafe	12, 15m 40, 50ft	*		●		*Uses integral tape extension to a carabiner	fireinnovations.com
■	■	-	125kg 276lb	EN 341/D	7.5mm 5/16" Aramid	15-120m 50-394ft 120m 394ft	15mm 0.6"	■	■			heightec.com
■	■ ■	10kN 2248lbf	160kg 352lb	NFPApending EN341pending	7.5-8mm 5/16" Technora	15m 50ft	17mm 0.7"	■ ■	■		Red button is a quick release from the rope which does NOT function under load.	highnovate.com
	■ ■	14 kN 3147lbf	140kg 310lb	EN 12841 NFPA E ANSI Z359.4	7.5mm 5/16" BW FR Hybrid Technora or 8mm 5/16" Polyester	30m * 98ft * 200m / 656ft	20mm 0.8"	■	■	■	Data for 2020 version. 2018 (red) & 2020 (black) versions shown here. * + Custom lengths Also Sold by FERNO	iscwales.com
■	■	>12kN 2697lbf	200kg 441lb	EN 12841/C	10-11mm 3/8-7/16"	-	15mm 0.6"	■ ■	■		Device can adapt to better suit specific user weights and rope size	icerockequipment.com

pressure. **DROP HEIGHT**: = maximum single drop but multiple drops may be possible **USES:** ○= OK BUT NOT IDEAL

images NOT to scale		MODEL	COMPANY	ORIGIN	ITEM COST KIT COST	WT KIT WT	DIMENSIONS of DEVICE	MATERIALS: FRAME CAM HANDLE	DOUBLE BRAKE REQUIRES RESET
		Fedor Light*	KROK		£55 $65 €60	280g 9.9oz	148 x 67mm 5.8 x 2.6"	Alloy Alloy Alloy/Nylon	
		Grisha/GriShi Airborne Trooper*	KROK		£60 $70 €65	415g 14.6oz	160 x 85 x 30mm 6.3 x 3.4 x 1.2"	Stainless Steel Stainless Steel Stainless Steel	■
		ENSA APE-Extreme	MALLORY SAFETY & SUPPLY		n/a	5.22kg 6.5oz	88 x 90mm 3.5 x 3.5"	Alloy Alloy Alloy	■
		EXO EASHOOK OPEN	PETZL		£340 $430 €395	200g 7oz 1220g 0oz	115mm 4.5"	Alloy/Steel Stainless Steel Nylon/Alloy	■
		EXO AP	PETZL		£410 $500 €450	200g 7oz 1470g 0oz	115mm 4.5"	Alloy/Steel Stainless Steel Nylon/Alloy	■
		Wind Escapettor	PROTECCIÓN TÉCNICA		£575 $1425 €358 €1300	189g 6.7oz 3.6kg 8lb	85 x 28 x 40mm 3.4 x 1.1 x 1.5"	Alloy/SSteel Stainless Steel Alloy	■
		Escapettor	PROTECCIÓN TÉCNICA		£285 $350 €320	119g 4.2oz 660g 1.45lb	90 x 28 x35 mm 3.5 x 1.1 x 1.4"	Alloy Alloy Alloy	■
		RSS -AL-2	RIT SAFETY SOLUTIONS		£310-340 $395-$433 €365-400	n/a	168 x 90mm 6.6 3.5"	Alloy Alloy Alloy	
		RSS -AL-4	RIT SAFETY SOLUTIONS		£335-360 $425-$455 €390-420	n/a	215 x 90mm 8.5 x 3.5"	Alloy Alloy Alloy	
		Phoenix Escape System	RESCUE PRODUCTS INTERNATIONAL		n/a	939g 2lb	210 x 73 x 36mm 8.3 x 2.9 x 1.4"	Alloy - Alloy	

COST: Approx & **include** local tax/VAT £$€+Currency Conversion Only **DOUBLE BRAKE:** ■=Lock requires reset. ☐=proportional on squeeze

ESCAPE/MINI DESCENDERS

LOAD ROPE WHILE CONECTED	KIT/DEVICE-ONLY	MBS/ MBL	MIN MAX WLL	STANDARDS	ROPE RANGE	KIT ROPE LENGTHS MAX DROP HEIGHT	EYE DIAMETER	OTHER USES: BELAY/LIFELINE	OTHER USES: ASCENDING	OTHER COLOURS	NOTES	WWW.
■	■	22kN 4945lbf	400kg 882lb	EN 341	8-10mm 5/16-3/8"	-	17mm 0.7"	■ ■	■		Carabiner loads through eye in cam. Loading rope while attached via bottom eye. *Data unverified	Krok.biz
	■	15kN 3372lbf	400kg 882lb	-	8-12mm 5/16-1/2"	-	17mm 0.7"	■ ■	■		Name converts from Russian as either 'i' or 'a'. Also available in hardened steel for $32. with blue powder-coat. *Data unverified	Krok.biz
■	■	17.8kN 4000lbf	40kg 88 lb 440kg 970lb	EN 12841/C EN 341 NFPA-E ANSI Z359.4	7.5mm 5/16" ENSA Fr Hybrid Technora	30-37m 100 to 450ft <198m /650 ft	22mm 0.86"	■ ■	■		In-House training by ENSA required. Device has integrated pulley and will carry two-person rescue load	nsa-northamerica.com
	■	13.5kN 3034lbf	140kg 310lb	EN 341-D	7.5mm 5/16" Aramid (Technora)	15m 50ft	15mm 0.6"	■ ■	■	■	An individual, non-escape oriented EXO= GriGri costing €90 EN kits include locking carabiner/hook	petzl.com
	■	13.5kN 3034lbf	140kg 310lb	NFPA-E	7.5mm 5/16" Aramid (Technora)	15m 50ft	15mm 0.6"	■ ■	■	■	NFPA Kit includes anchor hook as standard.	petzl.com
	■	18kN 4047lbf	60kg 132lb 120-140kg 265-310lb	EN 341 2D ANSI Z359.4	5mm 1/4" Technora	20-160m 66-525ft 200m / 656ft	12.5mm 0.5"	■	■		options available to improve handling for 2-person rescue loads. Custom rope lengths available	protecttion.com
■	■	18kN 4047lbf	40kg 88lb 140kg 310lb	EN 341 2D	5mm 1/4" Technora	20m 66ft	12.5mm 0.5"	■	■		options available to improve handling for 2-person rescue loads. Custom rope lengths available	protecttion.com
■		14kN 3147lbf	0kg 0lb	NFPA E	11mm 7/16" Kevlar Tape 8mm 5/16" Kevlar cord	15m 50ft	*	■			*Uses integral tape extension to a carabiner	ritsafetysolutions.com
■	■ ■	14kN 3147lbf	140kg 310lb	NFPA E	11mm 7/16" Kevlar Tape 7.5mm 5/16" Kevlar cord	15m 50ft	*	■		■	*Uses integral tape extension to a carabiner	ritsafetysolutions.com
■	■ ■	13.5kN 1376lbf	136kg 300lb	NFPA E	6mm 1/4" Technora	12.1,15.2m 40, 50ft	mm "	■ ■	■		cost & spec for 50ft version.	rescueproinc.com
												expansion row

e pressure. **DROP HEIGHT**: = maximum single drop but multiple drops may be possible **USES:** ○= OK BUT NOT IDEAL

images NOT to scale		MODEL	COMPANY	ORIGIN	ITEM COST KIT COST	WT KIT WT	DIMENSIONS of DEVICE	MATERIALS: FRAME CAM HANDLE	DOUBLE BRAKE REQUIRES RESET
		3300	SKYLOTEC		£750 £1485 €830 €1735 $950 $2070	970g 2.1lb 3.65kg 8lb	135 x 90 x 60mm 5.2 x 3.5 x 2.4"	Alloy Stainless Steel Alloy/Ti	■*
		3700	SKYLOTEC		£880 £1575 $1130 $2500 €1025 €1820	1.3g 2.86lb 3.8kg 8.4lb	135 x 100 x 60mm 5.2 x 4 x 2.4"	Alloy Stainless Steel Alloy/Ti	■*
		Lov 2 Lov 3	TAZ		£196226 $330380 €223240	353g 380g 12.4oz 13.4oz	140 x 95 x 50mm 150 x 80 x 40mm 5.5 x 3.75 x 2" 6 x 3.2 x 1.6"	Alloy Stainless Steel Nylon	
		FCX	STERLING ROPE		$145 >$550	221g 7.8oz	140 x 50 x 25mm 5.5 x 2 x 1"	Alloy - Alloy	■
		F4	STERLING ROPE		$130 >$420	170g 6oz	152 x 50 x 25mm 6 x 2 x 1"	Alloy - Alloy	

COST: Approx & **include** local tax/VAT £$€+Currency Conversion Only **DOUBLE BRAKE:** ■=Lock requires reset. ☐=proportional on squeeze

ESCAPE/MINI DESCENDERS

LOAD ROPE WHILE CONECTED	KIT/DEVICE-ONLY	MBS/ MBL	MIN MAX WLL	STANDARDS	ROPE RANGE	KIT ROPE LENGTHS MAX DROP HEIGHT	EYE DIAMETER	OTHER USES: BELAY/LIFELINE	OTHER USES: ASCENDING	OTHER COLOURS	NOTES	WWW.
	■ ■	13.5kN 3035lbf	59kg 130lb 141kg 310lb	EN341-D ANSI	5.9mm ¼" Bonded Nylon/ aramid	25m 82ft 106m 350ft	15mm 0.6"	■	●		*Hands free automatic descent or use trail rope for speed control, speed: 1.9m/s at 140kg / 6'3ft/s at 310lbs	skylotec.com
	■	13.5kN 3035lbf	59kg 130lb 141kg 310lb	EN341-D ANSI	5.9mm ¼" Bonded Nylon/ aramid	25m 82ft 180m 590ft	15mm 0.6"	■	●		*Hands free automatic descent or use trail rope for speed control, speed: 1.9m/s at 140kg / 6'3ft/s at 310lbs	skylotec.com
■	■	15kN 3372lbf	200kg 441lb	EN 358 EN 12841/A-C	10-11mm ⅜-7/16"	-	15mm 0.6"	■	■	■ ■ ■	also operates on tensioned diagonal ropes. Lov3= gated version	taz3d.fr
	■ ■	13kN 3035lbf		NFPA-E	7-8mm 5/16" Nylon (PER) or Technora	15m 50ft 150m/492ft	20mm 0.8"	■	●			sterlingrope.com
	■ ■	13kN 3035lbf		NFPA-E	7-8mm 5/16" Nylon (PER) or Technora	15m 50ft	20mm 0.8"	■	●			sterlingrope.com

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HARNESS TOOL CARRIERS

Petzl's PRO version of the CARITOOL has a nylon anti-snag shroud to the gate and includes an eye at the top for safety cord/ lanyard to make sure you don't drop your kit just as you unhook it.

As the name suggests, these are supplementary hooks that are designed to clip onto your harness in a semi-permanent fashion and then easily stow your equipment. This is either as a general storage option for carabiners, hardware, slings etc. or, in the case of heavier duty hooks, for attaching and continually switching between being stowed and being used. We should be calling this Guide 'CARITOOLS' since that's what most people know them as but in contrast to a time when *Hoover* cornered the vacuum market so completely that they turned a noun into a verb, *Petzl* didn't stand unopposed for quite long enough. You have to be quick these days and although it may seem to arborists that *Petzl* had things their own way for many years, there were always competitors on the sport side with *Camp, CT, Singing Rock, Kong, Black Diamond* and the now discontinued *Mammut IceBreaker* and even this tandem hook (right) from *Simond*. There have also always been more industrial options. But it is arborists rather than rope access/rescue that have driven development and proliferation of harness carry hooks. Early arborist harnesses like the *Whillans* had (and have) steel, offset tool clips incorporated into their design and later, add-on steel hooks appeared like the French *Komet* and German *Treerunner*. *Protekt* of Poland, better known to arborists as '*TreeUp*' have the simplest of designs - something akin to a blunt, steel, meat-hook but they also have a more conventional plastic carabiner-style hook. More recently we have seen the *Shembiner* chainsaw hook and two of the alloy wizards - *DMM* and *Rock Exotica* introducing more complex carabiner-style models. All of these companies would probably moan about using *Petzl*'s product name as a generic term but sometimes it's just easier. Don't forget, the plastic hooks are only rated to about 5kg/11 lb so you can't generally hang, for instance, a chainsaw off them. That normally requires the metal versions although *Petzl*'s larger *Caritool was* originally sold by *Husqvarna* as a chainsaw holder so presumably some others will also cope. *CM*I took Shem Kendrick's idea for a chainsaw hook and ran with the *Shembiner*, slightly different to most of the models here because it's an open hook. More on this later. You sometimes hear comments that a *Caritool* or similar clip has broken - this will almost certainly be due to overloading and/or torqueing - in other words, user-error! Of course, you could use practically any inverted carabiner as a tool attachment and especially a bent-gate snap carabiner but what sets ALL of these models apart is an adaptation to be used on webbing which will be some form of captive eye or just a stabilisation bar as with the *Treeup* hook model (left) which pushes through a narrow sewn eye with the T-bar sitting on top. Most models have a maximum webbing size they will fit and therefore harnesses that they won't fit. Some stockists actually list the harnesses their hook *WILL* fit but that's a bit too exhaustive for us and liable to change every few months so we've listed the maximum web size it will fit (in orange) in the dimensions column.

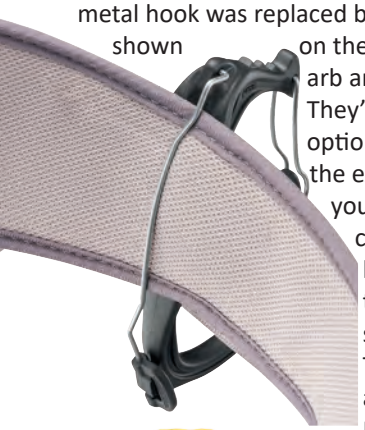
The *Petzl CARITOOL* (above) is plastic (or more accurately, glass-reinforced plastic) and has changed just a bit from the first Guide with just the yellow all black with just the yellow anti-snag cover version rather than the original all-black. The *Evo* continues to be a sport model aimed t mountaineers but it does the same job and fixes to wider range of belt widths. *Courant's Large Honos* (above right) comes in a fetching blue, red or yellow (as does the small version) and is unusual in having a wire retaining loop on the webbing hook as well as a sliding plastic keeper on the gate that you can move down to act as a lock. The latest metal tool-holding incarnations are alloy and becoming quite complex with locking gates and screw-on belt attachment (Left). Some of the older models can still hold their own though and this *Treerunner* folding model (right) overcomes the problem of taking up space unnecessarily and unwanted hang-ups by folding flat to the harness when not in use.

Some of the plastic models have '*Not Load Bearing*' emblazoned on them. Not surprising since they're plastic but so do the latest generation of metal carriers. This warning refers to the possibility of someone hooking their fadass directly

onto one and trying to hang on it. Non-living loads like your tools are absolutely fine.

In their original, modified carabiner form, you have the sport climbing fraternity and ice climbers in particular to thank for this handy genre of tool clips intended to keep your rack lighter (and cheaper) and clip and unclip ice screws or chocks and cams (pro) quickly and easily. Consequently, a number of the models here are aimed at mountaineering but we've included them because they do the same job. You'll notice that a number of designs have a broad, top surface with a prominent lip above the gate, while others have a heavily ribbed top surface. This is for stacking items safely out of the way so that you can extract another item while still attached within the hook. This evolved from the sport requirement for racking multiple sizes of ice-screws and pro but it works for any multiple items like spare carabiners.

Ultimately, the highest strength and toughest items are the chainsaw hooks from *Treerunner/Protekt* and Krok (russian models currently sanctioned so not listed) and the latest generation of all-alloy models like *CMI's Shembiners, DMM's Vault* and *Rock Exotica's Transporter*. (NB: the *Husqvarna* all metal hook was replaced by the interesting plastic-cased hook shown on the right aimed at forestry rather than arb and by a *CariHook made by Petzl*). They're undoubtedly the most robust options, it's just a question of whether the extra cost, weight and bulk on your harness is preferable to the cheap and light plastic models. Many harnesses have sewn tabs specifically to take a *Caritool* or other suitably sized carabiner and the iconic Teufelburger *TreeMotion* harnesses are basically one big *Caritool* carrier.



But as we've mentioned, the big difference between a standard carabiner and the models in this guide is that they are purpose-designed tool carriers with a stabilising element that keeps them firm and correctly oriented on ANY suitably sized harness accessory webbing. Most models have an integral keeper along the spine that clips over the webbing but others like the Singing *Rock Porter* (left) , CT *Truck* and Camp *Hub* have a simple straight, often flattened, spine with an add-on rubber 'keeper' that weighs about 4g if you're counting and enables the hook to fit most harness webbing more firmly. Be aware that no tool clip will fit ALL webbing, some will fit the now standard 45mm but not the older standard 50mm/2" webbing. One model, the Petzl *Caritool Evo* (right) has, as the name suggest, evolved since our last GUIDE and now has an elastic cord to fit the widest range of webbing in our guide. All of these dedicated tool hooks are designed to firmly grasp webbing and limit rotation of the hook when clipping or unclipping gear. The original *Caritool* has plastic barbs on its web clip, the Camp *Hub* has a profiled and ribbed spine, the new *Courant Honos* has a retaining clip to 'lock' the webbing into the retainer as does the *Treehog TH1035* (top right) and the new Edelrid *SML3* (right) due out later in 2019. Some of the metal carriers are actually screwed onto your harness so they ain't going anywhere, actually, two plates are screwed together onto the accessory webbing rather than actually screwing into life-support webbing but you knew what we meant. This immobility is particularly important when you're hanging on with one hand while trying to clip or unclip vital equipment including your chainsaw. The best carriers need to be unobtrusive on the harness, easy to clip and unclip but also be absolutely secure both in terms of the attachment to the harness and keeping the equipment safe when it's clipped in, no matter what mystical or ...us manoeuvring you undertake on the ...rope. A lighter-duty plastic model will break more readily when ...overloaded so is less of a hang-up ...isk than the heavier-duty models which can carry a small elephant. With this in mind, the very strong russian Krok model (right) has had the keeper on the nose

UPDATED Jan '24

removed. The gate will still close to keep your carried items safe but if loaded over 110kg or 150kg respectively for the two models will bend and release you. The CAMP Kilo too will release at 150kg in the event of a hang-up. On the other hand, if you've just cut your rope and are about to hurtle through the canopy to certain death, you might be glad of the open hook and strength of something like a *Shembiner* or Eyolf's Hake snagging a branch on the way down.

If you look at the Petzl *Caritool* and the *Courant Honos* in the title pictures you'll notice an eye in the top left corner and at the bottom, respectively and you'll also find this or some form of captive eye on other models like the *Treehog* and the *Reecoil* hook which is more of a tool hanger. The eye is for attaching a cord or full size lanyard to your gear so that you don't immediately drop it as soon as you've taken it off the hook. In the case of the *Shembiner XL* left you have the best of all worlds because it has eyes you can tie cord into, a large eye at the bottom for clipping a chainsaw lanyard into and the hook itself with a large opening, therefore easy to drop your saw onto but it has a slight 'barb' to stop your saw falling off if you invert. The other steel chainsaw hooks are easier to clip into than to unclip, as is the case with all tool clips with a sprung gate, but that's on the valid assumption that you'll need to stow the saw faster, having made a cut, than prior to the cut when you have the time to go through the fiddlier process of unhooking. Skylotecs' *CT Hammer Lodge (*left) has a little plastic clip to hold the gate open should you prefer and the nose of the hook is nicely rounded so as not to snag anything on the way in or out.

In contrast, the *DMM Vault* (right) and RE *RE Transporter* (left) can lock closed if you prefer so that you won't lose kit regardless of the aerial gymnastics you perform. Note that the Vault hinges in the middle of the spine to fit webbing in from the top. The *Transporter* and *Vaults* are very much the top end of tool carriers with the *Transporter* and *MIni Vault* both bolt-equipped for a more secure, semi-permanent fixing to the

IMAGES NOT TO SCALE							
MANUFACTURER	BLACK DIAMOND	BUCKINGHAM	BUCKINGHAM	CAMP	CAMP	CMI	CMI
MODEL VARIANT	Ice Clipper	2402G	BuckCarrier 2402B	Hub	Kilo	Shembiner	Shembiner XL
ORIGIN							
COST	£9 $10 €8	£8 $9 €9	£44 $54 €55	£8 $12 €10	£31 $43 €36	£27 $33 €031	£37 $46 €43
WEIGHT	35g 1.2oz	284g 10oz	68g 2.4oz	36g 1.3oz	52g 1.8oz	47g 1.6oz	60g 2.15oz
MAX LOAD	5kg 11lb	11-16kg 25-35lb*	6.8kg 15lb	5kg 11lb	20kg 44lb	n/a	n/a
GATE CLEARANCE	65mm 2.6"	23mm 0.9"	10mm 0.4"	23mm 0.9"	25mm 1"	14mm 0.55"	31mm 1.22"
DIMENSIONS heightt x width	105 x 50mm 4.1x2"	120 x 63mm 4.75 x 2.5"	114 x 45mm 4.5 x 1.75"	116 x 58mm 4.6 x 2.3"	118 x 72mm 4.6 x 2.9"	104 x 55mm 4.08 x 2.2"	127 x 76mm 5 x 3"
FITS to WEB SIZE...	≥60mm ≥2.4"	≥50mm ≥2"	≥50mm ≥2"	≥45mm ≥1.75"	≥45mm ≥1.75"	≥50mm ≥2"	≥50mm ≥2"
STANDARDS LOCKING	- -	- -	- -	- -	- -	- -	- -
MATERIAL FRAME GATE	Plastic Stainless Steel	Polymer Polymer	Alloy Alloy	Plastic Stainless Steel	Alloy Stainless Steel	Alloy	Alloy
NOTES		*depending on whether the gate is closed	Comes with spacers. Can be secured with zip-tie	Rubber web keeper	Releases at 150kg in event of hang up. fixes with bolts		
WEBSITE	blackdiamondequipment.com	buckinghammfg.com	buckinghammfg.com	camp.it	camp.it	cmigearusa.com	cmigearusa.com

COSTS: Any £$€ shown in burnt orange are currency conversions only and will not include shipping, import duty and tax

HARNESS TOOL CARRIERS

harness. DMM's newish *Parking Lot* (pic-top) is not included here as it's not a hook/carrier by itself but it fixes to your harness and then the *Mini-Vault* or their U-shaped *Stowaway* bolts to it in various hole-positions and configurations. We haven't included *Grivel's CarryAbiner* because it is, cunningly, a regular strength snap carabiner with an add on rubber keeper, the idea being that your tool carry hook can be used as a life-bearing carabiner should the need arise. Good idea but if we included that we'd have to include virtually every snap-gate carabiner!

Something else a little different is *Petzl*'s *Interfast* (pic right) which fits any slotted harness and enables you to drop a bag or whatever onto the hook and release it by pushing in that yellow-edged button. The hole in the bottom is for attaching a leash to whatever you're hooking on the harness.

IN THE FOLLOWING TABLES:

COSTS: include local Tax/VAT, are **approximate and rounded up**.

ORIGIN: Is the country of the 'manufacturer' but they are not necessarily the actual manufacturer of this particular product. Where we know we have put a smaller inset flag to show where it's made if different from the host flag.

MATERIALS: Some manufacturers use the word 'nylon' instead of 'Plastic'. While they are outwardly the same, nylon is a DuPont product with strict manufacturing procedures.

WLL is Working Load Limit but it is often the case that this figure is decidedly lower than the figure that some quote as a SWL or Safe Working Load. We tend to use only WLL these days -we always thought that was the same as SWL but maybe not so it's best to err on the side of caution when it comes to load limits. We haven't quoted an MBS/MBL Minimum Breaking Strength which is quoted by some manufacturers, because these are all non-live-load carriers so if we put a much higher breaking figure some clown is bound to try and hang off it.

GATE CLEARANCE: is the physical space between the nose and the spine through which you can fit an item - those with a bent gate will tend to have a larger opening but some don't have a gate at all, being open hooks, so these are good for larger kit and chainsaws.

FITS to WEB SIZE: is the width (or height) of webbing that the carrier can be fitted to - those that simply slot over the top like Buckingham's Kermit green hook are not as limited as those like the Vault or Camp's Kilo that have a definite containment area. Rubber keepers are also a bot more forgiving of webbing width but on the whole , most are designed for 45mm/1.75" or 50mm/2".

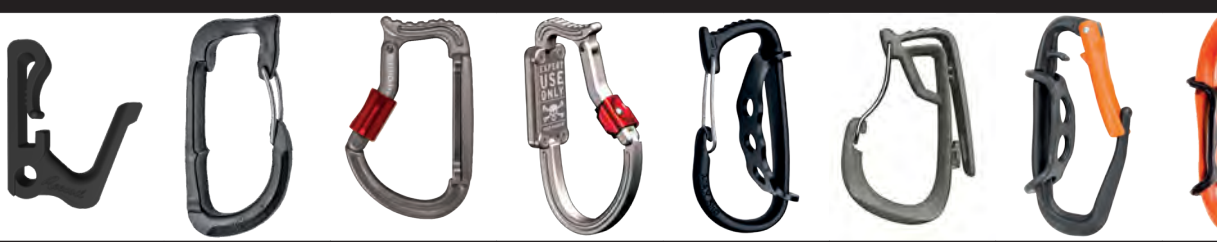
LOCKING: mean that the carrier can be looked once you've loaded something in so that, no matter what, it ain't going anywhere. Some might also lock it when not in use as an anti-snag precaution.

								
COURANT	COURANT	DMM	DMM	DMM	DMM	EDELRID	EDELRID	EYOLF
Honos sm	Honos lg	Mega Vault	Vault Lock	Vault Wire	Micro Vault	SM Clip	SM Clip 3R	Hake
£7 $9 €8	£15 $19 €17	£65 $81 €75	£45 $57 €60	£34 $43 €45	£20 $24 €26	£6 $8 €7	£8 $11 €10	£15 $18 €16
35g 1.2oz	82g 2.9oz	126g 4.5oz	72g 2.5oz	61g 2.15oz	22g 0.8oz	24g 0.85oz	41g 1.45oz	56g 2oz
5kg 11lb	15kg 33lb	30kg 66lb	30kg 66lb	30kg 66lb	30kg 66lb	5kg 11lb	5kg 11lb	n/a
20mm 0.8"	37mm 1.5"	46mm 1.8"	20mm 0.8"	23mm 0.9"	12mm 0.5"	25mm 1"	33mm 1.3"	33mm 1.3"
112 x 65mm 4.4 x 2.6"	150 x 92mm 6 x 3.6"	147 x 88mm 5.8 x 3.5"	111 x 56mm 4.37 x 2.2"	111 x 56mm 4.37 x 2.2"	68 x 35mm 2.7 x 1.4"	85 x 58mm 3.35 x 2.3"	118 x 56mm 4.6 x 2.2"	110 x 43mm 4.3 x 1.7"
≥45mm ≥1.75"	≥45mm ≥1.75"	≥45mm ≥1.75"	≥45mm ≥1.75"	≥45mm ≥1.75"	≥45mm ≥1.75"	≤50mm ≤2"	≤95mm ≤3.7"	≤80mm ≤3.15"
- -	■	■	■	- -	■	- -	- -	- -
Glass Fibre Plastic Stainless Steel	Glass Fibre Plastic Stainless Steel	Alloy Alloy	Alloy Alloy	Alloy Stainless Steel	Alloy Alloy	Plastic Stainless Steel	Nylon Stainless Steel	Alu Alloy
					fixes with bolts	Made from recycled rope. Rubber web keeper	Web slot kept closed with rubber keeper	lanyard/accessory hook holes=7mm
mycourant.com	mycourant.com	dmmwales.com	dmmwales.com	dmmwales.com	dmmwales.com	edelrid.com	edelrid.com	eyolf.ca

IMAGES NOT TO SCALE

MANUFACTURER	HONEYWELL	HONEYWELL	HUSQVARNA	HUSQVARNA	KONG	OMEGA PACIFIC	PETZL	
MODEL VARIANT	Chainsaw hook	Ch'saw hook Lg	Carry Hook	Chainsaw Hook	Owl	Deputy+	CARITOOL Sml	CAR
ORIGIN								
COST	£51 $50 €49	£40 $50 €46	£15 $18 €16	£12 $17 €15	£24 $29 €27	£30 $36 €34	£6 $8 €7	£14
WEIGHT	260g 9.2oz	190g 6.7oz	25g 0.9oz	65g 2.3oz	68g 2.4oz	108g 3.8oz	25g 0.9oz	
MAX LOAD	20kg 44lb	20kg 44lb	5kg 11lb	n/a	10kg 22lb	22.7kg 50lb	5kg 11lb	
GATE CLEARANCE	50mm 2"	54mm 2.1"	20mm 0.8"	60mm 2.4"	17mm 0.7"	26mm 1.02"	20mm 0.8"	
DIMENSIONS heightt x width	160 x 67mm 6.3 x 2.6"	192 x 110mm 7.5 x 4.3"	114 x 54mm 4.5 x 2.13"	150 x 80mm 6 x 3"	172 x 92mm 6.8 x 3.6"	116.3 x 65mm 4.57 x 2.55"	114 x 54mm 4.5 x 2.13"	142 5.6
FITS to WEB SIZE...	45mm 1.75"	Any	≤45mm ≤1.75"	≤80mm ≤3.15"	Any	≤45mm ≤1.76"	≤45mm ≤1.75"	≤
STANDARDS LOCKING	- -	- -	- -	- -	- -	- -	- -	
MATERIAL FRAME GATE	Alloy Alloy	Alloy Alloy	Glass Fibre Plastic Stainless Steel	Plastic Stainless Steel	Alloy Alloy	Alloy Alloy	Glass Fibre Plastic Stainless Steel	Gla Plas Stain
NOTES		slides into web loop via hook-nose first		Intended for forestry rather than arb. Also loop-hook version	Attaches to eyes/ loops with snap carabiners	+ is a colour variant. Cost is $10 more		
WEBSITE	sps.honeywell.com	sps.honeywell.com	husqvarna.com	husqvarna.com	kong.it	rocknrescue.com	petzl.com	pe

IMAGES NOT TO SCALE



MANUFACTURER	REECOIL	ROCK EMPIRE	ROCK EXOTICA	ROCK EXOTICA	SINGING ROCK	SINGING ROCK	SKYLOTEC	SK
MODEL VARIANT	Drill-Grab	Helper	Transporter	TransporterXL	Porter	Porter XL	Hammer Lodge	
ORIGIN								
COST	£9 $11 €11	£5 $6 €6	£85 $81 €100	£94 $90 €110	£7 $12 €8	£11 $16 €14	£10 $13 €12	£9
WEIGHT	40g 1.4oz	28g 1oz	95g 3.4oz	142g 5oz	32g 1.13oz	80g 2.8oz	19g 0.7oz	
MAX LOAD	Hook 5kg 11lb Eye*3.5kg 7.7lb	5kg 1.1lb	23kg 50 lb	23kg 50 lb	5kg 11lb	20kg 44 lb	5kg 11lb	
GATE CLEARANCE	45mm 1.75"	18mm 0.7"	32mm 1.25"	48mm 1.9"	23mm 0.9"	40mm 1.6"	25mm 1"	
DIMENSIONS heightt x width	90 x 74mm 3.5 x 2.9"	115 x 54mm 4.5 x 2.1"	142 x 80mm 5.6 x 3.15"	145 x 86mm 5.7 x 3.4"	112 x 53mm 4.4 x 2.1"	143 x 86mm 5.6 x 3.4"	101 x 43mm 4 x 1.8"	108 4.2
FITS to WEB SIZE...	≤45mm ≤1.75"	≤45mm ≤1.75"	≤50mm ≤2"	145mm 5.7"	≤75mm 3"	≤75mm 3"	≥45mm ≥1.75"	≥ ≥
STANDARDS LOCKING	- -	- -	■	■	- -	- -	- -	
MATERIAL FRAME GATE	Plastic	Plastic Stainless Steel	Alloy Alloy	Alloy Alloy	Plastic Stainless Steel	Plastic Stainless Steel	Nylon Nylon	Stain
NOTES	* Lanyard eye for chainsaw or tool being used			Coming Jan 2024 180kg MBS	rubber web keeper	NEW for 2023 100kg MBS	rubber web keeper. Climbing Technology (Italy) owned by Skylotec	rubbe Climbing ly) own
WEBSITE	reecoil.com	rockempire.com	rockexotica.com	rockexotica.com	singingrock.com	singingrock.com	skylotec.com	skyl

COSTS: Any £$€ shown in burnt orange are currency conversions only and will not include shipping, import duty and tax

HARNESS TOOL CARRIERS

PETZL	PETZL	PETZL	PROTEKT	PROTEKT
RITOOL Lg	CARITOOL Evo	Interfast	TU300	AY100
$20 €16	£12 $15 €14	£ 12 $15 €14	£4 $6 €5	£4 $6 €5
75g 2.6oz	40g 1.4oz	55g 1.9oz	80g 2.8oz	31g 1oz
15kg 33lb	5kg 11lb	5kg 11lb	50kg 110lb	25kg 55lb
45mm 1.75"	120mm 4.73"	>6mm >0.25"	27mm 1"	23mm 0.9"
2 x 80mm 6 x 3.15"	146 x 74mm 5.75 x2.9"	85 x 45mm 3.4 x 1.75"	112 x 50mm 4.4 x 2"	110 x 50mm 4.3 x 2"
≤45mm ≤1.75"	Any	≤60mm ≤2.4"	T=35mm 1.4" wide	≤60mm ≤2.4"
- -	- -	ANSI/ISEA ■	- -	- -
ass Fibre stic GFP/ nless Steel	Glass Fibre Plastic Stainless Steel	Nylon Nylon	Steel	Plastic Stainless Steel
	Fixes with elastic cord	hinged backplate traps belt webbing	Top T-section retains hook within loop	
etzl.com	petzl.com	petzl.com	protekt.com	protekt.com

YLOTEC	TREEHOG	TREERUNNER	TREERUNNER	TREERUNNER
Truck	TH1045	ChSaw Folding	ChainSaw Hook	ChSaw Steel
$11 €10	£11 $14 €13	£37 $47 €43	£34 $42 €39	£40 $50 €46
20g 0.7oz	31g 1oz	114g 4oz	260g 9.2oz	200g 7oz
5kg 11lb	5kg 11 lb	20kg 44 lb	20kg 44 lb	>20kg >44 lb
25mm 1"	23mm 0.9"	30mm 1.2"	50mm 2"	30mm 1.2"
8 x 55mm 5 x 2.16"	110 x 50mm 4.3 x 2"	126 x 70mm 5 x 2.75"	190 x 120mm 7.5 x 4.7"	96 x 58mm 3.78 x 2.3"
≤45mm ≥1.75"	≤50mm 2"	≤80mm 3.15"	≤80mm ≤3.15"	≤50mm ≤2"
- -	- -	- -	- -	- -
Nylon nless Steel	Plastic Stainless Steel	Aluminium Aluminium	Aluminium Aluminium	Aluminium Stainless Steel
r web keeper. g Technology (Ita- ned by Skylotec		can be fixed with bolts		
otec.com	treehog.co.uk	grube.de	grube.de	grube.de

UPDATED Dec '23

MULTI-POINT ANCHOR/ RIGGING PLATES

Rigging plates haven't changed much from our first Market Guide in TECHNICAL**RESCUE** over a dozen years ago. *SMC* now has the newest range with their *Origin* plates with angular holes rather than round. The *Origin TT* below is their answer to *RE's Bolt*. There are around four times more plates now thanks to three key changes. The first is that we're seeing more round, wheel-style plates; Canada's *Eyolf* were first (pic top) while DMM introduced a new concept with the more arb-oriented Hub, *ISC have the Halo (title image) and Kong, Grivel, SMC* and *CMI all have circular plates.*These are all slick looking wheel hubs and more will follow. Second, having identified a need for anchor/ rig plates in their range, larger distributors have them made on their behalf by bulk manufacturers like *ISC* in Wales or one of the Italian companies or in China/Taiwan. Consequently you will recognise a lot of the same plates under different names, sometimes the same plate will be slightly customised, perhaps an extra eye or two or the shape changed a bit but they're essentially the same plates despite some odd differences in weight and size (we've mostly used the specifications listed by the name on the plate but if in doubt look for the source manufacturer). The other change is the number of Chinese manufacturers now quite adept at making climbing hardware.

We've traditionally steered clear of including Chinese and Taiwanese manufacturers under their own name because of trademark/ copyright/design infringement issues with copycat equipment flooding the market and not always to the best of standards. *Lixada /MagiDeal* for instance market a plate that is identical to the ISC range down to the odd shaped indents. But the Chinese and Taiwanese are just as capable as anyone else of making high quality goods, it's the customer demand for cheaper options and reducing the spec of the equipment they're asking to be made that has been the problem. If you spec high, they'll make high-spec gear. It's refreshing to see that *Fusion* in California and *Beal Ropes* make no bones about the fact that their plates are made in Taiwan. So we've speculatively included *Anpen* from China but not yet others like *GM* or *Xinda* even though they are making very similar plates for better known brands. Remember that in our tables, the country of ORIGIN is not necessarily the country of manufacture - where we know - there's a small inset flag. Watch out for plates from theatrical rigging (which might be pretty good) and from bondage. We were almost caught out including one called a 'Boner' or something equally dubious that was stronger than most in this list!

The images in this introduction are NOT to scale but they are roughly to scale in the tables because there is a big difference in size, weight and cost between a small 4-hole plate and a giant 12-hole plate and especially with the 3D models which we discussed in more details later because there is still some confusion about so-called 3-D rigging.

NOT INCLUDED IN THIS GUIDE

Originally only seen in rescue stretcher rigs, rigging rings are endemic in arb and we have ***NOT*** included them here even though you can attach multiple carabiners because it doesn't do much 'organising'. We also haven't included the excellent *X-Rigging* rings from David Driver or 'textile' anchors like the *Notch Bone* (right) which are basically knot replacements to save you time

Images in this introduction NOT to scale

www.arbclimber.com

rather than rigging organisers. There are many rigging organisers incorporated into carabiners like this *Grivel Vlad, Rock Exotica*'s huge *Kootenay Carriage* knot-passing pulley and their more diminutive *Hydra.* We'll try to incorporate all of these into a later update but for the moment we're dealing with plates and shapes full of holes rather than as a secondary use on other products. Finally, we haven't included the so-called splicing plates (*MSA* pic left) but they could certainly be used as organiser plates despite their in-line characteristics which limits your options somewhat.

PLATE DESIGN

The basic job of a rigging plate hasn't changed; tidying, organising and best of all ensuring correct directional loading but the rigging plate is so much more than simply an organiser for the anchor end of your rope systems. Originally, teams got their local metalworker to fabricate metal plates of all types, mainly stainless steel and alloy. These were cut to shape, drilled to accept carabiners and if you were lucky, deburred. They were mostly triangular, intended to have a number of ropes or webbing collected at one point which would then be securely anchored. My own team procured bearing plates uncannily similar to *DMM's Hub* (above right), which were heavy but served us well and I'm certain there were plenty of other home-grown innovations. The do-it-yourself approach was overtaken in the late 80's when *Russ Anderson, CMC, SMC* and *Rock Exotica* in particular started producing quality machined and anodised plates that could accept multiple anchor connections and redistribute them to several load and/or belay ropes. These were generally at the larger end of things but in the pocket-sized versions, *Rock Exotica* (rights later bought by *Petzl*) came up with a model that became the industry watch-word for rigging plates due to its shape- the *Paw* (title opposite) That particular paw design still exists as the *Tri-Rig* and *Penta* plate by *Rock Exotica* while the *Paw* name has been retained by *Petzl*. The original *Paw* was the forerunner of a whole raft of designs that used a large collection eye capable of accepting the largest of carabiners or maillons or multiples thereof. This presents a slight contradiction as the large eye may be overcrowded with carabiners causing a return to unruly and untidy rigging rather than preventing jamming of carabiners against each other. Some say that this particular design problem has been addressed with the tear-drop eye design which purports to prevent carabiner jamming but its hard to see how that stops you cramming in more metal than you should. In reality the teardrop makes clipping larger carabiners much easier than with a small hole. Individual holes on larger plates addresses the original problem of overcrowded hardware by increasing separation. Another thing that has changed is a move away from straight edged eyes intended just for carabiners and towards more rounded edges for direct tying of rope and webbing. This is exemplified by the gentle curves of *Kong's Rally Bent* (right), Skylotec's *CT Cheese* or the *Shizll* plate (below right) or by the design complexities of *Rock Exotica* with their *RockStar* (titles opposite) and *DMM* with their *HUBs* (sml version above). The newest model, *CMC*'s *Squid* (right) uses an element of the *Rockstar*'s design, the yolk-shape, to produce an angled, 3-way attachment perfectly suited to the use of double devices. Some models are better suited to 3-dimensional rigging aimed primarily at arborists, a concept that baffles some so we have a separate text box later for some further explanation. At the less complex end of things the simple 4 or 5-hole mini plates like the *Petzl Paw* are still held by some users to be the ONLY size you need since anything more means your rigging is too complicated!

LOADING

In this era of system redundancy, a dilemma faces users of rigging plates which are often treated as 'bombproof' with a number of collected rope systems terminating in one large eye. This means that if that one collection eye fails the whole system fails. In many cases the sturdiest stainless steel and 7075 T6 aircraft alloy plates probably are about as bombproof as things get but there's no accounting for metal fatigue and stress fractures and sheer bad luck so local or company protocols may mandate that rigging plates should always have a built-in bypass to provide redundancy. This can be the simple application of a sling running through some or all of the connected carabiners or on smaller plates an additional large carabiner can be clipped between the top and bottom carabiners (but ensuring that the plate is still taking all the load). Alternatively, *DMMs Bat Plates* can be bolted together to give you two plates in one and *Edelrid's Maggi* already is two plates bolted together - how bombproof do you want it?

One thing that is often overlooked is that the quoted Minimum Breaking Strength of, for instance 45kN, refers to any ONE eye acting as the main collection eye and it may ONLY refer to the main collection eye. So it doesn't mean that you can load ALL of the eyes to 45kN at the same time because clearly one or more eyes needs to be connected to an anchor and would be overwhelmed once it's own capacity of 45kN is

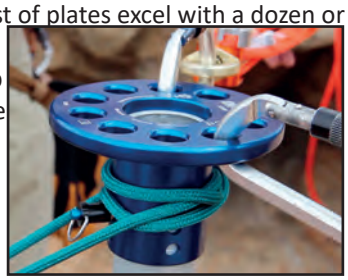
exceeded. You must treat that MBS figure as the maximum total load that can be **TRANSMITTED** through the plate **via the main collection eye** - therefore, in the 45kN example, if you had 6 eyes evenly connecting to ONE central collection eye, each of those eyes should only be loaded to 750 kg/1650 lbs or preferably less, or whatever combination totals around 4500kg/9900lbs. If you add another anchor connection to the collection eye (or to a separate eye if you have any spare), this calculation of input forces can virtually double providing the load is fairly evenly divided and certainly if the two anchors are equally loaded. *Edelrid's Master Plates* specify their smaller eyes with a maximum loading of 10kN but we would be surprised if that is the actual MBS rather than an indication of maximum *cumulative* loading.

A key aspect of loading, and something the rigging plates were designed to assist with, is torquing of your carabiners ie. where they try to twist in-situ and apply uneven load to certain parts and are actually bent by contact with a stronger component. In reality it takes a hell of a lot to bend a carabiner but that's the action that is trying to take place and must be avoided at all costs because what actually happens is the weaker gate pins will fail or the nose may snap. A rigging plate spaces components out but they can still rotate in the plate's eye so you're never completely out of the woods, so to speak, unless you incorporate a swivel or an integrated swivel-pulley or swivel-carabiner. Careful selection of the rigging plate design suitable for your particular system is vital. *DMM* for instance use kidney -shaped eyes to allow 'sliding' and better load balance while *SMC* use elongated eyes for easier clipping. The smoothest edged plates can even be used as a belay plate. *Rock Exotica* took things to the ultimate with the *UFO*, a solid cube of holes enabling all four corners to be connected although we struggled to find the perfect alignment for a stretcher rig with our existing carabiners and had to purchase custom-shaped and fitting carabiners to avoid the very torquing we were using the *UFO* to avoid in the first place. The *UFO* was superseded by the *Rockstar*.

APPLICATIONS

1) MAIN ANCHOR

Enables connection of all the various ropes and safeties and haul systems etc. into their own positions on the same collection point which can then be attached to one or several anchors. This is where the largest of plates excel with a dozen or more eyes to utilise. The bigger plates have large indents to help reduce weight but some, like the now discontinued *Rock Exotica Se7en*, pushed these indents all the way through to create irregular holes that look as though they can be pushed into action using either webbing or very large carabiners. However, be careful that such 'holes' are actually designed to take load.

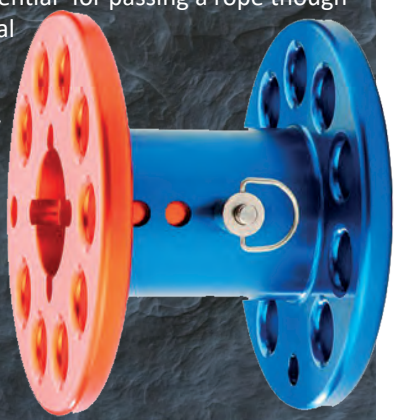


ROCK EXOTICA

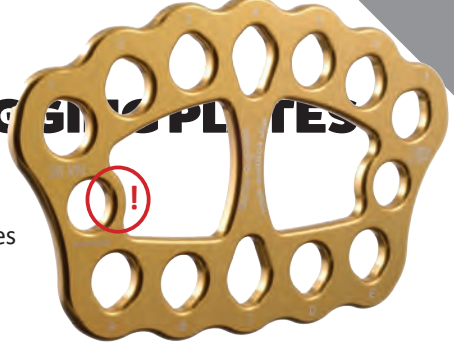
Rock Thompson and his band of metal wizards deserve special mention because, along with *DMM* they have come up with rigging ideas that are well outside of the conventional box. These aren't necessarily the most applicable to arb but it's actually arb work and to some extent rope access that is pushing the technical boundaries of rigging rather than rescue. So there are four 'plates' worthy of separate mention although the term 'plate', implying something rather flat, can only be applied to the Bolt. We were quite excited by the prospect of the **Bolt** with a removable stainless anchor pin (or bolt) meaning that you could load hardware like pulleys and cams directly without the need for a carabiner. However, having got our mitts on one we quickly realised that this was only a bonus once you have a set-up that you're never going to change while in use because you obviously can't remove any of the hardware that's placed directly on that pin/bolt once loaded. In the case of pulleys you also can't add in rope unless you laboriously thread it from one end. So it does require a degree of pre-planning but if you get that right first time the Bolt does indeed save on carabiners, working space and can improve orientation of your hardware. This has, however spawned the new SMC Origin TT (pic title page) designed for twin tensioned rope (a rescue thing) which has a two-part bolt allowing at least one of the two sets of connections to be removed/ added during work though you would need to be mindful of load balance.

The cubist **UFO** was discontinued a decade ago with the mantle taken up by its lighter cousin the **Rockstar** which enables connection of carabiners in all directions so they are truly 3-dimensional before you even apply a rope. The problem we had with the UFO in particular was the ease with which you could adversely torque a carabiner. In the picture on the right you can see how a simple 2-dimensional rigging option with 3-point loading on a single collection point can result in torquing of the carabiner at the points circled in red. In this case neither of the outer carabiners can be loaded directly downwards or indeed even at the angle they are now without applying unacceptable load near the nose of the carabiners. In the carabiner on the right even releasing the screwgate didn't alleviate the angle enough and in fact made it substantially weaker as it twisted on the nose pin when the screw might have taken at least some of the load. You really have to be on

the ball when it comes to ensuring that they load correctly because before load is applied, each carabiner is loose and trying to go with gravity from a different part of the cube. It can be like herding cats to orientate multiple directions simultaneously.
It is again, all about pre-planning and systematic loading rather than winging it, so the UFO wasn't really a 'rig-&-forget' tool. However, smart cookies that they are, R.E. introduced the Rockstar in 2013 to take over from the UFO and it has fewer 'walls' to impede the carabiner hang so there's less potential for torquing of the carabiners.
The largest offering in our list is the beautifully crafted **AZORP** and we don't just say that because it was designed by our US Rope Editor Reed Thorne. In Rock's hands Reed's original napkin design is again a work of art. It consists of two separate plates that pin together to form a giant cotton reel or rope drum-looking device. I'm not sure that it was part of Reed's original thinking (because this was intended as an accessory for a tripod head or monopod system) but 3D aficionados will already have spotted the potential for passing a rope though the spindle intended for metal pole and having your own rope-festival going on. As a set of wheels, it will sit nicely on the ground still allowing access to most of the upper holes . At the very least if you stand it back on end, the bottom plate acts as a foot keeping the top plate off the floor so that your carabiners load nicely in free space rather than jammed against the ground. Finally, you can separate the two halves and have two entirely functional plates albeit with a round lump hanging out the middle of each. Having discussed this with Reed, he's quite keen to see you incorporating a short extension pole so that you can experiment with jamming between two trees with the AZORP rigged in the middle. If your rigging looks like the set-up below you're probably trying to do too much in one go! AZORP is available in the US & Canada through CMC RESCUE and worldwide via Rock Exotica stockists. Check out TECHNICAL RESCUE 71 for several pages of ideas using the AZORP.



ANCHORS/RIGGING PLATES



If they're surrounded by a thickness of material equal to or greater than the regular eyes then you're probably OK.

2) BRIDGE STRAP ORGANISER

Now a feature of many arb harnesses like this *Weaver Denali*, a small rigging plate attaches the bridge to the harness, waist belt and/or leg loops leaving one or two eyes for whatever takes your fancy.

3) MAIN HARNESS CONNECTION (PICK-OFF RIG)

Tidy up your personal attachments from your main hard-point or bridge with the smallest plates as these will provide separate connection points for attachment to your descender/ascender rig, pick-off (rescue) sling and/or pulley system, and most importantly will ensure that there is no 3-way loading of carabiners which has traditionally been a necessary evil of the standard pick-off rescue procedure. Mini plates are so small and light there is no reason for the lightest of climbing rigs not to have one. I have a harness from Swedish company *Actsafe* that actually already has a multi-eye rigging plate instead of a normal D-ring MHP so this may yet become more popular.

4) HIGHLINE/ZIPLINE 'TROLLEY' ORGANISER.

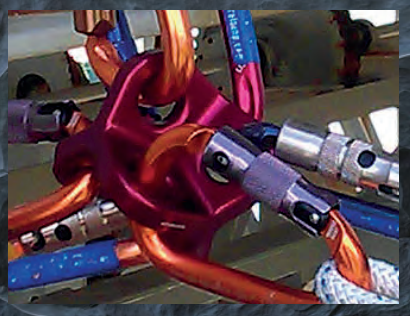
A plate makes a great trolley attachment for connecting pulleys to the main rope and pulleys, control lines to either side and your own array of connections beneath. *ISC*'s photo in the titles shows what we mean by 'trolley organiser'. Of course some pulleys, notably the *Kootenay Carriage* and *DMM*'s '*Hitch Climber*' already incorporate rigging points into the cheeks which may negate the need for a separate plate.

5) HAUL SYSTEMS

A plate can give you better alignment of your prusik (if you are using it for progress capture) bypassing the top pulley and onto the rope. Quite often you see the prusik bent around the pulley block in an effort to connect back into the main supporting carabiner.
Your belay and redirect pulley(s) can also be better separated and provide more direct alignment with the load. Use swivels or swivel-integrated pulleys to ensure the carabiners or pulley eye aren't subjected to inappropriate torque loading during the haul.

3-D RIGGING

Nothing to be afraid of here, 3-D rigging is simply the means to rig or deviate at 90 degrees to your anchor point(s) at the same time as your other ropes or connections continue in the usual directions away from the anchor. *DMM* and those cunning *Treemagineers* who, incidentally, are far too clever for their own good, started the 3D rigging 'trend' with the awesome *Hubs*. These were originally confusingly sized as a medium and large implying that there should be a small - maybe they always intended to create a smaller one but ran out of T7075 alloy because these are almost as bulky as those old steel bearing plates mentioned earlier. 2-dimensional rigging (an unorthodox example top-right) allows you to connect to an anchor at one end and then distribute out at the other end. You might change the angle that the connection comes into the plate but the loading is ultimately 2- dimensional, transmitted from front to back through the flat or flattish plate. You can rig 3-dimensionally through most standard plates but the contact edges are thin and loadings are outside of the norm which is why many of the plates listed in our tables don't have the '3-D' column ticked. What the **Hub** did was to provide the fattest, most smoothly rounded holes on the planet, in particular the central hole, to allow direct connection of a rope and webbing. In this case it allows the rope to pass straight through, in effect you thread the *Hub* onto the rope which can then allow you to position the side loaded eyes wherever needed or redirect the ropes running through it as in the picture on the right. CNC milling and/or hot-forging of the eyes gives them this large, smooth radius and allows direct use of rope and webbing without the need for carabiners. Some 2-D plates are better suited to 3-D rigging than others for instance the *ISC Halo*, *SMC Vortex* and the *Grivel 9* which is concave or convex depending on which side you view it from. 3-D rigging as originally envisaged by *Treemagineers*, usually takes the form of the hub running along a rope and then rigging lines radiating out laterally to that. The centre eye has an enlarged lip for really smooth and high-strength rope-running and the external eyes can take carabiners or direct web connection. *Rock Exotica*'s own take on things was an actual three-dimensional lump of rigging plate - the *UFO* and *Rockstar*. These require carabiners connection but again enable your ropes and webbing to fly off in all directions, 360 degrees and maintain an acceptable loading on all components (aside from the risk of torquing discussed previously) see pic below. Talking of torque , Canadian company *Eyolf* has the *SnoFlake L* and *Kong* have the *DiscoHub* as large, round multi-holed flat plates that could exhibit a torque problem on all but the outer eyes. Specialist 3D anchors like the *Hub* and *Rockstar* and *CMI*'s new *Neptune (above)* , can obviously still be used as a regular 2-dimensional rig-point but this is much easier with the flat *Hub* than it is with the *Rockstar* where you need to monitor the carabiner contact points.



STANDARDS

A quick word about standards because European standards that are usually the 'go-to' for technical definitions and adherence to quality are in something of a state of flux. They now state that rigging plates are not fully covered by rigid and flexible anchor standards EN795 and 354 which is what most plates mean when they have a CE marked on it (although EN362 could apply to Bolt and OriginTT as they are openable). Consequently a 'temporary fix in 2018 was via a PPE directive PPE-R/11.114 version 1 that uses parts of EN 12275 and EN 365 as well as applicable parts of EN 795 and EN 354! I think we'll just put CE and leave that to the manufacturers and reputable stockists even though many will show a 'CE' mark that is not strictly accurate.

CONCLUSIONS

Back to operational stuff and don't assume that any old rigging plate will suit your task - the chances are you'll have a set rig that seldom changes and you should be able to predetermine the number of top and bottom eyes you will need to negate torquing or 'unbalancing' the plate. A bit of see-sawing due to load coming on and off of various components is expected and fine but if torquing remains a problem (twisting under load) then simply add a swivel, there are now several excellent designs available. Also think about using load release straps like a *Mariners Hitch* for critical tensioned elements that might need to be slackened off independently of other components on your plate. Don't be afraid to invert the plate if it suits your purposes to improve directional loading. Nobody mandates that the concave face or the small eyes have to point towards the load or vice-versa – use whatever orientation best fits your system.

In the following tables, £$€ Prices shown in orange are a currency conversion guide only. They do not take into account shipping and import duty etc. that will likely increase that price**.**
The **Smallest Dimension of the Largest Eye** refers to the largest round bar section that can fit because many of these are an odd shape or tapered.
Alu = Aluminium Alloy

rock exotica

GEAR FOR THE Z AXIS

rockO WireEye

We've taken our popular oval carabiner and added the "wire eye" to keep your gear, lanyards and lines where they belong.

rockStar

The rockStar is now the choice for compact and lightweight 3-dimensional rigging.

Unicender
Switch easily from DdRT to SRT. Attaches mid-line.

Omni
Swivel pulley with moveable sideplate, available in multiple sizes.

ORCA
Opens like a non-locker, closes like an autolock.

rockGrab
Slimmer and lighter than the competition for snag-free use.

rockSteel
Updated design yields 50 kN MBS NFPA-G and ANSI 2007 rated.

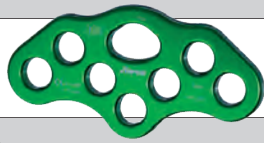
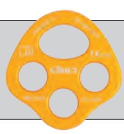
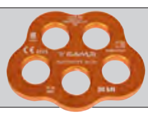
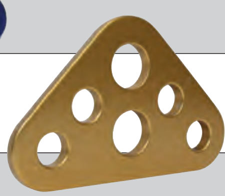
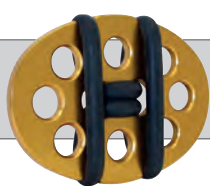
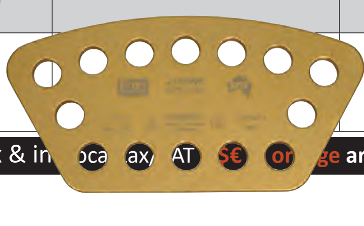
BOLT
Connect lines or pulleys without carabiners.

MADE IN USA

26 Years of innovation and quality design. Made in USA

EXPERT USE ONLY

rock exotica

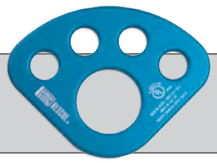
images approximately to scale		MODEL	COMPANY	ORIGIN	COST	WEIGHT	MATERIAL	PLA DEP
		B03	ANPEN		£9* $10* €10*	53g 1.9oz	Alu	5m 0.2
		B04	ANPEN		£19* $22* €21*	210g 7.4oz	Alu	8m 0.3
		B05	ANPEN		£31* $27* €26*	250g 8.8oz	Alu	8m 0.3
		B70	ANPEN		£32* $39* €37*	230g 8.1oz	Alu	10n 0.4
		B80	ANPEN		£27* $32* €31*	182g 6.4oz	Alu	10n 0.4
		B130	ANPEN		£82* $99* €94*	452g 15.9oz	Alu	9.5r 0.4
		THRP1	ARBORTEC/ TREEHOG		£17 $21 €20	93g 3.3oz	Alu	10n 0.4
		THRP2	ARBORTEC/ TREEHOG		£30 $37 €35	240g 8.5oz	Alu	10n 0.4
		THRP3	ARBORTEC/ TREEHOG		£50 $59 €58	500g 1.1lb	Alu	10n 0.4
		AirPort4	BEAL		£31 $38 €35	92g 3.25oz	Alu	8m 0.3
		AirPort8	BEAL		£47 $58 €54	188g 6.6oz	Alu	10n 0.4
		MultiAnchor5 1269	CAMP		£43 $53 €40	70g 2.5oz	Alu	8m 0.3
		MultiAnchor8 126901	CAMP		£69 $85 €70	245g 8.6oz	Alu	12n 0.4
		MultiAnchor12 126902	CAMP		£105 $130 €100	590g 1.3 lb	Alu	12n 0.4
		Hexa RP2 DISCONTINUED	CAPITAL SAFETY/ DBI SALA/3M		£59 A$113 $73	228g 8oz	Alu	10n 0.3
		Deca RP3 DISCONTINUED	CAPITAL SAFETY/ DBI SALA/3M		£84 A$161 $104	410g 14.5oz	Alu	10n 0.3
		Tetra RP1 DISCONTINUED	CAPITAL SAFETY/ DBI SALA/3M		£84 A$161 $104	564g 1.25 lb	Alu	10n 0.3

NOTES: COST: Approx & in ca ax AT $€ or ge are a currency conversion guide only not the actual sale price MBS or MBL Minimum Bre

ANCHOR/RIGGING PLATES

TE TH	DIMENSIONS	STANDARDS	MBS approx 10x WWL	MIN HOLE DIAM	SMALLEST DIMENSION of LARGEST EYE	HOLES LARGE EYE(S)	3D	OTHER COLOURS	NOTES	WWW.
m 2"	90 x 82mm 3.5 x 3.2"	CE	40kN 8992 lbf	20mm 0.75"	30mm 1.2"	3 +1			* Price is retail FOB China so excludes shipping/import duty etc.	en.anpen.net
m 2"	156 x 121mm 6.1 x 4.8"	CE	50kN 11240 lbf	20mm 0.75"	52mm 2"	4 +1			* Price is retail FOB China so excludes shipping/import duty etc.	en.anpen.net
m 2"	173 x 113mm 6.8 x 4.5"	CE	50kN 11240 lbf	20mm 0.75"	40mm 1.6"	5 +1			* Price is retail FOB China so excludes shipping/import duty etc.	en.anpen.net
nm 4"	158 x 100mm 6.25 x 3.9"	CE	45kN 10116lbs	20mm 0.75"	40mm 1.6"	7 +1			* Price is retail FOB China so excludes shipping/import duty etc.	en.anpen.net
nm 4"	173 x 85mm 6.8 x 3.4"	CE	45kN 10116lbs	20mm 0.75"	40mm 1.6"	7 +1			* Price is retail FOB China so excludes shipping/import duty etc.	en.anpen.net
nm 4"	247 x 150mm 9.8 x 5.9"	CE	45kN 10116lbs	19mm 0.75"	65mm 2.6"	13 +2			* Price is retail FOB China so excludes shipping/import duty etc.	en.anpen.net
nm 4"	90 x 84mm 3.5 x 3.3"	CE NFPA-G	36kN 809 lbf	19mm 0.75"	36mm 1.4"	3 +1				treehog.co.uk
nm 4"	159 x 100mm 6.25 x 3.9"	CE	40kN 8993 lbf	19mm 0.75"	38mm 1.5"	7 +1				treehog.co.uk
nm 4"	248 x 149mm 9.8 x 5.9"	CE	50kN 11240 lbf	19mm 0.75	66mm 2.6"	13 +1				treehog.co.uk
m 2"	83 x 85mm 3.25 x 3.4"	CE	45kN 10116 lbf	20mm 0.75"	30mm 1.2"	3 +1			Also branded as Edelweiss	beal-pro.com
nm 4"	174x85mm 6.8 x 3.4"	CE	45kN 10116 lbf	20mm 0.75"	30mm 1.2"	7 +1				beal-pro.com
m 2"	93 x 72mm 3.6 x 2.8"	CE EAC	36kN 8093lbs	19mm 0.75"	19mm 0.75"	5				camp.it
nm 7"	149 x 86mm 5.8 x 3.3"	CE EAC	45kN 10116lbs	19mm 0.75"	19mm 0.75"	8				camp.it
nm 7"	227 x 128mm 8.9 x 5"	CE EAC	45kN 10116lbs	19mm 0.75"	19mm 0.75"	12				camp.it
nm 9"	153 x 101mm 6 x 4"	NFPA G	50kN 11240lbs	19mm 0.75"	27mm 1.1"	4 +2			Also branded as SRTe or Rollgliss Technical Rescue. 5-hole Penta ALA Rock Exotica's Penta also discontinued.	capitalsafety.com
nm 9"	170 x 123mm 6.7 x 4.8"	NFPA G	50kN 11240 lbf	22mm	25mm 1"	8 +2			Also branded as SRTe or Rollgliss Technical Rescue. Rubber spacers protect surfaces & connector when flush with ground.	capitalsafety.com
nm 9"	245 x 125mm 9.6 x 4.9"	NFPA G	50kN 11240 lbf	19mm 0.75"	19mm 0.75"	14			Also branded as SRTe or Rollgliss Technical Rescue	capitalsafety.com

eaking Load represents approximately 10 times the WLL Working Load Limit HYPHEN- = not applicable N/A = info Not Available/not given

images approximately to scale		MODEL	COMPANY	ORIGIN	COST	WEIGHT	MATERIAL	PLA DEP
		Micro Anchor Plate 300623	CMC		£33 $42 €38	74g 2.6oz	Alu	8.2 0.3
		Anchor Plate 30061	CMC		£61 $79 €71	204g 7.4oz	Alu	6.7 0.2
		Anchor Plate 300615	CMC		£71 $93 €83	278g 9.8oz	Stainless Steel	3m 0.1
		AZORP Arizona Omni Rigging Pod	CMC		£na/770* $343/650* €na/896*	1400g 3 lb	7075 Alloy	12m 0.4
		SQUID	CMC		£120 $149 €137	240g 8.5oz	Alu	51m 2.0
		RigPlat4	CMI		£37 $48 €43	91g 3.2oz	Alu	9.5 0.37
		RigPlat1	CMI		£78 $101 €90	190g 6.7oz	Aircraft Alu	9.5 0.37
		RigPlat2	CMI		£83 $108 €97	245g 8.6oz	Stainless Steel	3m 0.1
		Maxi/ RigPlat3	CMI		£104 $136 €121	500g 1.1 lb	Aircraft Alu	9.5 0.3
		Neptune	CMI		£125 $163 €145	363g 0.8lb	Aircraft Alu	41m 1.62
		Focus	CONTERRA		£35 $45 €40	270g 9.5oz	Alu	8.9 0.3
		Anchor Multiplier Small	COURANT		£20 $24 €22	93g 3.3oz	Alu	9.8 0.3
		Anchor Multiplier Med	COURANT		£32 $39 €37	202g 7oz	Alu	9.5 0.3
		Anchor Multiplier Large	COURANT		£67 $81 €76	422g 1 lb	Alu	10m 0.3
		Hub Small	DMM		£83 $160 €118	260g 9.2oz	Alu	* <20 <0
		Hub Large	DMM		£125 $250 €178	550g 1.2 lb	Alu	* <20 <0

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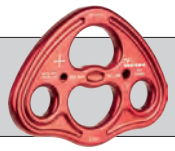
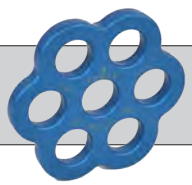
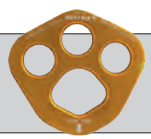
ANCHOR/RIGGING PLATES

TE TH	DIMENSIONS	STANDARDS	MBS approx 10x WWL	MIN HOLE DIAM	SMALLEST DIMENSION of LARGEST EYE	HOLES LARGE EYE(S)	3D	OTHER COLOURS	NOTES	WWW.
mm 2"	89 x 70mm 3.5 x 2.75"	NFPA G	46kN 10341lbf	16mm 0.6"	25mm 1"	3 +1				cmcpro.com
mm 6"	158 x 117mm 6.2 x 4.6"	NFPA G	45kN 10116lbf	22mm 0.9"	51mm 2"	4 +1				cmcpro.com
m 2"	158 x 117mm 6.2 x 4.6"	NFPA G	43kN 9666lbf	22mm 0.9"	51mm 2"	4 +1				cmcpro.com
nm 7"	165 x >140mm 6.5 x >5.5"	NFPA G	67kN 15062lbf	22mm 0.9"	50mm 2"	18 +1 +2	■		$650* =AZORP kit 2 rig plates/pins.. Cord and rope can be passed through central spindle. Outer sleeve opening 60mm	cmcpro.com (for North American Sales)
nm 0"	104 x 84mm 4.1 x 3.3"	CE NFPA G*T	TBA	TBA	TBA	3			New 2023 Model * G+ certain configurations only	cmcpro.com
mm 75"	88 x 70mm 3.5 x 2.75"	NO	89kN 20007lb	20mm 0.75"	20mm 0.75"	4				cmi-gear.com
mm 75"	171 x 127mm 6.75 x 5"	exceeds NFPA G but not certified	57.8kN 13000lb	23mm 0.9"	57mm 2.25"	5 +1				cmi-gear.com
m 25	171 x 127mm 6.75 x 5"	exceeds NFPA G but not certified	57.8kN 13000lb	23mm 0.9"	57mm 2.25"	5 +1				cmi-gear.com
mm 75	241 x 120mm 9.5 x 4.75"	exceeds NFPA G but not certified	57kN 13000lb	20mm 0.75"	57mm 2.5"	11 +1 +1*			* 1 x 3" webbing eye	cmi-gear.com
nm 25"	100mm 4"		40.1kN 9000lbf	14mm 0.55"	30mm 1.2"	6 +1	■			cmi-gear.com
mm 5"	152 x 121mm 6 x 4.75"	NFPA G	40kN 8993lbf	24mm 0.95"	30mm 1.2"	6 +2	■			conterra-inc.com
mm 8"	91 x 84mm 3.5 x 3.3"	CE NFPA-G	36kN 8093lbf	20mm 3/4"	36mm 1.4"	3 +1		■	Individually marked	mycourant.com
mm 7"	166 x 108mm 6.5 x 4.25"	CE NFPA G	40kN 8993lbf	20mm 0.75""	38mm 1.5"	7 +1		■	Individually marked	mycourant.com
nm 9"	249 x 150mm 9.8 x 5.9"	CE NFPA G	45kN 10116lbf	20mm 0.75""	66mm 2.6"	13 +1			Individually marked	mycourant.com
mm 8"	119mm 4.7"	CE RFU 11.114 V1	45/80kN 10116 lbf 16186 lbf	16mm 0.63"	24mm 0.94"	4** +1	■	■	*Reduces to 10mm depth. Individually marked. 80kN load = central eye. ** eyes for web/rope 45mm wide. 4x 6mm eyes aesthetic only	dmmprofessional.com
mm 8"	169mm 6.6"	CE RFU 11.114 V1	150/45kN 10116lbf 33721lbf	19mm 0.75"	48mm 1.9"	4 +1 +4*	■	■	* Plate thickness reduces to 10mm. Individually marked. 80kN load = central eye. * web eyes 43mm wide	dmmprofessional.com
										expansion row

eaking Load represents approximately 10 times the WLL Working Load Limit HYPHEN- = not applicable N/A = info Not Available/not given

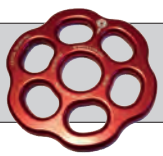
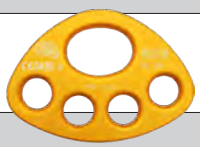
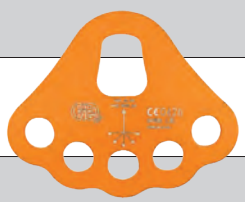
images approximately to scale		MODEL	COMPANY	ORIGIN	COST	WEIGHT	MATERIAL	PLA DEP
		X Small Bat Plate	DMM		£23 $30 €28	37g 1.3oz	Alu	8m 0.3
		Small Bat Plate	DMM		£29 $30 €47	159g 5.5oz	Alu	10r 0.3
		Medium Bat Plate	DMM		£38 $66 €64	247g 8.6oz	Alu	10r 0.3
		Large Bat Plate	DMM		£49 $95 €83	322g 11.2oz	Alu	10r 0.3
		Maggi Rig	EDELRID		£47 $64 €60	140g 4.0oz	Stainless Steel	10r 0.3
		Mini Rig	EDELRID		£22 $25 €30	62g 2.2oz	Alu	6m 0.2
		MasterRig II	EDELRID		£68 $86 €81	165g 5.8oz	Alu	7m 0.2
		Hertz XS	EDELWEISS		£31 $37 €35	36g 1.3oz	Light Alloy	8m 0.3
		Hertz S	EDELWEISS		£31 $37 €35	92g 3.25oz	Alu	8m 0.3
		Hertz M	EDELWEISS		£47 $57 €54	188g 6.6oz	Alu	10r 0.4
		SnoFlake S	EYOLF		£27 $32 €31	73g 0oz	Alu	10r 0.4
		SnoFlake M	EYOLF		£43 $52 €50	121g 0oz	Alu	10r 0.4
		SnoFlake L	EYOLF		£59 $71 €68	220g 7.8oz	Alu	10r 0.4
		Little Foot	FUSION CLIMBING		£16 $17 €20	74g 2.6oz	Alu	8m 0.3
		Big Foot	FUSION CLIMBING		£25 $19 €30	115g 4oz	Alu	8m 0.3
		Vlad	GRIVEL		£33 $40 €35	90g 3.2oz	Alu	-

NOTES: **COST:** Approx & inc local tax/VAT **£$€ in orange are a currency conversion guide only not the actual sale price** **MBS or MBL Minimum Bre**

ANCHOR/RIGGING PLATES

ATE PTH	DIMENSIONS	STANDARDS	MBS approx 10x WWL	MIN HOLE DIAM	SMALLEST DIMENSION of LARGEST EYE	HOLES LARGE EYE(S)	3D	OTHER COLOURS	NOTES	WWW.
mm 1"	62 x 62mm 2.4 x 2.4"	CE RFU 11.114 V1	36kN 8093lbf	15mm 0.6"	17mm 0.7"	3 +1		■	Individually marked. Large eye 27mm wide	dmmprofessional.com
mm 9"	129 x 95mm 5 x 3.7"	CE RFU 11.114 V1	60kN 13,200lbs	19mm 0.75"	25mm 1"	2 +2 +2*		■	*2 bolt holes for connecting plates together. Individually marked. Large eye 40mm wide	dmmprofessional.com
mm 9"	189 x 97mm 7.4 x 3.8""	CE RFU 11.114 V1	60kN 13,200lbs	19mm 0.75"	25mm 1"	6 +2 +2*		■	*2 bolt holes for connecting plates. Individually marked. Narrow plate profile for restrictive spaces. Large eye 40mm wide	dmmprofessional.com
mm 9"	249 x 99mm 9.8 x 3.9""	CE RFU 11.114 V1	60kN 13,200lbs	19mm 0.75"	25mm 1"	10 +2 +2*		■	*2 bolt holes for connecting plates. Individually marked. Narrower plate profile for restrictive spaces. Large eye 40mm wide	dmmprofessional.com
mm 9"	60 x 60mm 2.4 x 2.42	CE CNB/P 11.114 pfE	70kN 15,737lbf	20mm 0.75"	20mm 0.75"	4			two plates riveted together for maximum redundancy	edelrid.de
m 5"	101 x 83mm 4 x 3.25"	CE	36kN 8093 lbf	20mm 0.75"	30mm 1.2"	3 +1			Hot-forged update of previous flat-plate design still available from some outlets	edelrid.de
m 7"	149 x 98mm 5.9 x 3.9"	CE	50kN 11240lbf	20mm 0.75"	30mm 1.2"	7 +1			Hot-forged update of MasterRig I, a flat-plate design still available from some outlets	edelrid.de
m 2"	62 x 61mm 2.4 x 2.4"	CE	36kN 8093 lbf	15mm 0.6"	17mm 0.7"	3 +1				edelweiss-ropes.com
m 2"	83 x 85mm 3.25 x 3.4"	CE	45kN 10116 lbf	20mm 0.75"	25mm 1"	3 +1				edelweiss-ropes.com
mm 4"	174 x 85mm 6.8 x 3.4"	CE	45kN 10116 lbf	20mm 0.75"	25mm 1"	7 +1				edelweiss-ropes.com
mm 4"	90 x 70mm 3.5 x 2.75"	CE	36kN 8093lbf	20mm 0.75"	20mm 0.75"	4		■		eyolf.ca
mm 4"	100mm 4"	CE	36kN 8093lbf	20mm 0.75"	20mm 0.75"	7		■		eyolf.ca
mm 4"	145mm 5.7"	CE	36kN 8093lbf	20mm 0.75"	20mm 0.75"	13		■		eyolf.ca
m 3"	89 x 82mm 3.25 x 3.24"	CE	30kN 6744lbf	19.75mm 0.78"	35.5mm 1.4"	3 +1		■		fusionclimb.com
m 3"	152 x 120mm 6 x 4.7"	CE	40kN 8992 lbf	23mm 0.9"	51mm 2"	4 +1		■		fusionclimb.com
	120 x 82mm 4.7 x 3.2	CE	12*-30kN 6744lbf	22mm 0.9"	22mm** 0.9"	3 +1			*Minor axis - loading across the gate. Double gate with 15mm opening. **round bar capacity	grivel.com
										expansion row

eaking Load represents approximately 10 times the WLL Working Load Limit HYPHEN- = not applicable N/A = info Not Available/not given

images approximately to scale		MODEL	COMPANY	ORIGIN	COST	WEIGHT	MATERIAL	PLA DEP
		Tris	GRIVEL		£12 $14 €13	39g 1.4oz	Alu	10n 0.3
		Four	GRIVEL		£14 $17 €16	55g 1.9oz	Alu	10n 0.3
		Nine	GRIVEL		£19 $23 €22	149g 5.3oz	Alu	10n 0.3
		Shuttle	GRIVEL		£19 $18 €17	86g 3oz	Alu	10n 0.3
		Small Rigging Plate RP300	ISC		£20 $30 €22	93g 3.3oz	Alu	9.8r 0.3
		Med Rigging Plate RP310	ISC		£29 $45 €37	202g 7oz	Alu	9.5r 0.3
		arge Rigging Plate RP320	ISC		£61 $87 €76	422g 14.8oz	Alu	10n 0.3
		Small Halo RP302	ISC		£20 $30 €22	118g 4.1oz	Alu	7.8r 0.3
		Med Halo RP303	ISC		£29 $45 €37	221g 7.8oz	Alu	9.8r 0.3
		Large Halo RP304	ISC		£61 $87 €76	337g 11.9oz	Alu	12.8 0.5
		Tris DISCONTINUED	KONG		£26 $34 €27	57g 2oz	Alu	4m 0.1
		3-Rig	KONG		£23 $28 €26	95g 0oz	Alu	10n .39
		4-Rig	KONG		£27 $34 €32	150g 0oz	Alu	10n 0.3
		Poker DISCONTINUED	KONG		£30 $37 €34	96g 3.4oz	Alu	4m 0.1
		PentaPlan DISCONTINUED	KONG		£35 $39 €33	106g 3.7oz	Alu	4m 0.1
		Full	KONG		£34 $42 €39	90g 3.2oz	Alu	10n 0.3
		Rally	KONG		£38 $40 €36	180g 0oz	Alu	10n 0.3

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ANCHOR/RIGGING PLATES

TE TH	DIMENSIONS	STANDARDS	MBS approx 10x WWL	MIN HOLE DIAM	SMALLEST DIMENSION of LARGEST EYE	HOLES LARGE EYE(S)	3D	OTHER COLOURS	NOTES	WWW.
nm 9"	60 x 60mm 2.4 x 2.4"	CE	29kN 6519 lbf	19mm 0.75"	19mm 0.75"	3	■			grivel.com
nm 9"	79 x 59mm 3.1 x 2.3"	CE	30kN 6744 lbf	19mm 0.75"	19mm 0.75"	4	■		Concave profile, Individually marked.	grivel.com
nm 9"	104mm 4.1"	CE	30kN 6744 lbf	19mm 0.75"	25mm 1"	8 +1	■		Concave profile, Individually marked	grivel.com
nm 9"	125 x 87mm 4.9 x 3.4"	CE UIAA	20kN 4496 lbf	19mm 0.75"	13mm 0.5"	3 +1 +2*	■		Also Belay/descender. Concave profile. 2 Rope slots for 7.3-13mm rope.Similar to Kong Full. Large eye 51mm long. Individually marked.	grivel.com
nm 8"	91 x 84mm 3.5 x 3.3"	CE NFPA-G	36kN 8093 lbf	20mm 0.75"	36mm 1.4"	3 +1			Individually marked.	iscwales.com
nm 7"	166 x 108mm 6.5 x 4.25"	CE NFPA G	40kN 8993 lbf	20mm 0.75"	38mm 1.5"	7 +1			Individually marked.	iscwales.com
nm 9"	249 x 150mm 9.8 x 5.9"	CE NFPA G	45kN 10116 lbf	20mm 0.75"	66mm 2.6"	13 +1			Individually marked.	iscwales.com
nm 1"	115mm 4.5"	CE NFPA G	40kN 8992 lbf	20mm 0.75"	29mm 1.14"	6 +1	■		Individually marked. Outer eyes are 27mm/1" wide	iscwales.com
nm 8"	144mm 5.72"	CE NFPA G	50kN 11240 lbf	25mm 1"	39mm 1.5"	6 +1	■		Individually marked. Outer eyes are 36mm/1.4" wide	iscwales.com
mm "	165mm 6.5"	CE NFPA G	70kN 15736 lbf	28mm 1.1"	52mm 2"	6 +1	■		Individually marked. Outer eyes are 39mm/1.5" wide	iscwales.com
m 5"	89.5 x 75mm 3.5"	CE	30kN 6744 lbf	20mm 0.75"	24mm 0.95"	3 +1				kong.it
nm "	96 x 76mm "	CE	36kN 8093 lbf	20mm 0.75"	24mm 0.95"	3 +1			Stronger version-replaced the Tris	kong.it
nm 9"	125.5 x 90mm "	CE	36kN 8093 lbf	20mm 0.75"	32mm 1.25"	4 +1			Stronger version-replaced the Poker	kong.it
m 5"	118 x 94mm 4.7 x 3.7"	CE	30kN 6744 lbf	20mm 0.75"	32mm 1.25"	4 +1 +2*			* 2x 22mm webbing eyes. Large eye 43mm wide	kong.it
m 5"	155 x 122mm 6.1 x 4.8"	CE	30kN 6744 lbf	20mm 0.75"	26mm 1"	5 +1			There was a 4-hole version of this weighing 74g, still available from some outlets. Large eye is 46mm high	kong.it
nm 9"	125 x 90mm 4.9 3.5"	CE	30kN 6744 lbf	20mm 0.75"	20mm 0.75"	3 +1 +2*	■	■	Also a fully capable belay plate/ descender *Slots for single or double ropes 8-12mm Large eye 30m wide	kong.it
nm 9"	160 x 56mm	CE	36kN 8093 lbf	20mm 0.75"	20mm 0.75"	10				kong.it

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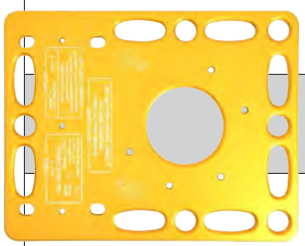
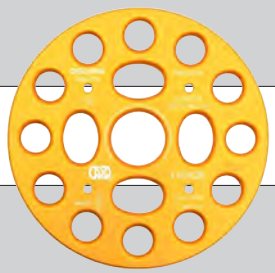
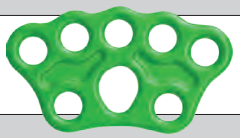
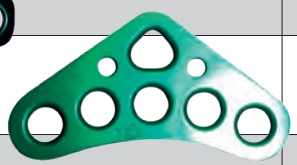
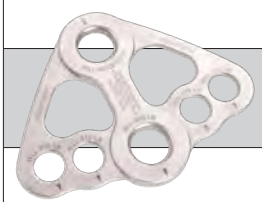
images approximately to scale		MODEL	COMPANY	ORIGIN	COST	WEIGHT	MATERIAL	PLA DEP
		Rally Bent	KONG		£24 $36 €30	180g 0oz	Alu	10m 0.3
		BigRig	KONG		£243 $302 €280	1500g 0oz	Alu	10m 0.3
		DiscoRig	KONG		£68 $86 €74	390g 0oz	Alu	10m 0.3
		3 Hole FA6003605	KRATOS SAFETY		£28 $35 €32	53g 1.9oz	Alu	6m 0.2
		5-Hole FA6003605	KRATOS SAFETY		£34 $42 €40	210g 7.4oz	Alu	7m 0.2
		Stretcher	MSA		£92 $120 €107	330g 11.6oz	Alu	8.6 0.3
		Stealth	MSA		£69 $90 €81	250g 8.7oz	Alu	8m 0.3
		Hec	ONBOARD SYSTEMS		n/a	1.75lb 0.8kg	Stainless Steel	
		Paw S	PETZL		£26 $32 €28	60g 2.1oz	Alu	6m 0.2
		Paw M	PETZL		£46 $55 €42	210g 7.4oz	Alu	6m 0.2
		Paw L	PETZL		£72 $83 €71	350g 12.3oz	Alu	10m .39
		RSI Anchor Plate 603210	RESCUE SYSTEMS inc		£55 $71 €68	211g 8oz	Alu	10m .39
		Micro	RESCUE TECHNOLOGY		£26 $33 €30	93g 3.3oz	Alu	9.8 0.3
		Tech.Rescue 603215	RESCUE TECHNOLOGY		£39 $51 €50	202g 7oz	Alu	9.5 0.3
		Magnum 603216	RESCUE TECHNOLOGY		£85 $103 €92	422g 16oz	Alu	10m 0.3
		RIT Rigging Plate	RIT SAFETY SOLUTIONS		£44 $53 €50	n/a	Alu	8m 0.3
		Anchor Plate 1:3	ROCK EMPIRE		£26 $32 €30	73g 2.6oz	Alu	6m 0.2

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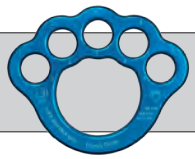
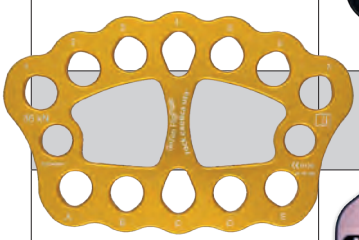
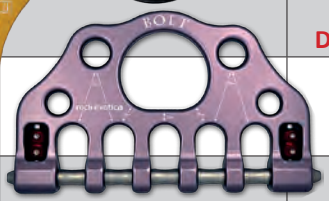
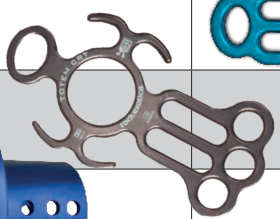
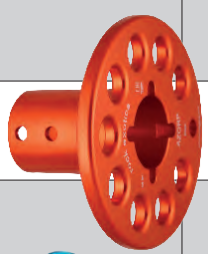
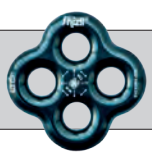
ANCHOR/RIGGING PLATES

TE TH	DIMENSIONS	STANDARDS	MBS approx 10x WWL	MIN HOLE DIAM	SMALLEST DIMENSION of LARGEST EYE	HOLES LARGE EYE(S)	3D	OTHER COLOURS	NOTES	WWW.
nm 9"	139.5 x 56mm	CE	36kN 8093 lbf	20mm 0.75"	20mm 0.75"	10				kong.it
nm 9"	295 x	CE	36kN 8093 lbf	20mm 0.75"	50mm 2"	5 8xoval +1 +8bolt	■		Intended as an adjunct to Kong's tripod winch but will function anywhere as a rig plate and will fit 50mm scaffold tube	kong.it
nm 9"	187mm	CE	36kN 8093 lbf	20mm 0.75"	38mm 1.5"	12 +5	■			kong.it
m 5"	103 x 83mm 4 x 3.25"	CE NFPA	36kN 8093 lbf	19mm 0.75"	25mm 1"	3 +1				kratossafety.com
m 8"	149 x 98mm 5.9 x 3.8"	CE NFPA	45kN 10116 lbs	19mm 0.75"	27mm 1.1"	7 +1				kratossafety.com
mm 4 "	254 x 95mm 10 x 3.75"	NFPA G	54kN 12200lbs	25mm 1"	25mm 1"	10 +2*			* 2 accessory eyes	msanet.com
m 2"	184 x 89mm 7.25 x 3.5"	NFPA G	48kN 11000lbs	22mm 0.8"	24mm 0.93"	4 +1 +2*			* 2 accessory eyes	msanet.com
		FAA	3.56kN 800lbf			6 +2			FAA	onboardsystems.com
m 4"	96 x 75mm 3.8 x 2.95"	CE, NFPA G UKCA	36kN 8093lbf	19mm 0.75"	24mm 0.93"	3 +1		■	Previous version also in red	petzl.com
m 4"	160 x 90mm 6.3 x 3.5"	CE, NFPA G UKCA	36kN 8093 lbf	19mm 0.75"	35mm 1.4"	7 +1		■	Individually marked. Large eye 40mm wide Previous version also in blue	petzl.com
nm 9"	221 x 120mm 8.7 x 4.7"	NFPA G	36kN 8093 lbf	19mm 0.75"	35mm 1.4"	12 +2		■	Individually marked. Voids not to be used	petzl.com
nm 9"	178 x 137mm 7 x 5.4"	CE, NFPA G UKCA	48kN 11000 lbf	20mm 0.75"	36mm 1.4"	5 +1*		■	*+1 central slot - can be used as brake-plate for 1/2" rope	petzl.com
mm 8"	91 x 84mm 3.5 x 3.3"	CE NFPA-G	36kN 8093 lbf	20mm 0.75"	36mm 1.4"	3 +1			Individually marked.	rescuetech1.com
mm 7"	166 x 108mm 6.5 x 4.25"	CE NFPA G	40kN 8993 lbf	20mm 0.75"	38mm 1.5"	7 +1			Individually marked.	rescuetech1.com
nm 9"	249 x 150mm 9.8 x 5.9"	CE NFPA G	45kN 10116 lbf	20mm 0.75"	66mm 2.6"	13 +2			Individually marked. Large central eyes not intended for load	rescuetech1.com
m 2"	121 x 83mm 4.75 x 3.25"	NFPA G	55kN 12365 lbf	22mm 0.8"	25mm 1"	3 +1			Apex eye is slightly larger at just over 25mm. Large eye is 35mm wide	ritsafetysolutions.com
m 4"	80 x 65mm 3.2 x 2.6"	CE	33kN 7419 lbf	20mm 0.75"	22mm 0.9"	1 +3			Individually marked.	rockempire.cz

eaking Load represents approximately 10 times the WLL Working Load Limit HYPHEN- = not applicable N/A = info Not Available/not given

images approximately to scale		MODEL	COMPANY	ORIGIN	COST	WEIGHT	MATERIAL	PLA DEP
		Anchor Plate 3:5	ROCK EMPIRE		£39 $49 €46	240g 8.5oz	Alu	10r 0.3
		Anchor Plate 5:8	ROCK EMPIRE		£70 $87 €82	500g 1.1 lb	Alu	10r 0.3
		Tri Rig RP1	ROCK EXOTICA		£20 $27 €40	51g 1.8oz	7075 Alu	8.9r 0.3
		Penta Plate RP2	ROCK EXOTICA		£29 $47 €63	108g 3.8oz	7075 Alu	8.9r 0.3
		V5 RP4 DISCONTINUED	ROCK EXOTICA		£55 $67 €64	310g 10.9oz	7075 Alu	10r 0.3
		Se7en RP3 DISCONTINUED	ROCK EXOTICA		£66 $74 €95	376g 13.3oz	7075 Alu	9.7r 0.3
		Bolt RP5	ROCK EXOTICA		£94 $114 €108	489g 1.07 lb	Alu + St Steel pin	12r 0.4
		Rock Star RP22	ROCK EXOTICA		£102 $112 €178	209g 7.4oz	Alu	11.3 0.4
		Totem F10	ROCK EXOTICA		£30 $40 €38	128g 4.5oz	Alu	10r 0.3
		Totem CRT	ROCK EXOTICA/ RICH CARLSON		£40 $48 €46	278g 9.8oz	Alu	12r 0.4
		AZORP	ROCK EXOTICA		£281 $343 €897	1400g 3 lb	7075 Alu	12r 0.4
		SMALL RS015	SAR PRODUCTS		£20 >$27 >€24	93g 3.3oz	Alu	9.8r 0.3
		MEDIUM RS016	SAR PRODUCTS		£29 $38 €34	202g 7oz	Alu	9.5r 0.3
		LARGE RS017	SAR PRODUCTS		£61 $80 €71	422g 14.8oz	Alu	10r 0.3
		SpiderPlate	SHIZLL		£30 $40 €39	55g 1.9oz	Alu	10r 0.3
		Big Spider	SHIZLL		£40 $65 €52	134g 4.7oz	Alu	14r 0.5

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ANCHOR/RIGGING PLATES

ATE PTH	DIMENSIONS	STANDARDS	MBS approx 10x WWL	MIN HOLE DIAM	SMALLEST DIMENSION of LARGEST EYE	HOLES LARGE EYE(S)	3D	OTHER COLOURS	NOTES	WWW.
mm 9"	159 x 100mm 6.25 x 3.9"	CE	40kN 8993 lbf	20mm 0.75"	38mm 1.5"	7 +1			Individually marked.	rockempire.cz
mm 9"	248 x 149mm 9.8 x 5.9"	CE	50kN 11240lbf	20mm 0.75"	66mm 2.6"	13 +2			Individually marked. Large central eyes not intended for load	rockempire.cz
mm 5"	84 x 72mm 3.3 x 2.8"	CE	33kN 7419lbf	19mm 0.75"	25.4mm 1"	3 +1			All Rock Exotica plates are machined flat from oversized material	rockexotica.com
mm 9"	123 x 101mm 4.9 x 4"	CE NFPA G	36kN 8093lbf	19mm 0.75"	57mm 2.25"	5 +1				rockexotica.com
mm 9"	197 x 149mm 7.8 x 5.9"	CE NFPA G	36kN 8093lbf	25mm 1"	67mm 2.65"	5 +1			teardrop carabiner holes are 35mm long	rockexotica.com
mm 7"	238 x 152mm 9.4 x 6"	CE NFPA G	36kN 8093lbf	22mm 0.87"	24mm 0.93"	12* +2 +2		■	Original Large Rig-Plate. *10 of the 12 are teardrop. Central large spaces are not intended for loading so Large Eye diameter is length of remaining 2 smaller eyes	rockexotica.com
mm 7"	203 x 127mm 8 x 5"	NO	36kN 8093lbf	19mm 0.75"	53mm 2.1"	9 +1			Stainless steel pin retained by sprung 'keepers' either end. Lower holes- 18mm opening with 21mm interior space. Top 2 eyes 20.7mm/0.8"	rockexotica.com
mm 5"	75 x 93mm 3 x 3.7"	CE NFPA G	36kN 8093lbf	20mm 0.77"	20mm 0.77"	9	■		Rockstar and UFO are machined from a solid lump of alloy	rockexotica.com
mm 9"	190 x 64mm 7.5 x 2.5"	NO	30kN 6744lbf	18mm 0.72	44mm 1.7"	2 +2* +1	■		*Accepts 10.5-13mm ropes for abseil/belay with carabiner adjunct. elliptical eyes 26 x 18mm	rockexotica.com
mm 7"	216 x 121mm 8.5 x 4.8"	NO	36kN 8093lbf	21mm 0.8"	48mm 1.9"	3 +2* +2	■		DISCONTINUED *Accepts 10.5-13mm ropes. Two fabric/rope rigging bollards. Rich Carlson design.	canyonsandcrags.com
mm 7"	165 x >140mm 6.5 x >5.5"	NFPA G	67kN 15062lbf	22mm 0.9"	50mm 2"	18 +1 +2	■		So good it gets in twice. AZORP kit inc. two rig plates, pins and bag. Rope can be passed through central spindle. Outer sleeve opening 60mm	rockexotica.com cmcrescue.com
mm 8"	91 x 84mm 3.5 x 3.3"	CE NFPA-G	36kN 8093lbf	20mm 3/4"	36mm 1.4"	3 +1			Individually marked.	sarproducts.com
mm 7"	166 x 108mm 6.5 x 4.25"	CE NFPA G	40kN 8993lbf	20mm 3/4"	38mm 1.5"	7 +1			Individually marked.	sarproducts.com
mm 9"	249 x 150mm 9.8 x 5.9"	CE NFPA G	45kN 10116lbf	20mm 3/4"	66mm 2.6"	13 +1			Individually marked.	sarproducts.com
mm 9"	58 x 58mm 2.3 x 2.3"	Machinery Directive '06	50kN 11240lbf	14mm 0.5"	14mm 0.5"	4	■		Accepts 12-13mm rope. Individually marked. *MBS equates to use with carabiners/ webbing. Rope-only connection = 25kN	shizll.com
mm 5"	76 x 76mm 3 x 3"	Machinery Directive '06	100kN* 22480lbf	17mm 0.7"	17mm 0.7"	4	■		accepts 14-16mm rope. Individually marked. *MBS equates to use with carabiners/ webbing. Rope-only connection = 50kN	Shizll.com
										expansion row

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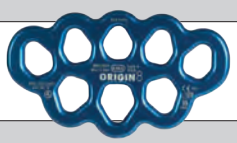
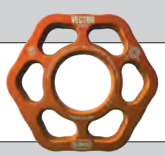
images approximately to scale		MODEL	COMPANY	ORIGIN	COST	WEIGHT	MATERIAL	PLATE DEPTH
		Rigging Plate 1/3	SINGING ROCK		£38 $30 €27	65g 2.3oz	Alu	6mm 0.25
		Rigging Plate 3/5	SINGING ROCK		£94 $115 €72	145g 5.1oz	Alu	8mm 0.3
		Cheese Plate S	SKYLOTEC		£48 $59 €55	75g 2.6oz	Alu	6mm 0.25
		Cheese Plate L	SKYLOTEC		£95 $116 €90	160g 5.6oz	Alu	7mm 0.28
		Genesis	SLACK-TECH		£78 $95 €90	304g 10.7oz	Alu	20mm 0.8
		NFPA Mini DISCONTINUED	SMC		£26 $31 €30	79g 2.8oz	Alu	9mm 0.37
		Origin 5	SMC		£27 $33 €31	113g 4oz	Alu	9.5mm 0.37
		NFPA Large DISCONTINUED	SMC		£47 $57 €54	323g 11.4oz	Alu	12.7mm 0.5
		Origin 8	SMC		£45 $55 €52	264g 9.3oz	Alu	12.7mm 0.5
		Origin TT	SMC		TBA*	n/a	Alu & Stainless Steel	n/a
		Vector DISCONTINUED	SMC		£39 $47 €45	168g 5.9oz	Alu	12.7mm 0.5
		Tree Angel	TREE CLIMBING JAPAN		£114 $90 €85	420g 14.4oz	Alu	12.7mm 0.5
		TF-CD404	TREE-FORCE		£25 $35 €33	240g 8.5oz	Alu	10mm 0.39
		Mini Rigger 1012	YATES		£41 $50 €47	130g 4.7oz	6061 T6 Alu	10mm 0.38
		Rescue Rigger 1015	YATES		£46 $56 €53	243g 8.6oz	6061 T6 Alu	10mm 0.38

NOTES: COST: Approx & inc local tax/VAT £$€ in orange are a currency conversion guide only not the actual sale price MBS or MBL Minimum Bre

ANCHOR/RIGGING PLATES

TE TH	DIMENSIONS	STANDARDS	MBS approx 10x WWL	MIN HOLE DIAM	SMALLEST DIMENSION of LARGEST EYE	HOLES LARGE EYE(S)	3D	OTHER COLOURS	NOTES	WWW.
m 5"	100 x 82mm 4 x 3.25"	CE	36kN 8093lbf	20mm 0.75"	26mm 1"	3 +1			Individually marked	singingrock.com
m "	153 x 88mm 6 x 3.5"	CE	50kN 11240lbf	20mm 0.75"	26mm 1"	7 +1			Individually marked	singingrock.com
m 5"	103 x 83mm 4 x 3.25"	CE	36kN 8093lbf	20mm 0.75"	30mm 1.2"	3 +1		■	Individually marked. *CLIMBING TECHNOLOGY* now owned by *SKYLOTEC*	skylotec.com climbingtechnology.com
m 8"	149 x 98mm 5.9 x 3.8"	CE	45kN 10116lbs	20mm 0.75"	30mm 1.2"	7 +1		■	Individually marked. *CLIMBING TECHNOLOGY* now owned by *SKYLOTEC*	skylotec.com climbingtechnology.com
m "	152 x 122mm 6 x 4.8"	No	70kN 15736 lbf	20mm 0.8"	40mm 1.57"	3 +1 +3*	■		* 3 Webbing eyes Designed for Slack-lining/ Tight-rope walking! Largest eye 42mm wide.	slacklinetechnology.com
m 7"	75 x 95mm 3 x 3.7"	NFPA "G"	36kN 8093 lbf	19mm 0.74"	25mm 1"	3 +1		■	small eye height 27mm Large eye height 30mm	smcgear.com
mm 7"	104 x 84.9mm 4.1 x 3.3"	CE NFPA G UKCA	36kN 8093 lbf	20mm 0.8"	25mm 1"	3 +2				smcgear.com
mm "	178 x 135mm 7 x 5.3"	NFPA "G"	50kN 11240 lbf	25mm 1"	57mm 2.25"	5 +1		■	individually numbered small eye height 36mm	smcgear.com
mm "	169 x 99mm 6.6 x 3.9"	CE NFPA G UKCA	50kN 11240 lbf	20mm 0.8"	25mm 1"	5 +3				smcgear.com
a	n/a	CE NFPA G UKCA	45kN 10116lbf	n/a	n/a	4 +3			NEW- Out late 2023 *Not Yet Available	smcgear.com
mm "	105 x 116mm 4.15 x 4.16"	NFPA G	48kN 10791 lbf	18mm 0.72"	46mm 1.8"	6 +1			individually numbered Small eye width 31mm	smcgear.com
mm "	240 x 150mm 9.5 x 6.875"	No	90kN 20232 lbf	13.5mm 0.5"	43mm 1.7"	8 +1 +4*	■		Also branded for STEIN. Also used as a Knotless rigging device. * 4 accessory cord holes RRP shown can be as low as £75. Individually numbered	steinworldwide.com
mm 9"	159 x 100mm 6.25 x 3.9"	CE	40kN 8993 lbf	20mm 0.75"	38mm 1.5"	7 +1			Also a Small & large plate in this range - see Arbortec/Treehog THRP1 & 3 for spec	tree-force.com
mm 8"	102 x 112mm 4 x 4.4"	-	45kN 10000 lbf	19mm 0.75"	27mm 1.1"	3 +1			Previous ISC-made version discontinued	yatesgear.com
mm 8"	165 x108mm 6.5x 4.25"	-	45kN 10000 lbf	19mm 0.75"	27mm 1.1"	7 +1		■		yatesgear.com
										expansion row
										expansion row

eaking Load represents approximately 10 times the WLL Working Load Limit HYPHEN- = not applicable N/A = info Not Available/not given

UPDATED Dec'23

SWIVELS for LIFE SUPPORT

The importance of swivels in modern rigging can be gauged by the fact that all major manufacturers have them in their range. Rock Exotica has long led the field with the first commercial rescue swivels and these days it still has the largest range. In fact Rock Exotica were the first to take the next logical step an incorporate a machined swivels into a machined pulley as well as directly into a carabiner thus eliminating one of the drawbacks of a swivel - increased system/ component lengths. An average swivel is 3-4 inches long and this adds unwanted length to something we would generally like to be as compact as possible. The introduction of Rock's *Swivabiner* range with either a swivel eye or an entire second carabiner incorporating a swivel was genius but surprisingly didn't set the world alight, at least not as much as it deserved. This was probably due to cost and because the humble swivel, by itself, is a compact and versatile item that is easily stowed, easily carried and is easily added to a harness D-ring or bridge, rig plate, anchor sling or stretcher rig.

Swivels are disproportionately tough; stronger in breaking strength than most of the carabiners they accommodate and some are considerably tougher in terms of taking abuse especially when machined from a solid block of alloy. However, don't forget that **the max strength shown does NOT equate to the max load that can be rotated/swivelled**; that is considerably lower, generally around 4-10kN and this is not a figure given by many. All except one are aluminium alloy with a stainless steel axle on which the two halves 'swivel' effortlessly with the help of a sealed set of ball bearings. Actually there was one model with bushings but this is the exception.

Rock Exotica has been one of the few to introduce an all-stainless steel model which withstands the kind of steel-on-steel abuse that some industrial rigging can inflict but is unlikely to occur in normal personal or rescue. Stainless steel swivels are not actually that unusual since the yachting world has been using them for years. of the larger eyes in this Guide. The triangular shaped swivels are more suited to single carabiners since they tend to load into the apex and additional carabiners tend to jam that apex carabiner. Some designs like the *R.E. Nano Swivel* are more obviously designed to take a single carabiner in one eye and multiples at the other end while the rounded profile of the *Petzl* , *DMM* and the new *SMC Reactor* models enable them to be attached directly to textile slings. Actually, most now have a textile friendly edge - only the more traditional models like *CMI's NFPA* and CMC's Pro-Series have more angular edges. The *SMC Reactor* also demonstrates the advantage of a larger eye - it can take the gate diameter of an ANSI rated Screwgate/locking carabiner. The majority in this list can take a regular 11mm bar carabiner gate but the industrial requirements of ANSI requires a larger, stronger carabiner.

The key development in recent years has been the openable swivels. This was started (in rope access-related activities) by *Rock Exotica* with its swivel-shackle combinations where the swivel can attach directly to a device, bridge or eye rather than via a carabiner. Taking this concept a little further was, surprisingly, not *Rock Exotica* but *Edelrid's Conecto* which had eyes on each end that open like a clam-shell to accept tape, rope or hardware and are then secured with a bolt. Since our first GUIDE, *Petzl* and *DMM* have followed this trend and *Edlerid* have enlarged on the concept with their replacement model the *Cupid* while *CAMP* Italy went the whole hog with their *Enigma* swivel (opposite top) that is entirely 'break-apart' for integration into harness bridge and/or hardware and will also collapse down for easy stowage. *DMM* unfortunately had to recall their entire range of *Nexus* and *Focus* mini swivels in

Nov 2022 due to a manufacturing fault . As we've noted in our tables, these should be back shortly. But that glitch aside, the principle was for a range of hot-forged shackle and eye options within a diminutive milled frame just large enough to attach directly to most of the hardware currently used and in the case of the *Mini-Swivel* and *Focus*, with a plastic insert to hold the carabiner firmly. *Rock Exotca's Nano-Swivel* started the drive towards smaller but with *DMM*'s recall, *Petzl* have stolen the show with their openable micro swivels.

A swivel's key advantage is in taking the twist out of ropes so they are particularly useful for long rope operations. On a stretcher rig plate they provide excellent freedom of movement to the attendant allowing easier rotational movement in tending to the casualty without the constant counter-rotation battle against the rope/sling and carabiner - for this reason swivels have become a standard harness fitting for many arborists and for tactical use where operators may need to rotate into a firing position without the risk of being 'torqued' back to forward-facing at an inopportune moment. Haul systems are an obvious application where the ability of the whole pulley system to rotate on the anchor can prevent twisted strands from increasing your input effort.

The most 'recent' innovations are from *CAMP* with the previously mentioned Enigma and their *Gyro* series with 1, 3 or 4 swivel eyes mounted on a common swivel housing and giving directional loading to individual carabiners without cramming a larger hole and minimising the chances for adverse torquing. This is pretty much the opposite of *Petzl* and *DMM*'s efforts to shrink the swivel to the smallest sizes possible.

Swivels have evolved into an individual asset for direct attachments to hardware , rope/slings and harness bridges, not just for haul systems and anchoring so its uses are myriad..... don't leave home without one.

IN THE FOLLOWING TABLES:

Max Eye diameter: refers to the largest of the two (or more) eyes if they are different sizes usually the top eye. This figure may NOT be the same as the largest bar diameter of carabiner that can be accommodated - many are oval and some will accommodate more than one carabiner. Some we have measured to give a round-bar figure but some quote the max dimension - if the eye is round you'll know that you can get pretty much that same bar size through (make sure it's not too tight though or you will have problems with torque) . If the eye is an oval you'll have to limit your ambitions.

Images NOT to Scale								
MANUFACTURER	ART	BEAL	BLACK DIAMOND	CAMP	CAMP	CAMP	CAMP	CAMP
MODEL VARIANT	Twister -	Twist-Air B -	Rotor Swivel -	Swivel 1393	Enigma 3259	Gyro 1 3260	Gyro 3 2940	Gyro 4 3109
ORIGIN								
COST	£45 $60 €52	£44 $50 €48	£65 $0 €0	£50 $64 €60	£104 $180 €118	£45 $50 €52	£76 $120 €90	£105 $180 €0
WEIGHT	58g 2oz	88g 3.1oz	83g 2.9oz	150g 5.3oz	116g 4.1oz	76g 2.7oz	155g 5.5oz	265g 9.3oz
MAX LOAD	25/28kN* 0lbf	22kN 4945lbf	26kN 5845lbf	35kN 7868lbf	23kN 5170lbf	25kN 0lbf	26kN 5845lbf	26kN 5845lbf
LOWER/MAX EYE SIZE	18mm 0.7"	18mm 0.7"	25mm 1"	23mm 0.9"	18-36mm 0.7"	10-16mm 0.4-0.6"	10-16mm 0.4-0.6"	10-16mm 0.4-0.6"
DIMENSIONS heightt x width	78 x 30mm 3.1 x1.2"	86 x 39mm 3.4 x 1.5"	85 x 40mm 3.3 x 1.6"	110 x 55mm 4.3 x 2.1"	100 x 51mm 4 x 2"	73 x 35mm 2.9 x 1.4"	80 x 90mm 3.2 x 3.5"	125 x 90mm 4.9x 3.5"
BEARING/BUSHING	■	■	■	■	■	Steel Ball/Socket	Steel Ball/Socket	Steel Ball/Socket
OPENABLE	-	■	-	-	■	-	-	-
STANDARDS	CE	CE	CE	CE EAC	CE EAC ANSI	CE ANSI EAC	CE ANSI EAC	CE ANSI EAC
MATERIAL	Machined Aluminium	Alu alloy	Aluminium	Aluminium	Aluminium Stainless Steel	Alloy, Steel, Stainless Steel	Alloy, Steel, Stainless Steel	Alloy, Steel, Stainless Steel
OTHER COLOURS/ NOTES	*28kN max load, tested with 25kN. Does not twist under load				Black. Collapsible, take-apart	plastic inserts for tighter 10mm fit	plastic inserts for tighter 10mm fit	plastic inserts for tighter 10mm fit
WEBSITE	climbingtechnology.com	beal-planet.com	blackdiamondequipment.com	camp.it	camp.it	camp.it	camp.it	camp.it

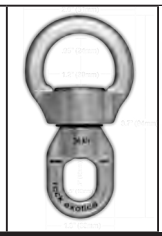
Images NOT to Scale					
MANUFACTURER	DMM	EDELRID	EDELRID	EDELWEISS	FIXE CLIMBING F
MODEL VARIANT	Nexus Bow-D SW470	Cupid -	Conecto -	Vortex -	SWR -	SW1 590
ORIGIN						
COST	£80 $115 €100	£85 $107 €90	£50 $60 €63	£52 $62 €56	£40 $45 €45	£30 $0 €0
WEIGHT	103g 3.6oz	105g 3.7oz	155g 5.5oz	88g 3.1oz	88g 3.1oz	154g 5.5oz
MAX LOAD	26kN 5845lbf	20kN 4496lbf	15kN 3372lbf	22kN 4945lbf	22kN 4945lbf	30kN 6744lbf
LOWER/MAX EYE SIZE	16 20-30mm 0.6 0.8-1.2"	25mm 1"	20mm 0.8"	18mm 0.7"	18mm 0.7"	23mm 0.9"
DIMENSIONS heightt x width	103 x 48mm 4 x 1.9"	95 x 50mm 3.7 x 2"	100 x52mm 4 x 2"	86 x 39mm 3.4 x 1.5"	86 x 39mm 3.4 x 1.5"	110 x 55mm 4.3 x 2.1"
BEARING/BUSHING	■	■	■	■	■	■
OPENABLE	■	■	■	-	■	-
STANDARDS	CE	CE	CE	CE	CE	
MATERIAL	Body Milled Alu Alloy	Hot forged Alu alloy	Hot forged Alu alloy	Alu alloy	Alu Alloy	Alu Alloy
OTHER COLOURS/ NOTES	Black RECALLED 2022 Restock pending	Replaced Conecto. Gate opening=12mm	DISCONTINUED			
WEBSITE	dmmwales.com	edelrid.com	edelrid.com	edelrid.com	edelweiss-ropes.com	fixeclimbing.com

COSTS: Any £$€ shown in burnt orange are currency conversions only and will not include shipping, import duty and tax

LIFE SUPPORT SWIVELS

									
CMC/RE	**CMC/RE**	**CMI**	**CMI**	**CONTERRA**	**DMM**	**DMM**	**DMM**	**DMM**	**DMM**
Rescue -	**ProSeries** -	**Rescue** -	**Cali Swivel2** -	**TiRadius** -	**Axis L** -	**Axis S** -	**Mini** SW400	**Focus D** SW440	**Focus Bow** SW450
£71 $86 €82	£102 $124 €117	£101 $122 €116	£104 $126 €119	£119 $145 €137	£80 $110 €100	£70 $95 €75	£60 $79 €64	£75 $110 €95	£75 $110 €95
125g 4.4oz	184g 6.5oz	159g 5.6oz	204g 7.2oz	83g 2.9oz	184g 6.5oz	117g 4.2oz	48g 1.7oz	64g 2.3oz	72g 2.5oz
36kN 8093lbf	36kN 8093lbf	40kN 9000lbf	43.6kN 9800lbf	38kN 8500lbf	50kN 11240lbf	36kN 8093lbf	26kN 5845lbf	26kN 5845lbf	26kN 5845lbf
25mm 1"	30mm 1.2"	30mm* 1.2"	20 18mm 0.8 0.7"	25mm 1"	20-38mm 0.8-1.1"	18-30mm 0.7-1.2"	16mm 0.6"	10-16 16mm 0.4-0.6"	10-16 20-30mm 0.4-0.6 0.8-1.2"
93 x 49mm 3.75x1.9"	114 x 50mm 4.5 x2"	108 x 45mm 4.25 x 1.75"	100 x 76.2mm 4 x 3"	76.2 x 32mm 3 x 1.25"	96 x60mm 3.8 x 2.4"	80 x 50mm 3.2 x 2"	66 x 32mm 2.6 x 1.3"	76.5 x 35mm 3 x 1.4"	82 x 48mm 3.2 x 1.9"
■	■	■	■	■	■	■	■	■	■
-	-	-	-	-	-	-	-	■	■
NFPA	NFPA	NFPA		NFPA	CE	CE	CE	CE	CE
Machined Alloy	Machined Alloy	Machined alloy	Machined alloy	Titanium	Hot forged Alu Alloy	Hot forged Alu Alloy	Body Milled Alu Alloy	Body Milled Alu Alloy	Body Milled Alu Alloy
		*max bar size 20mm/0.8"	Green/Silver. Blue/Silver		Black	Black	Black RECALLED 2022 Restock pending	Black RECALLED 2022 Restock pending	Black RECALLED 2022 Restock pending
cmcpro.com	cmcpro.com	cmigearusa.com	cmigearusa.com	conterra-inc.com	dmmwales.com	dmmwales.com	dmmwales.com	dmmwales.com	dmmwales.com

									
USION CLIMB	**FUSION CLIMB**	**KONG**	**iRUDEK**	**PETZL**	**PETZL**	**PETZL**	**PETZL**	**PROTEKT**	**ROCK EMPIRE**
Delta -	**Oval** -	**Dancer** -	**Swiver** -	**Swivel S** -	**Swivel L** P58-L	**Micro Swivel** P58 XSO	**Open Swivel** -	**KR-200 210** -	**ZWB018** -
£50 $56 €53	£54 $61 €56	£55 $80 €61	£25 $34 €29	£61 $65 €60	£71 $75 €76	£55 $65 €60	£77 $95 €83	£27 $37 €31	£39 $49 €46
170g 6oz	170g 6oz	160g 5.6oz	79g 2.8oz	95g 3.4oz	150g 5.3oz	75g 2.6oz	130g 4.6oz	157 167g 5.5 5.9oz	74.2g 2.6oz
36kN 8093lbf	36kN 8093lbf	42kN 9442lbf	35kN 7868lbf	23kN 5170lbf	36kN 8093lbf	26kN 5845lbf	23kN 5170lbf	30kN 6744lbf	30kN 6744lbf
30.5mm* 1.2"	31.75mm 1.25"	23mm 0.9"	21mm 0.8"	19 22mm 0.75 0.8"	27mm 1.2"	14 22mm 0.55 09"	23 29mm 0.9 1"	29-34mm* 1.1-1.3"	21mm 0.83"
10 x 54.7mm 4.3 x 2.15"	114 x 52mm 4.5 x 2"	113.5 x 54mm 4.5 x 2.1"	85 x 36mm 3.3 x 1.4"	82 x 45mm 3.2 x 1.6"	105 x 53mm 4.1 x 2.1"	76 x 45mm 3 x1.8"	97 x 50mm 3.5 x 2"	113 x 54mm 4.5 x 2.1"	83 x 38mm 3.3 x 1.5"
■	■	■	■	■	■	■	■	■ ■	■
-	-	-	■	-	-	■	■	-	-
CE ANSI	CE ANSI	CE	CE	CE NFPA EAC UKCA	CE NFPA EAC UKCA	CE EAC UKCA	CE EAC UKCA	CE	CE
Alu Alloy	Alu Alloy	Alu Alloy	Aluminium					Alu Alloy	Aluminium
*max bar size < 25mm/1"				Black		no bearings so Does not rotate once loaded	14mm gate	*max bar size 23mm/0.9"	
usionclimb.com	fusionclimb.com	kong.com	irudek.com	petzl.com	petzl.com	petzl.com	petzl.com	protekt.com	rockempire.com

Images NOT to Scale								
MANUFACTURER	ROCK EXOTICA	ROCK EXOTICA	ROCK EXOTICA	ROCK EXOTICA	ROCK EXOTICA	ROCK EXOTICA	ROCK EXOTICA	ROCK EXOTICA R
MODEL VARIANT	Shackle Swivel SS1	Triangle S1L	Rotator Round Large S2L	Orbitor S3	Nano-Swivel S11	Stainless Steel S2S / S2S-B	SwivaEye C82 A	SwivaBiner C81 A
ORIGIN								
COST	£95 $90 €104	£65 $75 €90	£60 $73 €90	£58 $73 €86	£72 $75 €93	£156 $190 €180	£110 $96 €113	£120 $106 €125 £
WEIGHT	163g 5.76oz	144g 5.1oz	127g 4.5oz	99g 3.5oz	57g 2oz	227g 8oz	137g 4.86oz	166g 5.9oz
MAX LOAD	36kN 8093lbf	36kN 8093lbf	36kN 8093lbf	26kN 5845lbf	23kN 5170lbf	36kN 8093lbf	30kN 0lbf	30kN 6744lbf
LOWER/MAX EYE SIZE	19 24-30mm 0.75 0.9-1.2"	26-30mm 1-1.2"	24-30mm 0.9-1.2"	20-28mm 0.8-1.1"	11 18-20mm 0.4 0.7-0.8"	30mm 1.2"	24-30 21mm* 0.95-1.2 0.84"	24-30 24-30mm* 0.9-1.2 0.9-1.2"
DIMENSIONS heightt x width	97x 50mm 3.8 x 2"	108 x 50.8mm 4.24 x 2"	97 x 50mm 3.8 x 2"	71 x 37mm 2.8 x 1.44"	69 x 38mm 2.7x1.5"	94 x 51mm 3.7x 2"	138 x 66mm 5.42x 2.6"	185 x 66mm 7.3 x 2.6"
BEARING/BUSHING	■	■	■	■	■	■	■	■
OPENABLE	■	-	-	-	-	-	-	-
STANDARDS	CE	-	CE	CE	CE	-	CE	-
MATERIAL	Machined Alu Alloy. Steel	Machined Alu Alloy	Machined Alu Alloy	Machined Alu Alloy	Machined Alu Alloy	Stainless Steel	Machined Alu Alloy	Machined Alu Alloy
OTHER COLOURS/ NOTES		DISCONTINUED	Rotator Small discontinued			Black	*Top eye figure =gate opening	*Top & bottom eye figure =gate opening
WEBSITE	rockexotica.com	rockexotica.com	rockexotica.com	rockexotica.com	rockexotica.com	rockexotica.com	rockexotica.com	rockexotica.com

COSTS: Any £$€ shown in burnt orange are currency conversions only and will not include shipping, import duty and tax

LIFE SUPPORT SWIVELS

							Expansion column	Expansion column	Expansion column
									
OCK EXOTICA	**SINGING ROCK**	**SKYLOTEC**	**SKYLOTEC**	**SKYLOTEC**	**SMC**	**SMC**			
Enforcer LC1	**Twister** -	**WIB** H074	**CT Twister** -	**CT Twirl** -	**Reactor L** -	**Reactor S** -			
995 $1000 €1250	£36 $55 €38	£44 $50 €46	£60 $65 €63	£70 $76 €77	£50 $60 €57	£41 $50 €48			
400g* 14oz	88g 3.1oz	160g 5.7oz	80g 2.8oz	170g 6oz	136g 4.8oz	82g 2.9oz			
36kN* 8093lbf	22kN 4945lbf	40kN 8992lbf	24kN 5396lbf	36kN 8093lbf	40kN 8992lbf	40kN 8992lbf			
24-30mm 0.9-1.2"	18mm 0.7"	35mm* 1.3"	19-24mm 0.75-1"	26-30mm 1-1.2"	25mm 1"	14mm 0.55"			
203 x 53mm 8 x 2.1"	86 x 39mm 3.4 x 1.5"	110 x 50mm 4.3 x 2"	84 x 43mm 3.3 x 1.7"	116 x53mm 4.6 x 2.1"	101 x 50mm 4 x 2"	67 x 83mm 3.3 x 2.64"			
■	■	■	■	■	■	■			
-	-	-	-	-	-	-			
CE	CE	CE	CE	CE	CE NFPA UKCA	CE NFPA UKCA			
Machined Alu Alloy	Alu alloy	Aluminium	Hot forged Alu Alloy	Hot forged Alu Alloy	Forged Aluminium	Forged Aluminium			
*20kN max reading. *inc batteries	4kN swivelling limit	*max round bar size 23mm/0.9"	Black climbingtechnology.com	*max round bar size 24mm/0.9"					
ockexotica.com	singingrock.com	skylotec.com	skylotec.com	skylotec.com	smcgear.com	smcgear.com			

IMAGES NOT TO SCALE

UPDATED Nov'23

SWIVEL PULLEYS

& CARABINER/PULLEY SWIVELS

Yachting was the first to use swivel pulleys, indeed pulley development in general has been led by the various maritime industries but it took the genius of *Rock Exotica* to once again cross the design divide into life-critical tasking in 2005 with the *OmniBlock* which quickly found a home in an arb industry that was now keen to embrace all things metal and shiny. *Rock Exotica* not only married a rescue-spec swivel eye with a pulley they also added a locking button to the swing-cheek making this a super-safe as well as super-tough being machined out of a single block of aircraft alloy. They had the field to themselves for a few years and produced (produce) for large players like *CMC* but once P*etzl* introduced their *Spin* series the gloves seemed to be off and swivel pulleys and latterly carabiner/swivel pulleys are appearing more and more and they're doing so with the advantage of being able to improve on some elements of the *OmniBlock* design. *SMC* for instance with their *Apex* series have streamlined the profile. The ultimate in *Swiss-Army Knife* optimism is the *SwivaBiner* from *RockExotica/CMC* where a full size carabiner sits on top of a swivel, on top of a pulley. The carabiner takes the place of the swivel eye which usually requires you to clip in a carabiner making the whole assembly longer so the *Swivabiner* is saving some space and the whole assembly is replacing 3 separate items. Not sure that the three separate items wouldn't be more useful but the *Swivabiner*s are pretty flash none-the less. We've used a *SwivaEye* (which is the 'biner and swivel bit minus the pulley) since Rock invented them and it has been a real workhorse in all kinds of weird and wonderful situations that it was never intended for. *Petzl* have followed the single carabiner-swivel concept with their own variation using their '*Open*' swivel. This does allow connection to other 'closed' components as a carabiner does but only with the more time-consuming job of removing an Allen bolt. It is however, considerably smaller than a carabiner and only barely larger than a closed swivel. (see pic comparison right) The logical extension of the *Swiv-A-Biner* pulley concept is of course, to have two pulleys on a swivel - so double blocks with a becket completes the carabiner-swivel series nicely with *Rock Exotica* and their proxy series by *CMC* still having this particular field to themselves.

Where RockExotica, Petzl and CMC swivel their cheeks on the central axle, SMC decided to buck the trend and have theirs swivel on a pin at the top. The centre is the cheek release; a sprung, push button requiring 90 degree rotation of the button before pushing it in to release the side plate. Petzl's Spins all have a red warning flash to indicate that the side plate is not properly locked (pic above)

The *Omniblock* and its competitors have tended to be at the larger and certainly bulkier end of the scale but once again *Rock Exotica* led the way with a more diminutive swivel pulley when they produced Reed Thorne's baby, the *AZTEK* mini pulley system using mini *Omniblock*s where the swivel is almost as large as the pulley. This was subsequently taken up by *CMI*'s *MicroTrolley* which is actually even smaller albeit as a single rather than double sheave. *Rock Exotica* have since brought out a model specifically aimed at arborists. The H*ydra* is their swivelling variation of the *Hitchclimber*

IN THE FOLLOWING TABLES.....

See the Pulleys Introduction on page 62 for the same key to these tables.

Sheave Diameters in **green** are verified as the minimum/tread diameter - others may be the max or outer diameter - we will update as we get the data.

Alu = Aluminium orAluminium Alloy
StSt = Stainless Steel but may simply be galvanised steel in a few cases or....
Zstl = Zinc plated steel

OMNI 2.0”
DOUBLE

- Install and remove rope while still connected to the anchor.
- Sideplate locks with two-stage, double-catch safety mechanism.

- Integrated swivel allows pulley to orient while reducing gain.
- Connect, install and remove rope with one hand.
- CNC machined for optimal weight & strength.

THE NEWEST OF THE OMNI FAMILY

Available in single or double sheave versions, from 1.1” up to 2.0” sheave diameter.

rock exotica

Images NOT to Scale






MANUFACTURER	CMC	CMC	CMC	CMC	CMC	CMC
MODEL VARIANT	1.1 PMP Single 300434	1.1 PMP Double 300433	1.5 PMPSingle SS 300430	1.5 Single 300431	1.5 Double 300432	2.0 PMP Singl 300437
ORIGIN						
COST (inc Tax) Conversion-only	- $95 -	- $123 -	- $139 -	- $105 -	- $155 -	- $130 -
WEIGHT	140g 4.9oz	245g 8.6oz	331g 11.7oz	260g 9.2oz	411g 14.5oz	348g 12.3oz
MAX LOAD- WLL MBS	5 23kN 1124 8093lbf	7.25 30kN 1630 6744lbf	8 36kN 1798 8093lbf	8 36kN 1798 8093lbf	8 36kN 1798 8093lbf	8 36kN 1798 8093lbf
ROPE Ø	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"
SHEAVE (WHEEL) Tread Ø	28mm 1.1"	2x 28mm 2x 1.1"	38mm 1.5"	38mm 1.5"	2x 38mm 2x 1.5"	51mm 2"
DIMENSIONS ht x w x depth	112 x 51x 30mm 4.4 x 2 x 1.2"	135 x 51 x 53mm 5.3 x 2 x 2"	135 x 64 x 32mm 6.3 x 2.5 1.3"	135 x 64 x 32mm 5.3 x 2.5 x 1.3"	160 x 64 x 57mm 6.3 x 2.5 x 2.3"	148 x 76 x 32m 5.8 x 3 x 1.3"
PRUSIK TEND LOCK BECKET	■■-	■■■	■■-	-■-	-■■	■■-
BUSHING BEARING PIN	■	■	■	■	■	■
CHEEKS - SWIVEL FIXED	■	■	■	■	■	■
EFFICIENCY	>90%	>90%	>90%	>90%	>90%	>90%
CHEEK SHEAVE AXLE	Alu Alu Alu	Alu Alu Alu	Alu StSteel Alu	Alu Alu Alu	Alu Alu Alu	Alu Alu Alu
STANDARDS	CE	CE	CE	CE	CE	-
OTHER COLOURS	-	-	-	-	-	-
NOTES			*steel cable≤12mm			
WEBSITE	cmcpro.com	cmcpro.com	cmcpro.com	cmcpro.com	cmcpro.com	cmcpro.com

Images NOT to Scale






MANUFACTURER	PETZL	PETZL	PETZL	PETZL	PETZL	RE / CMC
MODEL VARIANT	Spin S1 S1	Spin S1 Open 2P654	Spin L1 L1	Spin L2 dbl L2D	Spin L1D 1-way L2	AZTEK P41 / 300321
ORIGIN						
COST (inc Tax) Conversion-only	£58 $72 €66	£65 $75 €70	£90 $110 €100	£144 $175 €160	£168 $205 €190	£105 $127 €12
WEIGHT	145g 5.1oz	0g 0oz	290g 10.2oz	480g 1lb 9oz	425g 15oz	226g 7.9oz
MAX LOAD- WLL MBS	5 23kN 1124 8093lbf	5 23kN 1124 8093lbf	6 36kN 1348 8093lbf	6 36kN 1348 8093lbf	6 36kN 1348 8093lbf	9 36kN 2023 8093lbf
ROPE Ø	7-11mm 9/32-7/16"	7-11mm 9/32-7/16"	8-13mm 5/16-½"	8-13mm 5/16-½"	8-13mm 5/16-½"	8mm 5/16"
SHEAVE (WHEEL) Tread Ø	25mm 1"	25mm 1"	38mm 1.5"	2x 38mm 2x 1.5"	38mm 1.5"	2x 28mm 2x 1.1"
DIMENSIONS ht x w x depth	103x48x33mm 4 x 1.9 x 1.3"	105x48x33mm 4.1 x 1.9 x 1.3"	150x70mm 5.9 x 2.75"	180 x 70 x 70mm 7 x 2.75 x 2.75"	150x74mm 5.9 x 2.9"	104 x 50mm 4.1 x 2"
PRUSIK TEND LOCK BECKET	-■-	-■-	-■-	-■■	■■-	■--
BUSHING BEARING PIN	■	■	■	■	■	■
CHEEKS - SWIVEL FIXED	■	■	■	■	■	■
EFFICIENCY	91%	91%	95%	95%	93% one-way	>90%
CHEEK SHEAVE AXLE	Alu StSt StSt	Alu StSt StSt	Alu StSt StSt	Alu StSt StSt	Alu StSt StSt	Alu Alu Alu
STANDARDS	CE NFPA UKCA UIAA	CE NFPA UKCA	CE NFPA UKCA	CE NFPA UKCA	CE NFPA UKCA	CE
OTHER COLOURS	■	■	■	■	■	■■
NOTES	red warning mark if sheave is not locked	red warning mark if sheave is not locked	red warning mark if sheave is not locked	Red warning mark if sheave is not locked	Red warning mark. One way faceted sheave	grey= quick release p orange=side becket sc
WEBSITE	petzl.com	petzl.com	petzl.com	petzl.com	petzl.com	rockexotica.co

SWIVEL PULLEYS







	CMC	CMC	CMC	CMC	CMI	NOTCH	PETZL
e	**2.0 PMP Double** 300438	2.6 PMP Single 300436	1.1 PMP SwivaBiner 300435	1.1 PMP SwivaBiner 300439	**MicroTrolley** RP161RS	**Rook** x	**Twin Release** -
	- $195 -	- $225 -	- $125 -	- $155 -	£91 $110/114 €105	£111 $120 €114	£362 $440 €410
	591g 20.9oz	850g 29.9oz	200g 7oz	298g 11oz	204/226g 7.2/8oz	189g 6.7oz	800g 1lb 12oz
	10 40kN 2248 8992lbf	20 80kN 4496 17984lbf	- 22kN - 4946lbf	- 22kN - 4946lbf	8.8 44kN 1980 9900lbf	2.8 28kN 629 6295lbf	9 36kN 2023 8093lbf
	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	8-13mm 5/16-½"
	2x 51mm 2x 2"	66mm 2.6"	28mm 1.1"	2x 28mm 2x 1.1"	32mm 1.25"	53mm 2.1"	2x 38-40*mm 2x 1.5"
m	180 x 76 x 57mm 7 x 3 x 2.3"	191 x 92.5 x 42mm 7.5 x 3.6 x 1.6"	168 x 51 x 30mm 6.6 x 2 x 1.2"	195 x 51 x 53mm 7.7 x 2 x 2"	114 x 50 x 32mm 4.5 x 2 x 1.25"	112 x 63.5 x 33mm 4.6 x 2.5"	180 x 105 x 77mm 7 x 4.1 x 3"
	■■■	■■-	■■-	■■■	■--	---	-■■
	■	■	■	■	■	■	■
	■	■	■	■	■	■	■
	>90%	>90%	>90%	>90%		>90%	95%
	Alu Alu Alu	Alu Alu Alu	Alu Alu Alu	Alu Alu Alu	Alu Alu StSt	Alu Alu StSt	Alu StSt StSt
	CE	CE	CE	CE	CE	ANSI CE	CE NFPA ANSI UKCA
	-	-	-	-	-	-	■
					RS=removable axle/sheave		Integrated progress capture cam.*=faceted cam
	cmcpro.com	cmcpro.com	cmcpro.com	cmcpro.com	cmigearusa.com	notchequipment.com	petzl.com







	ROCK EXOTICA	ROCK EXOTICA	ROCK EXOTICA	ROCK EXOTICA	ROCK EXOTICA	ROCK EXOTICA	ROCK EXOTICA
	Omni Block 1.1 P54	**Omni Block 1.1 dbl** P54D	**Omni Block 1.5** P51	**Omni Block 1.5 SS** P51 SS	**Omni Block 1.5** P51 SH	**Omni Block 1.5 dbl** P51 D	**Hydra** P4
21	£110 $98 €122	£150 $135 €162	£122 $105 €142	£100 $90 €87	£122 $105 €142	£150 $160 €190	£127 $120 €134
	140g 4.9oz	245g 8.6oz	260g 9.2oz	303g 10.7oz	303g 10.7oz	411g 14.5oz	189g 6.7oz
	5 23kN 1124 8093lbf	7.25 30kN 1630 6744lbf	8 36kN 1798 8093lbf	8 36kN 1798 8093lbf	8 36kN 1798 8093lbf	8 36kN 1798 8093lbf	5 28kN 1124 6295lbf
	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"
	28mm 1.1"	2x 28mm 2x 1.1"	38mm 1.5"	38mm 1.5"	38mm 1.5"	2x 38mm 2x 1.5"	53mm 2.1"
	112 x 51x 30mm 4.4 x 2 x 1.2"	135 x 51 x 53mm 5.3 x 2 x 2"	135 x 64 x 32mm 5.3 x 2.5 x 1.3"	135 x 64 x 32mm 5.3 x 2.5 x 1.3"	135 x 64 x33mm 6.3 x 2.5 x 1.3"	160 x 64 x 58mm 6.3 x 2.5 x 2.3"	112 x 63.5 x 33mm 4.4 x 2.5 x 1.3"
	■■-	■■■	-■-	-■-	-■-	-■■	---
	■	■	■	■	■	■	■
	■	■	■	■	■	■	■
	>90%	>90%	>90%	>90%	>90%	>90%	>90%
	Alu Alu Alu	Alu Alu Alu	Alu Alu Alu	Alu StSteel Alu	Alu Alu Alu	Alu Alu Alu	Alu Alu StSt
	CE	CE	CE	CE	-	CE	CE
	■	■	■	■	-	■	-
in rew					DISCONTINUED		
m	rockexotica.com	rockexotica.com	rockexotica.com	rockexotica.com	rockexotica.com	rockexotica.com	rockexotica.com

Images NOT to Scale						
MANUFACTURER	ROCK EXOTICA	ROCK EXOTICA	ROCK EXOTICA	ROCK EXOTICA	ROCK EXOTICA	
MODEL VARIANT	Omni Block 2 P53	Omni Block 2 dbl P53 D	Omni Block 2.6 P55	1.1 Swivabiner P54 SB B	1.1 Swivabiner dbl P54D SB B	
ORIGIN						
COST (inc Tax) Conversion-only	£150 $134 €162	£225 $202 €263	£256 $235 €223	£135 $137 €150	£190 $170 €220	
WEIGHT	348g 12.3oz	591g 20.9oz	850g 29.9oz	140g 4.9oz	300g 10.5oz	
MAX LOAD- WLL MBS	8 36kN 1798 8093lbf	10 40kN 0lbf	20 80kN 4496 17984lbf	5 23kN 1124 5170lbf	7 28kN 1573 6295lbf	
MAX ROPE Ø	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	
SHEAVE/TREAD Ø	51mm 2"	2x 51mm 2x 2"	66mm 2.6"	28mm 1.1"	2x 28mm 2x 1.1"	
DIMENSIONS ht x w x depth	148 x 76 x 32mm 5.8 x 3 x 1.3"	180 x 76 x 57mm 7 x 3 2.3"	191 x 92.5 x 42mm 7.5 x 3.6 x 1.6"	168 x 51 x 30mm 6.6 x 2 x 1.2"	195 x 51 x 53mm 7.7 x 2 x 2"	
PRUSIK TEND LOCK BECKET	■■-	■■■	■■-	■■-	■■■	
BUSHING BEARING PIN	■	■	■	■	■	
CHEEKS - SWIVEL FIXED	■	■	■	■	■	
EFFICIENCY	>90%	>90%	>90%	>90%	>90%	
CHEEK SHEAVE AXLE	Alu Alu Alu	Alu Alu Alu	Alu Alu Alu	Alu Alu Alu	Alu Alu Alu	
STANDARDS	-	CE	CE	CE	CE	
OTHER COLOURS	■	■	-	-	-	
NOTES						
WEBSITE	rockexotica.com	rockexotica.com	rockexotica.com	rockexotica.com	rockexotica.com	

Images NOT to Scale						
MANUFACTURER	ROCK EXOTICA	ROCK EXOTICA	SMC	SMC	SMC	
MODEL VARIANT	Material Handling Omni 2.6 MHP55	Material Handling Omni 4.5 MHP58	Apex 1.1 165020	Apex 1.5 165120	Apex 1.5 dbl 165130	
ORIGIN						
COST (inc Tax) Conversion-only	£207 $250 €238	£392 $475 €451	£82 $99 €94	£87 $105 €100	£140 $169 €161	
WEIGHT	850g 29.9oz	2.65kg 5.8lb	190g 6.7oz	306g 10.8oz	478g 16.9oz	
MAX LOAD- WLL MBS	20 100kN 4500 22500lbf	26.6 133.4kN 6000 30000lbf	3 12kN 674 2697lbf	9.5 38kN 2135 8542lbf	9.5 38kN 2135 8542lbf	
MAX ROPE Ø	9-13mm ⅜-½"	9-19mm ⅜-¾"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	
SHEAVE/TREAD Ø	75 66mm 2.95 2.6"	114 95mm 4.5 3.75"	28mm 1.1"	38mm 1.5"	2x 38mm 2x 1.5"	
DIMENSIONS ht x w x depth	191 x 92.5 x 37mm 7.5 x 3.6 x 1.5"	0 x 0mm 0 x 0"	121 x 59.4 x 29mm 4.75 x 2.3 x 1.13"	150 x 74 x 29mm 5.9 x 2.9 x 1.13"	171 x 74 x 58mm 6.7 x 2.9 x 2.3"	
PRUSIK TEND LOCK BECKET	■■-	■■-	■■-	■■-	■■■	
BUSHING BEARING PIN	■	■	■	■	■	
CHEEKS - SWIVEL FIXED	■	■	■	■	■	
EFFICIENCY	>90%	>90%				
CHEEK SHEAVE AXLE	Alu Alu Alu	Alu Alu Alu	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	
STANDARDS	ASME	ASME	CE NFPA UKCA	CE NFPA UKCA	CE NFPA UKCA	
OTHER COLOURS	-	-	-	-	-	
NOTES	non-human loads	non-human loads				
WEBSITE	rockexotica.com	rockexotica.com	smcgear.com	smcgear.com	smcgear.com	

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A NEW REVOLUTION OF PULLEY

The Apex Swivel Pulley combines 54 years of design and manufacturing knowledge with an uncompromising program of innovation, prototyping and user feedback.

The result is unmatched security and deceptively simple operation. This robust, American-made pulley will give you the confidence to complete your operation, no matter how complex the challenge.

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MADE IN USA

HAND BUILT IN THE NORTHWEST

SPECIFICATIONS

APEX 1.5 Single Swivel Pulley

Model #:	NFPA165120
Material:	Aluminum, Stainless Steel
Finish:	Anodized, Blue/Grey
Dimensions:	5.8" x 2.9"
Weight:	10.8oz (306g)
MBS:	38kN
WLL:	9.4kN
Rope size:	up to 13mm
Sheave Major Diameter:	2.0"
Sheave Tread Diameter:	1.5"

*NFPA-G Certified

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UPDATED March '24

CARABINER PULLEYS

We're going to guess that the birth of the carabiner pulley was many, many years with climbers using a plastic wheel slipped onto an oval carabiner- something you can still do now but as a manufactured product it was maybe not until this century that a properly integrated sheave appeared. So it took a long time for the evolution of what you might think would be quite a straightforward design. But no, *DMM*'s *Revolver* (green version right) with its diminutive friction reducing wheel kick started a drive towards a whole new genre of kit that was gleefully taken up by *Petzl* with the first fully functioning pulley sheave integrated into the structure of the carabiner, the *RollClip* The genre has latterly taken a more unusual direction with *Harken*'s *Snatchet* (left) with a faceted sheave held onto an oval carabiner with a bolted plastic frame or 'cheeks'. The faceted version provides increased friction for lowering while their non-faceted version acts as a regular pulley in both directions. The intention of course is to provide hauling efficiency with less space and kit; instead of a carabiner length plus a pulley length you just have the carabiner length. These things are perfect for creating a quick 2:1 or as part of a larger hauling system since they are as efficient as a fair quality pulley at 80-90%. They also have a slight advantage over a regular swing-cheek pulley that you can insert the rope while the carabiner element is connected therefore negating the chance of dropping the pulley. The *Revolver* is less of a pulley and more of an efficient carabiner offering useful rapid redirection capabilities that create less drag than a carabiner alone but don't forget that redirects create high load and not all carabiner pulleys are up to this task. The newest addition is China's *Kailas* which produces bespoke, properly branded products and this is a slick, hot-forged option (Black version shown above).

IN THE FOLLOWING TABLES:.....

ORIGIN: The main flag refers to the manufacturer's home country, but this may not be where the device is made. If we know, we show an inset flag.
COST: Prices are a rough guide only - it can vary due to exchange rates, taxes etc. and we usually round the price up. Chinese devices may need import duty added.
WEIGHT: for the individual item in its basic form
DIMENSIONS: Height/length by width
MATERIALS: ALU refers to ALUMINIUM or ALUMINUM ALLOY
StSt = Stainless Steel and some are **'Steel' =**carbon steel
MBS: Minimum Breaking Strength for the **Minor Axis** which is across the width, **Major Axis** which is down the spine of the carabiner and always the strongest direction of load and with the **Gate Open** which is usually the weakest because it allows the carabiner to bend away from its two ends.
WLL: Working Load Limit (specifically the pulley sheave
ROPE Ø: Any rope that will fit through the gate can be used but the pulley will only function to this diameter.
SHEAVE Ø: Diameter of wheel but may be the max or the min/tread diameter which are quite different figures. **Where we know the verified inner/tread Ø it is shown in *italics*.**
GATE OPENING: is the widest rope or bar that can pass through an open carabiner gate.
EFFICIENCY: IS how god the pulley axle (bearing or bushing) is at reducing friction - anything less than 100% is saving you effort whereas passing a rope over a standard carabiner would likely be well in excess of 120%.
GATE LOCK: is whether and how the gate is secured. **SNAP** has no locking action and can open if the gate is pushed against.
SCREWg is 'Screwgate' requiring the user to manually unwind and wind up the collar on the gate, failure to do so renders it a snap-gate.
AUTO means automatically locks on release of the locking collar. There is a spring action on the barrel which keeps the gate locked until you open the collar by twisting against the spring. A secondary and even third action may also be required involving pushing the collar up/downwards as well as twisting. We have not differentiated the 3 AUTO options.
CAPTIVE EYE: is a bar, as shown in the *Revolver Rig* above, that ensures that the rope cannot migrate off of the pulley sheave(s). Some of these can be an optional addition as with the *Petzl RollClip*s but they do mean that rope has to be threaded rather than hot-loaded mid-rope.
BECKET: An unusual feature with these carabiner pulleys and at the time of writing only present on the *Revolver Rig* and slack-lining's *Rollex* where the becket is for tape not rope. Don't just assume that a gap beneath the sheaves can be used as a load-bearing becket - *RnR's Onyx* specifically states this in writing on its lower frame.
STANDARDS: for CE standards there are 3 that may be applicable: **EN12278** as a PULLEY ■
EN12275 as a SPORT CONNECTOR/CLIP ■
and **EN362** as WORK CONNECTOR/CLIP ■
EAC covers Eastern Europe and Russia
UIAA covers mountaineering activities
UKCA is a superfluous addition/replacement to ENs for the UK.

A solution which includes the new FALCON harness and ARIA headlamp, RIG and STRATO helmet.

petzl.com

PETZL TACTICAL SOLUTIONS

Petzl offer a full range of verticality and lighting solutions for use in tactical environments. Whatever the situation, you need to be able to count on your gear and know that it will perform day in and day out.

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Images NOT to Scale						
MANUFACTURER	DMM	DMM	DMM	DMM	DMM	DMM
MODEL VARIANT	Revolver Snap A238	Revolver SG A272	Revolver LockSafe A277	Revolver Kwiklok A273	Revolver Rig SG A5821CB	Revolver Rig LockSafe A5871
ORIGIN						
COST (inc Tax/VAT)	£29 $37 €33	£31 $39 €36	£35 $44 €48	£34 $43 €39	£82 $107 €90	£85 $106 €11
WEIGHT min- max (see gatelock colour-coding)	51 g 1.8oz	63g 2.2oz	70g 2.4oz	69g 2.4oz	196g 6.9oz	203g 7.2oz
MBS Minor Axis Major Axis Gate Open	7kN 1573lbf 24kN 5395lbf 9kN 2023lbf	8kN 1798lbf 24kN 5395lbf 8kN 1798lbf	8kN 1798lbf 24kN 5395lbf 8kN 1798lbf	8kN 1798lbf 24kN 5395lbf 8kN 1798lbf	7kN 1574lbf 25kN 5620lbf 7kN 1574lbf	7kN 1574lbf 25kN 5620lb 7kN 1574lbf
MIN-MAX ROPE Ø	≤12.7mm ½"	≤12.7mm ½"	≤12.7mm ½"	≤12.7mm ½"	13mm ½"	13mm ½"
DIMENSIONS ht x w x depth	103 x 59mm 3.6 x 2.4"	109 x 59mm 3.8 x 2.4"	109 x 60mm 3.8 x 2.4"	109 x 60mm 3.8 x 2.4"	161 x 76mm 6.3 x 3"	161 x 76mm 6.3 x 3"
SHEAVE Ø *TREAD* **GATE OPENING**	12mm 0.47" 16mm 0.63"	12.7mm 0.5" 15mm 0.6"	12.7mm 0.5" 15mm 0.6"	12.7mm 0.5" 15mm 0.6"	*24mm 0.95"* 23mm 0.9"	*24mm 0.95"* 22mm 0.87"
PULLEY EFFICIENCY SWL	n/a	n/a	n/a	n/a	n/a	n/a
GATELOCK- SNAP SCREW Auto2 Auto3 Auto4 ACTIONS	■	■	■	■	■	■
CAPTIVE EYE BECKET	--	--	--	--	■■	■■
MATERIAL: 'BINER SHEAVE	Alu Alu	Alu Alu	Alu Alu	Alu Alu	Alu Alu	Alu Alu
STANDARDS	UIAA CE ■	UIAA CE ■■	UIAA CE ■■	UIAA CE ■■	CE ■■	CE ■■
OTHER COLOURS	■ ■	■	■	■	■	■
NOTES						
WEBSITE	dmmwales.com	dmmwales.com	dmmwales.com	dmmwales.com	dmmwales.com	dmmwales.com

Images NOT to Scale						
MANUFACTURER	HARKEN	HARKEN	KAILAS	LACD	PETZL	PETZL
MODEL VARIANT	Snatchet INSN65R	Snatchet INSN65	Rota EC202	Trilock W 1242	RollClip Snap P74	RollClip Triac P74TL
ORIGIN						
COST (inc Tax/VAT)	£264 $330 €304	£228 $286 €263	£44 $51 €46	£35 $49 €40	£33 $38 €46	£40 $50 €44
WEIGHT min- max (see gatelock colour-coding)	178g 6.3oz	178g 6.3oz	121g 4.3oz	131g 4.6oz	69g 2.4oz	115g 4oz
MBS Minor Axis Major Axis Gate Open	20kN 4496lbf 38kN 00lbf 16kN 1574lbf	20kN 4496lbf 38kN 00lbf 16kN 1574lbf	8kN 1798lbf 22kN 4946lbf 7kN 1574lbf	7kN 1574lbf 20kN 4496lbf 8kN 1798lbf	8kN 1798lbf 20kN 4496lbf 7kN 1574lbf	8kN 1798lbf 20kN 4496lb 7kN 1574lbf
MIN-MAX ROPE Ø	9-14mm ⅜-⁹⁄₁₆"	9-14mm ⅜-⁹⁄₁₆"	7-13mm ⁹⁄₃₂-½"	7-13mm ⁹⁄₃₂-½"	7-13mm ⁹⁄₃₂-½"	7-13mm ⁹⁄₃₂-½
DIMENSIONS ht x w x depth	146.5 x 72mm 5.8 x 2.8"	146.5 x 72mm 5.8 x 2.8"	112 x 73mm 5.8 x 2.8"	130 x 70mm 5.1 x 2.75"	109 x 60mm 4.3 x 2.4"	109 x 60mm 4.3 x 2.4"
SHEAVE Ø *TREAD* **GATE OPENING**	65mm 2.6" 21mm 0.825"	65mm 2.6" 21mm 0.825"	25mm/1" 24mm/1"	*18mm 0.7"* 23mm 0.9"	*18mm 0.7"* 25mm 1"	*18mm 0.7"* 22mm 0.87"
PULLEY EFFICIENCY SWL	n/a 10kN	n/a 10kN	85% 4kN	n/a	85% 4kN	85% 4kN
GATELOCK- SNAP SCREW Auto2 Auto3 Auto4 ACTIONS	■	■	■	■	■	■
CAPTIVE EYE BECKET	--	--	--	--	□-	□-
MATERIAL: 'BINER SHEAVE	Steel StSt -	Steel StSt	Alu Alu	Alu Alu	Alu Alu	Alu Alu
STANDARDS	CE ■ ANSI	CE ■■ ANSI	CE ■■■	CE ■■■	CE ■■ EAC UKCA	CE ■■■ EAC U
OTHER COLOURS	■	■	■ ■		■	■
NOTES	Ratchet version	Non-Ratchet version	Hot-forged, no snag nose	DISCONTINUED?		
WEBSITE	harkenindustrial.com	harkenindustrial.com	kailasgear.com	lacd.de	petzl.com	petzl.com

CARABINER PULLEYS

							expansion column
	DMM	DMM	DMM	DMM	EDELRID	EDELRID	
CB	Revolver Rig Durolok A5841CB	Revolver Rig SG Dbl A5822CB	Revolver Rig LockSafe Dbl A5872CB	Revolver Rig Durolok Dbl A5842CB	Axiom Slider 54640	Axiom 54640	
	UK	UK	UK	UK	DE	DE	
10	£87 $110 €95	£87 $110 €95	£90 $115 €120	£95 $120 €110	£42 $54 €50	£36 $50 €43	
	213g 7.5oz	214g 7.5oz	219g 7.7oz	226g 8oz	68g 2.4oz	66g 2.3oz	
f	7kN 1574lbf 25kN 5620lbf 7kN 1574lbf	7kN 1574lbf 25kN 5620lbf 7kN 1574lbf	7kN 1574lbf 25kN 5620lbf 7kN 1574lbf	7kN 1574lbf 25kN 5620lbf 7kN 1574lbf	8kN 1798lbf 22kN 4945lbf 7kN 1574lbf	8kN 1798lbf 22kN 4945lbf 7kN 1574lbf	
	13mm ½"	8mm 5/16"	8mm 5/16"	8mm 5/16"	13mm ½"	13mm ½"	
	161 x 76mm 6.3 x 3"	161 x 76mm 6.3 x 3"	161 x 76mm 6.3 x 3"	161 x 76mm 6.3 x 3"	125 x 65mm 4.9 x 2.6"	125 x 65mm 4.9 x 2.6"	
"	*24mm 0.95"* 20mm 0.8"	*2x 25.7mm 1"* 23mm 0.9"	*2x 25.7mm 1"* 22mm 0.87"	*2x 25.7mm 1"* 20mm 0.87"	*12mm 0.47"* 15mm 0.6"	*12mm 0.47"* 15mm 0.6"	
	n/a	n/a	n/a	n/a	86% 4kN	86% 4kN	
	■	■	■	■	■	■	
	■■	■■	■■	■■	■	--	
	Alu Alu	Alu Alu	Alu Alu	Alu Alu	Alu Alu	Alu Alu	
	CE ■■	CE ■■	CE ■■	CE ■■	CE ■	CE ■	
	■	■	■	■	-	■	
						3 friction settings to cater for rope sizes	
m	dmmwales.com	dmmwales.com	dmmwales.com.	dmmwales.com	edelrid.com	edelrid.com	
								expansion column
	PETZL	PETZL	RNR	SPIDER SLACKLINES	SPIDER SLACKLINES	TREERUNNER	
ct	RollClip Z SL P75SL	RollClip Z Triact P75TL	Onyx RC049	Rollex Highline SS 2P	Rollex Highline SG 2P	Spin 64055	
	FR	FR	US	IT	IT	US	
4	£33 $38 €45	£40 $48 €46	£40 $39 €46	£43 $55 €50/75	£47 $58 €53	£31 $39 €35	
	105g 3.7oz	110g 3.9oz	139g 4.9oz	129g 4.6oz	139g 4.9oz	132g 4.7oz	
f	8kN 1798lbf 20kN 4496lbf 7kN 1574lbf	8kN 1798lbf 20kN 4496lbf 7kN 1574lbf	8kN 1798lbf 20kN 4496lbf 7kN 1574lbf	8kN 1798lbf 20kN 4496lbf 7kN 1574lbf	8kN 1798lbf 20kN 4496lbf 7kN 1574lbf	7kN 1574lbf 20kN 4496lbf 8kN 1798lbf	
½"	7-13mm 3/32-½"	7-13mm 3/32-½"	7-13mm 3/32-½"	web24-26mm0.9-1"	web24-26mm0.9-1"	7-13mm 3/32-½"	
	109 x 60mm 4.3 x 2.4"	109 x 60mm 4.3 x 2.4"	n/a	130 x 67mm 5.1 x 2.6"	130 x 67mm 5.1 x 2.6"	130x73mm 5.1 x 2.9"	
"	*18mm 0.7"* 21mm 0.825"	*18mm 0.7"* 20mm 0.8"	?mm ?mm	27mm/1.1" 31mm/1.2"	25mm/1" 24mm/1"	21mm/1" 24mm/1"	
	85% 4kN	85% 4kN	n/a 4kN	n/a 4kN	n/a 4kN	n/a n/a	
	■	■	■	■	■	■	
	□-	□-	--	--	--	--	
	Alu Alu	Alu Alu	Alu Alu	Alu Alu	Alu Alu	Alu Alu	
KCA	CE ■■ EAC UKCA	CE ■■ EAC UKCA	-	CE ■	CE ■	CE ■	
	■	■	■	■■■■	■■■■	■■■■	
				Steel or Stainless Steel bearing Small lanyard eye			
	petzl.com	petzl.com	rocknrescue.com	spider-slacklines.com	spider-slacklines.com	grube.eu	

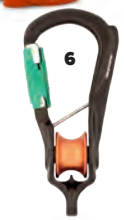
UPDATED Jan '24

PULLEYS
for General Rope-Use

IMAGES NOT TO SCALE

Pulleys 101 states that the Minimum Breakling Load or strength quoted for any pulley is the resultant total of input forces on the two, four or six stands of rope entering and leaving the pulley (depending on whether it is a single double or triple sheave pulley). That means that if the MBS is 20kN you can only input 10kN on each of 2 stands of rope NOT 20kN on each stand of rope. This is referred to as the **WLL or Working Load Limit** but is a straight 50% (or 33% in a triple sheave) of the MBS so **NOT** the same as the WLL we see on all other rope equipment which is a ratio of the MBS from 4:1 to 15:1 and therefore a much lower figure. This ratio varies depending on what the manufacturer or end-user determines is 'safe'. In rescue an ultra-safe ratio between 10:1 and 15:1 is used whereas the arb industry routinely uses 7:1. Divide the MBS by 7 or 10 or whatever your local protocols are to get the appropriate WLL. Not all quote WLL but figures shown in black in the WLLMBS row are those advocated by the manufacturer based on between 4 &15:1 ratio not simply the 2:1 or 3:1 fractional loading stamped on the pulleys. You cannot simply look at the WLL of a pulley to see if it is stronger or weaker than another unless you know the ratio they are using. Also bear in mind that the actual force is on the main hole with the carabiner - **the max MBS does NOT relate to any secondary attachment eyes like the becket,** with the exception of the model shown above, these are invariably around **30-50% weaker** than the main eye as they are only intended to take partia load in a mechanical advantage system. Also remember that a double or triple sheave pulley is designed to be loaded across all sheaves not a single sheave pulley with one or two spare sheaves! You could use a central sheave on a triple to maintain balance but the load limit may be considerably less than is stamped on it. The strongest in this GUIDE is the *P3Ta* by *LRV8* of Sydney. This is a resurrection of our old mates *SRTe*'s *P3* with a whopping 120kN MBS and WLL of 24kN more akin to an impact pulley. There are several different and distinct types of pulley used in rope-related activities- some of which have their own separate GUIDES within these **BUYERSGUIDES**:

1) **General Purpose Swivel Cheek Pulleys**
2) **General Purpose Fixed Cheek Pulleys**
3) **PMPs** or **Prusik Minding Pulleys**
4) **HitchClimbing Pulleys**: Unique to arborism. Developed for use in a Doubled rope 'prusik' hitch climbing system. Any small pulley with multiple top eyes is in this category.
5) **Swivel Pulleys** (integral swivel and locking cheek)
6) **Carabiner-Pulleys** a sheave is integrated into the carabiner - almost always lighter duty options.
7) **Stand-Alone Sheaves**: often using a shackle/carabiner as the axle.
8) **Progress Capture Pulleys** with an integral cam
9) **Carriage/Trolley Pulleys** for use on ziplines, tyroleans and cableways
10) **Tandem pulleys** - (a sub-set of 9) above) two pulley sheaves mounted along the same rope-line but on separate axles within a frame (as distinct from a double pulley where the sheaves are side by side on the same axle).
11) **Knot-Passing Pulleys** . Aka *Kootenay Carriage* and is a vast nylon sheave about a foot wide within a swivel frame with numerous attachment holes. Intended as a highline trolley where ropes have been joined and would therefore not fit through most regular trolleys.
12) **Impact Pulleys** ultra heavy-duty pulleys designed to arrest a falling load (section of tree). The top connection point is a solid pin or bollard rather than an eye in the pulley cheeks.
13) **Shear Load Pulleys**. Designed to divert load and impart friction in a lowering system with a non-rotating sheave
14) **All of the Above**: Well, not quite but *Rock Exotica/CMC*'s latest *SwivaBiner* is about as close as we currently are to an all-round rope tool. *Rock Exotica* actually has a utility version of the *Omni-Block* that can take an impact load so if they married that to their *SwivaBiner* instead of this regular *Omni* and added a progress capture cam they would indeed be all the way there!



IN THE FOLLOWING TABLES.....
SHEAVE(WHEEL)/TREAD DIAMETER Ø: The diameter of the wheel. ***This can vary from the outer edge to the bottom of the rope channel (tread) and many companies do not state which figure they are using so there can be quite a difference. this figure gives you an idea of the overall size of pulley.*** The smaller the wheel the greater the proportion of diameter would be lost in the rope channel ie. a 1" diameter sheave could lose 30% of that diameter when measured to the bottom of the rope channel (tread) whereas a 4" diameter sheave may only lose around 8% of the total diameter. On *Petzl*'s micro-pulleys for instance, the ame 20mm sheave is shown as 30mm on other models- ith the same size sheave. Use as large a diameter as ossible because the tighter the bend on the rope the more impacts the strength of the rope. If you are able to use 4" or greater sheave you would lose none of the rope's -line strength. **We will update all pulleys to show which dimension is being used - any in green are verified as being the minimum or tread diameter.**
PRUSIK TEND LOCK BECKET: '**Pruslik tend**' is more usually called **prusik-minding** and refers to the ability of the pulley to halt a prusik knot's upward slide on a moving rope rather than it disappear into the pulley wheel, the prusik then locks when the rope is released. This is achieved with a squaring and sometimes a slight inward curve on the bottom part of the pulley frame. Unlike a regular round-bottom pulley, these can often stand on their flatter base. Some designs are more

MAGNAPULLEYS

Two sets provide the operator 2 Doubles, 1 Double and 2 Singles, or 4 Singles, drastically reducing the hardware necessary for work and rescue rope systems. This flexibility is a great advantage to small teams or teams who have to travel or climb a great distance to their work site (Mountain Rescue, Military/Tactical, Work at Height, Arborist, Etc.) and need to strip down their kit to the minimum.

The Patented Magnapulleys offer a revolution in equipment flexibility, providing a Double Sheave Pulley that splits apart into two Single Sheave Pulleys.

CE and UKCA Certified

Exceeds the NFPA Standard 1983 (2017 ed) for Technical use.

Max Rope Diameter: 1/2", 12.5mm

Sheave Diameter at Center: 1"

Double Pulley 3 Sigma Strength Rating: 40kN

Single Pulley 3 Sigma Strength Rating: 28kN

andersonrescue.com

complex like the *CAMP Sphinx* with an extension to its frame and some like the Omni (see Swivel Pulley Guide) have a teardrop extension on one side.

LOCK refers to the locking of the pulley cheeks (or in the case of *ISC*'s new *Ultralink*, the shackle arms) so that they cannot be swivelled open unless you undo the securing pin/bolt. This may be a bolt that requires a tool or it may be push-button. Button release is now common with the bigger, swivel pulleys like *Rock Exotica*'s *Omni* Pulleys, *Petzl's Spins* and *SMC* 's *Apex* but is also on the much smaller *ISC's Ultralink*. These requires no tools and is a hand action only but there are only the *Ultralink*s and *SMC*'s swivel-less *Apex Direct* in the regular pulley selection. Of course, they're unusual in regular pulleys because the carabiner or connector you use to clip into virtually all regular pulleys, locks the cheeks and stops them swivelling. It is only on cheeks that can have the rope applied while the pulley is still connected to the anchor that we see the locking cheeks Bolt or screw release means that a tool, often an Allen Key, is required to open the cheeks in order to access the sheave for rope placement (or you could feed rope in from one end as if it were a fixed-cheek pulley). Again there are none in the current selection because these are all life-support pulleys - this feature is more commonly seen in engineering where a pulley is a machinery component that should not be undone except for maintenance. **BECKET** is a load-bearing bottom connection point - usually an obvious eye but it may be an extension of the frame as with the bottom of the *DMM Pinto* pulleys. The title image shows the *RevolutionFR* from *Conterra* with a 'becket' eye through the middle (similar to some Impact Pulleys)- expect to see more of this. Note that you cannot load the joining bar beneath the sheave of some models unless it specifically says so.

BUSH/BEARING/PIN The efficiency part of a pulley that tries to minimize friction under load. Bushings are the grunts of the industry, able to take abuse but not quite as efficient as a bearing. Bearings are ball bearing or needle rods that rotate against each other under load. They require more care than a bushing but are more efficient. A PIN is a simple axle with no frictional assistance beyond you daring to add a blob of grease (nor recommended in life-support rope activities). These will be simple pulley sheaves with a shackle bar or a carabiner acting as the axle. However, one or two models, notably the *PulleyOne* by *AtHeight* and the *Ultralight* by *ISC* might appear to be simple pin (or carabiner axles) but they both have independent bearings so they are not simply a passive 'PIN'.

Ball bearings and needle bearings are often shown simply as bearings and we may not have differentiated. Unless you are operating at extreme speed or extreme loads you are unlikely to notice the difference. Needle bearing are not quite as efficient as ball-bearings but they are able to take a higher load and even a bit of shock loading (not recommended) which ball bearings and are almost as robust as bushings. *CMI* use a lot of needle bearings which are effectively a pile of cylinders rotating against each other so the load is better spread than with the point-loaded (but friction-reducing) ball bearings.

EFFICIENCY: is dictated by the quality of the bushing or bearing that is handling the load. Bearings are better for lower loads at higher speed while bushing are good for high loads at low speed. Note that efficiency will be multiplied beyond 100% by the number of sheaves.

Images NOT to Scale								
MANUFACTURER	ART	CMI	CMI	CMI	DMM	DMM	DMM	DMM
MODEL VARIANT	Cocoon 5 -	RP141	RP151	MicroTrolley RP161RS	HitchClimber Eccentric pul500	Rigger pul400	Rigger becket pul410	HitchClim Triple Attach
ORIGIN								
COST (inc Tax) Conversion-only	£101 $157 €108	£48 $65 €52	£46 $62 €50	£91 $110/114 €105	£65 $90 €85	£65 $90 €85	£85 $110 €100	£55 $75
WEIGHT	177g 6.2oz	44g 1.5oz	113g 4oz	204/226g 7.2/8oz	176g 6.2oz	176g 6.2oz	198g 3.5oz	133g 4.7oz
MAX LOAD- WLL MBS	- 29kN - 6520lbf	3.1 31.1kN 700 7000lbf	3.1 31.1kN 700 7000lbf	8.8 44kN 1980 9900lbf	6 32kN 1349 6744lbf	8 40kN 1798 8992lbf	8 40kN 1798 8992lbf	6 30k 1349 67
MAX ROPE Ø	≤14mm <9/16"	≤12.7mm <½"	≤12.7mm <½"	≤13mm <½"	7-14mm 5/16-9/16"	7-14mm 5/16-9/16"	7-14mm 5/16-9/16"	≤14m <9/16
SHEAVE/TREAD Ø	30mm 1.2"	32mm 1.25"	32mm 1.25"	32mm 1.25"	28mm 1.1"	28mm 1.1"	28mm 1.1"	28mr 1.1"
DIMENSIONS ht x w x depth	90 x 42 x 36mm 3.5 x 1.6 x 1.4"	76x70x51mm 2.8x2.75x2"	102x76x51mm 3.75x2.8x2"	114x50x32mm 4.5 x 2 x 1.25"	96x76x44mm 3.8x2.8x1.7"	94x68x33mm 3.7x2.7x1.3"	124x68x33mm 4.9 x2.7x1.3"	94x68x3 3.7x2.7x
PRUSIK TEND LOCK BECKET	- - -	■ - -	■ - -	■ - -	■ - - - -	■ - -	■ - ■	■ - -
BUSHING BEARING PIN	■	■	■	■	■	■	■	■
CHEEKS - SWIVEL FIXED	■	■	■	■	■	■	■	■
EFFICIENCY								
CHEEK SHEAVE AXLE	Alu Alu Alu	Alu Alu Alu	Alu Alu Alu	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu
STANDARDS	CE	ANSI	-	CE	CE	CE NFPA	CE NFPA	CE
OTHER COLOURS	-	-	-	-	■ ■ ■ ■	■	■	■
NOTES	rope feeds directly onto top pin			RS=removable axle/ sheave	For HitchClimber prusik system			For HitchCli prusik sys
WEBSITE	climb-art.de	cmigearusa.com	cmigearusa.com	cmigearusa.com	dmmwales.com	dmmwales.com	dmmwales.com	dmmwales

MATERIALS: CHEEK SHEAVE AXLE: the cheeks/frame are in black while the sheave/wheel is shown in orange and the axle material in green . Any that purport to handle wire rope will be in stainless steel as the hardest wearing material while those looking to shed weight may have plastic (nylon, Delrin or Celcon) sheaves. Some axles shown as StSt for stainless steel may actually be steel or galvanised but not 'stainless'

Aluminium or Aluminium Alloy = Alu

Stainless Steel = StSt

Zinc-Coated Steel = ZStl

STANDARDS: As usual, you can't go far wrong with a bona-fide European CE or US NFPA mark (with EN12278 & NFPA requiring tamper-proof rivets) but there is also US ANSI (Industrial) and a number of country-specific standards. Because so many are, or were, designed for mountaineering, UIAA is also common. EAC is for eastern Europe and UKCA is a more recent UK introduction to reinvent the wheel and offer an alternative to the pan-European CE. Virtually pointless.

OTHER COLOURS: ☐ = Polished metal finish. Many have a black option which usually costs a little more. See **BLACK EQUIPMENT BUYERS GUIDE** for tactical personnel and film/stage riggers who need the black to blend into the background.... unless they're in snow.

COSTS shown are the full retail including VAt/tax and rounded up to the nearest whole figure.

Simple currency conversions are shown in orange. These are a rough guide only. They exclude import duty/shipping so the actual price will probably be much higher Below is an extracted selection of arb-specific pulleys mostly for use with climbing hitches in Moving/ Doubled Rope Systems (DdRT/MRS),some for redirect.

									
M	**ISC**	**NOTCH**	**OMEGA PACIFIC**	**PROTEKT**	**ROCK EXOTICA**	**SINGING ROCK**	**SKYLOTEC**	**STEIN**	**STEIN**
mber pul100	**Phlotich** RP282BRBS	**Rook** x	**Octavia** -	**TREE UP** TU 421	**Hydra** P4	**Miky** RK806	**CT Orbiter A** 2P665	**Skywalker** -	**Skywalker Pro** -
€65	**£51 $75 €60**	**£111 $120 €154**	**£50 $60 €57**	**£23 $28 €26**	**£127 $120 €134**	**£33 $45 €38**	**£30 $43 €35**	**£40 $55 €48**	**£51 $75 €60**
g z	**145g 5oz**	**189g 6.7oz**	**166g 5.85oz**	**160g 5.6oz**	**189g 6.7oz**	**105g 3.7oz**	**104g 3.7oz**	**100g 3.5oz**	**145g 5oz**
N 44lbf	**- 30kN - 6744lbf**	**2.8 28kN 629 6295lbf**	**- 32kN - 4945lbf**	**5 25kN 1124 5620lbf**	**5 28kN 1124 6295lbf**	**- 28kN - 6295lbf**	**5 30kN 1124 6744lbf**	**- 36kN - 8093lbf**	**- 30kN - 6744lbf**
m "	**≤13mm ≤½"**	**≤13mm ≤½"**	**8-14mm 5/16-9/16"**	**≤13.5mm ≤17/32"**	**≤13mm ≤½"**	**≤13mm ≤½"**	**8-13mm 5/16-½"**	**≤13mm ≤½"**	**≤13mm ≤½"**
m "	**42/30mm 1.6/1.2"**	**53mm 2.1"**	**44/30mm 1.7/1.2"**	**38mm 1.5"**	**35/25mm 1.4/1"**	**30mm 1.2"**	**19mm 0.75"**	**38mm 1.5"**	**42/30mm 1.6/1.2"**
3mm 1.3"	**97x69x34mm 3.8x2.7x1.3"**	**112x63.5x33mm 4.6 x 2.5 x 1.3"**	**94x69x31mm 3.7x2.7x1.2"**	**90x70x37mm 3.5x2.75x1.5"**	**112x63.5x33mm 4.4x 2.5 x 1.3"**	**76x55x34mm 3x2.2x1.3"**	**71x58x32mm 2.8x2.3x1.3"**	**74x60x29mm 2x1.77x1.1"**	**97x69x34mm 3.8x2.7x1.3"**
	■ - -	- - -	■ - -	■ - -	- - -	- - -	■ -	■ - -	■ - -
	■	■	■	■	■	■	■	■	■
	■	■	■	■	■	■	■	■	■
		>90%			**>90%**	**81%**	**80%**	**-**	
StSt	**Alu Alu StSt**	**Alu Alu StSt**	**Alu Alu StSt**	**Alu Alu Alu**	**Alu Alu StSt**	**Alu Alu StSt**	**Alu Alu StSt**	**Alu Alu StSt**	**Alu Alu StSt**
	CE UKCA	**ANSI CE**	**CE**	**CE**	**CE**	**CE**	**CE**	**CE**	**CE UKCA**
	■ ■ ■ ■ ■	-	-	■ ■	-	■	-	■	■
mber tem	For HitchClimber prusik system			Updated model'23			NB: this CT data differs from Skylotec's		For HitchClimber prusik system
s.com	iscwales.com	notchequipment.com	omega-pacific.com	protekt.pl	rockexotica.com	singingrock.com	skylotec.com	stein.com	stein.com

Images NOT to Scale								
MANUFACTURER	ALPIDEX	ANPEN	ANPEN	ANPEN	ANPEN	ARS ANDERSON RESCUE SOLUTIONS	ARS ANDERSON RESCUE SOLUTIONS	ARS ANDERSON RESCUE
MODEL VARIANT	Mobile 107	U29 -	U28 -	U01 -	U02 2155	Magna Single	Magna Becket	Magna D
ORIGIN								
COST (inc Tax) Conversion-only	£15 $22 €16	£38 $46 €45	£54 $65 €62	£25 $30 €29	£58 $70 €66	£75 $90 €86	£91 $110 €104	£145 $175
WEIGHT	87g 3.1oz	360g 12.7oz	407g 14.4oz	280g 9.9oz	500g 17.6oz	227g 8oz	255g 9oz	454g 16oz
MAX LOAD- WLL MBS	- 20kN - 4496lbf	- 32kN - 7195lbf	- 32kN - 7195lbf	- 32kN - 7195lbf	- 32kN - 7195lbf	- 28kN - 0lbf	- 26kN -5845lbf	- 40k - 8992
MAX ROPE Ø	≤11mm ≤7/16"	8-13mm 5/16-1/2"	8-13mm 5/16-1/2"	8-13mm 5/16-1/2"	8-13mm 5/16-1/2"	≤11mm ≤7/16"	≤11mm ≤7/16"	≤11m ≤7/16"
SHEAVE/TREAD Ø	20mm 0.8"	48mm 1.9"	48mm 1.9"	48mm 1.9"	48mm 1.9"	25mm 1"	25mm 1"	25mr 1"
DIMENSIONS ht x w x depth	72 x 40 x 28mm 2.8x1.6x1.1"	110 x 73mm 4.3 x 2.9"	176 x 94mm 7 x 3.7"	121 x 82 x36mm 4.7 x 3.2x 1.4"	147x82x60mm 5.8 x3.2x2.4"	76x63x26mm 3 x 2.5 x 1"	105x63x26mm 4.1 x 2.5 x 1"	76x63x5 3 x 2.5 x
PRUSIK TEND LOCK BECKET	- - -	- - -	- - -	- - -	- - ■	■ - -	■ - ■	■ - -
BUSHING BEARING PIN	■	■	■	■	■	■	■	■
CHEEKS - SWIVEL FIXED	■	■	■	■	■	■	■	■
EFFICIENCY	-	-	-	-	-	-	-	-
CHEEK SHEAVE AXLE	Alu Alu Alu	Alu Alu Alu	Alu Alu Alu	Alu Alu Alu	Alu Alu Alu	Alu Alu Alu	Alu Alu Alu	Alu Alu
STANDARDS	CE	CE	CE	CE	CE	CE UKCA	CE UKCA	CE UK
OTHER COLOURS	■■■■■■■■■	■■■■	■■	■	■	-	-	-
NOTES						Magnetic cheeks to form double sheave	Magnetic cheeks to form double sheave	Magnetic-car into single p
WEBSITE	alpidex.com	en.anpen.net	en.anpen.net	en.anpen.net	en.anpen.net	andersonrescue.com	andersonrescue.com	andersonresc

Images NOT to Scale								
MANUFACTURER	BEAL	BEAL	BEAL	BLACK DIAMOND	BLUEWATER	BLUEWATER	BLUEWATER	BLUEWA
MODEL VARIANT	Transf'air 1B -	Transf'air 2 -	Transf'air 2B -	RP102D	Micro Pulley 61000	Mini Pulley -	Mini Dbl Pulley 610121	Mini Dbl P 61012
ORIGIN								
COST (inc Tax) Conversion-only	£39 $46 €43	£46 $61 €57	£63 $77 €73	£25 $25 €27	£39 $15 €16	£44 $22 €24	£57 $28 €27	£59 $30
WEIGHT	280g 9.9oz	475g 17oz	500g 17.6oz	76g 2.7oz	120g 4.2oz	50g 1.8oz	80g 2.8oz	85g 3oz
MAX LOAD- WLL MBS	5 30kN 1125 6744lbf	10 30kN 2250 6744lbf	10 30kN 2250 6744lbf	- 17kN - 3822lbf	- 22kN - 2445lbf	- 24kN - 5396lbf	- 24kN - 5396lbf	- 24k - 5396
MAX ROPE Ø	≤16mm ≤5/8"	≤16mm ≤5/8"	≤16mm ≤5/8"	n/a n/a	≤13mm 1/2"	≤8mm ≤5/16"	≤8mm ≤5/16"	≤8mr ≤5/16"
SHEAVE/TREAD Ø	48mm 1.9"	2x 48mm 2x 1.9"	2x 48mm 2x 1.9"	n/a n/a	21mm 0.825"	21mm 0.825"	2x 21mm 2x 0.825"	2x 21r 2x 0.82
DIMENSIONS ht x w x depth	118x83x36mm 4.6x3.3x 1.4"	150x83x60mm 4.6x3.3x2.4"	150x83x60mm 4.6x3.3x2.4"	n/a n/a	81x36mm 3.2x 1.4"	73x39x25mm 2.9x1.5x 0.9"	73 x 39mm 2.9 x 1.5"	91 x 39 3.6 x 1.
PRUSIK TEND LOCK BECKET	- - -	- - ■	- - ■	- - -	- - -	■ - -	■ - -	■ - ■
BUSHING BEARING PIN	■	■	■	■	■	■	■	■
CHEEKS - SWIVEL FIXED	■	■	■	■	■	■	■	■
EFFICIENCY	-	-	-	-	-	-	-	-
CHEEK SHEAVE AXLE	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	AluNylon Alu	Alu Alu ZStl	Alu Alu StSt	Alu Alu StSt	Alu Alu
STANDARDS	CE UIAA	CE UIAA	CE UIA	CE	CE UIAA	CE	CE	CE
OTHER COLOURS	-	-	-	-	■	-	-	-
NOTES								
WEBSITE	beal-planet.com	beal-planet.com	beal-planet.com	blackdiamond.com	bluewaterropes.com	bluewaterropes.com	bluewaterropes.com	bluewaterrop

									
SOLUTIONS ouble	ARS ANDERSON RESCUE SOLUTIONS Magna Double Becket	ART Link 2 -	ART Turnbase PSA -	AT HEIGHT JAMMY DESIGN PulleyOne P36	AUSTRIALPIN AL02B -	BEAL Transf'air Mini -	BEAL Transf'airf Fixe -	BEAL Transf'air FixeB -	BEAL Transf'air 1 -
€166	£178 $215 €204	£47 $53 €50	£73 $88 €83	£92 $105 €96	£11 $15 €13	£23 $31 €29	£17 $26 €24	£38 $48 €45	£31 $41 €38
g z	510g 18oz	135g 4.8oz	160g 5.6oz	140g 5oz	48g 1.7oz	120g 4.2oz	90g 3.2oz	120g 4.2oz	270g 9.5oz
N lbf	- 40kN - 8992lbf	- N/AkN -N/Albf	- 24kN -5396lbf	- 36kN - 8093lbf	4 15kN 899 3372lbf	5 20kN 1125 4496lbf	5 20kN 1125 4496lbf	5 20kN 1125 4496lbf	5 30kN 1125 6744lbf
m "	≤11mm ≤7/16"	≤14mm ≤9/16"	≤14mm ≤9/16"	≤11.5mm ≤7/16"	≤12mm ≤1/2"	≤11mm ≤7/16"	≤12mm ≤1/2"	≤13mm ≤1/2"	≤16mm ≤5/8"
n	25mm 1"	22mm 0.9"	27mm 1.1"	50/42mm 2/1.6"	19mm 0.75"	28mm 1.1"	20mm 0.8"	28mm 1.1"	48mm 1.9"
3mm 2.1"	105x63x53mm 0 x 2.5 x 2.1"	74 x 35mm 2.9 x 1.4"	115x48x38mm 4.5 x 1.9 x 1.5"	70x75x18mm 2.75 x 3 x 07"	70 x 36mm 2.75 x 1.4"	80 x 68 x 36mm 3.1 x 2.7 x 1.4"	82 x 45 x 21mm 3.2 x 1.8 x 0.8"	82 x 45 x 21mm 3.2 x 1.8 x 0.8"	118 x 83 x 36mm 4.6 x 3.3 x 1.4"
	■ - ■	- - -	- - ■	- - -	- - -	- - -	- - -	- - -	- - -
	■	■	■	■	■	■	■	■	■
	■	■	■	■	■	■	■	■	■
	-	-	-	-	-	-	-	-	-
Alu	Alu Alu Alu	Stst Alu StSt	Alu Alu Alu	Alu Alu -	AluPolymerAlu	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt
CA	CE UKCA	CE	CE	CE	CE	CE UIAA	CE UIAA	CE UIAA	CE UIAA
	-	-	-	-		-	-	-	-
n divide ulleys	Magnetic-can divide into single pulleys	redirect for *ART Rope Guide*	inc. bridging spindle for becket	Clip through axle					
ue.com	andersonrescue.com	climb-art.de	climb-art.de	atheightuk.com	austrialpin.at	beal-planet.com	beal-planet.com	beal-planet.com	beal-planet.com
									
ATER	CAMP Andry 0108	CAMP Sphinx 2152	CAMP Sphinx Pro 2153	CAMP Tethys 2154	CAMP Tethys Pro 2155	CAMP Dryad 2156	CAMP Dryad Pro 2157	CAMP Naiad 2158	CAMP Naiad Pro 2159
Pulley 2									
€29	£11 $14 €12	£28 $30 €32	£34 $35 €40	£31 $30 €35	£35 $36 €40	£49 $48 €50	£58 $60 €69	£49 $60 €57	£69 $70 €80
	100g 3.5oz	95g 3.4oz	85g 3oz	100g 3.5oz	90g 3.2oz	170g 6oz	155g 5.5oz	280g 9.9oz	300g 10.6oz
N lbf	- 22kN 0 4945lbf	4 24kN 899 5396lbf	6 25kN - 5620lbf	4 24kN 899 5396lbf	6 25kN - 5620lbf	4 24kN 899 5396lbf	7 26kN 1574 5845lbf	7 44kN 1574 9892lbf	10 46kN 0 10341lbf
n "	≤12mm < 1/2"	≤13mm ≤1/2"	≤13mm ≤1/2"	≤13mm ≤1/2"	≤13mm ≤1/2"	≤13mm ≤1/2"	≤13mm ≤1/2"	≤16mm ≤5/8"	≤16mm ≤5/8"
mm 25"	36/26mm 1.4/1"	28mm 1.1"	28mm 1.1"	28mm 1.1"	28mm 1.1"	2x 28mm 2x 1.1"	2x 28mm 2x 1.1"	49mm 2"	49mm 2"
mm .5"	75 x 36 x 30mm 3 x 1.4 x 1.2"	86x50x29mm 3.4x2x1.1"	86x50x29mm 3.4x2x1.1"	78x61x29mm 3x2.4x1.1"	78x61x29mm 3x2.4x1.1"	102x61x49mm 4x2.4x2"	102x61x49mm 4x2.4x2"	149x96x31mm 5.9x3.8x1.2"	149x96x31mm 5.9x3.8x1.2"
	- - -	■ - -	■ - -	■ - -	■ - -	■ - ■	■ - ■	■ - ■	■ - ■
	■	■	■	■	■	■	■	■	■
	■	■	■	■	■	■	■	■	■
	70%	80%	92%	80%	92%	80%	92%	90%	97%
StSt	ZStl Nylon ZSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt
	CE	CE EAC	CE EAC	CE EAC	CE EAC	CE EAC	CE EAC	CE EAC	CE EAC
	-	■	■	■	-	-	-	-	-
	designed for safety net tensioning								
es.com	camp.it	camp.it	camp.it	camp.it	camp.it	camp.it	camp.it	camp.it	camp.it

Images NOT to Scale						
MANUFACTURER	CAMP	CAMP	CMC	CMC	CMC	CMC	CMC	CMC
MODEL VARIANT	Janus 2160	Janus Pro 2161	Protech sngle 300501	Protech dbl 300502	HD2 300441	HD2 Double 300442	HD4 300461	Rescue s 30030
ORIGIN								
COST (inc Tax) Conversion-only	£65 $80 €79	£77 $100 €96	£58 $71 €67	£93 $115 €108	£149 $184 €172	£202 $249 €232	£234 $289 €270	£0 $0
WEIGHT	405g 14.3oz	425g 15oz	94g 3.3oz	156g 5.5oz	367g 13oz	605g 1.3lb	850g 1.9lb	145g 5.1oz
MAX LOAD- WLL MBS	8 38kN 0 8543lbf	12 42kN 2698 9442lbf	- 36kN - 8093lbf	- 36kN - 8093lbf	- 50kN - 11240lbf	- 50kN - 11240lbf	- 46kN - 10341lbf	- 52k - 1169
MAX ROPE Ø	≤16mm ≤⅝"	≤16mm ≤⅝"	≤11mm ≤7/16"	≤11mm ≤7/16"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13m ≤½"
SHEAVE/TREAD Ø	2x 49mm 2"	2x 49mm 2"	25mm 1"	2x 25mm 2x 1"	65/57mm 2.6/2.2"	2x 65/57mm 2x 2.6/2.2"	100/95mm 4/3.7"	38mm 1.5"
DIMENSIONS ht x w x depth	147 x 100 x 54mm 5.8 x 4x 2.1"	147 x 100 x 54mm 5.8 x 4 x 2.1"	76 x 62 x 19mm 3 x 2.45 x 0.75"	100 x 62 x 37mm 3.95 x 2.45 x 1.45"	145 x 107 x 30mm 5.7 x 4.2 x 1.2"	165 x 95 x 50mm 6.5 x 3.75 x 2"	197 x 140 x 30 mm 7.75 x 5.5 x 1.2"	89 x 64 x 3.5 x 2.5
PRUSIK TEND LOCK BECKET	■ - ■	■ - ■	■ - -	■ - -	■ - ■	■ - -	■ - ■	- - -
BUSHING BEARING PIN	■	■	■	■	■	■	■	■
CHEEKS - SWIVEL FIXED	■	■	■	■	■	■	■	■
EFFICIENCY	90%	97%						
CHEEK SHEAVE AXLE	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu
STANDARDS	CE EAC	CE EAC	CE	CE	NFPA	NFPA	NFPA	NFPA
OTHER COLOURS	■	-	-	-	-	-	-	-
NOTES			machined alloy	machined alloy	Discontinued	Discontinued	Discontinued	
WEBSITE	camp.it	camp.it	cmcpro.com	cmcpro.com	cmcpro.com	cmcpro.com	cmcpro.com	cmcpro.

Images NOT to Scale								
MANUFACTURER	CMI	CMI	CMI	CMI	CMI	CMI	CMI	CMI
MODEL VARIANT	RP104BB	RC104	RC105	RP105	RP105D	RC106	RP106BB	RP106
ORIGIN								
COST (inc Tax) Conversion-only	£95 $122 €0	£101 $121 €113	£70 $83 €78	£94 $113 €106	£151 $182 €170	£108 $130 €122	£124 $146 158	£198 $238
WEIGHT	283g 10oz	397g 14oz	454g 1lb 0oz	595g 1lb 5oz	1049g 2lb 5oz	490g 1lb 1oz	612g 1lb 6oz	1043 1lb 5.
MAX LOAD- WLL MBS	7.5 37.8kN 1700 8500lbf	7.5 37.8kN 1700 8500lbf	7.5 37.8kN 1700 8500lbf	14.2 71.2kN 3200 16000lbf	17.8 88.9kN 4000 20000lbf	7.5 37.8kN 1700 8500lbf	14.2 71.2kN 3200 16000lbf	17.8 88 4000 200
MAX ROPE Ø	16mm ⅝"	16mm ⅝"	16mm ⅝"	16mm ⅝"	16mm ⅝"	16mm ⅝"	16mm ⅝"	16mm ⅝"
SHEAVE/TREAD Ø	60mm 2.4"	60mm 2.4"	60mm 2.4"	75mm 3"	75mm 3"	60mm 2.4"	75mm 3"	75mm 3"
DIMENSIONS ht x w x depth	108x83x 25mm 4.25x3.25x1"	111x89x25mm 4.4 x 3.5 x 1"	152x83x25mm 6 x 3.25 x1"	165x108x26mm 6.5 x 4.25 x 1"	184x108x50mm 7.25 x 4.25 x 2"	152x83x25mm 6 x 3.25 x1"	165x108x26mm 6.5 x 4.25x1"	184x108x 7.25 x 4.2
PRUSIK TEND LOCK BECKET	- - -	- - -	- - ■	- - -	- - ■	- - ■	- - -	- - ■
BUSHING BEARING PIN	■* □	■	■	■	■	■	■* □	■
CHEEKS - SWIVEL FIXED	■	■	■	■	■	■	■	■
EFFICIENCY	95.6%	95.6%	91.4%	92.1%	n/a	95.6%	94.1%	94.1
CHEEK SHEAVE AXLE	StSt Alu StSt	StSt Steel StSt	StSt Steel StSt	StSt Alu StSt	StSt Alu StSt	StSt Steel StSt	StSt Alu StSt	StSt Alu
STANDARDS	CE	CE	CE	CE	CE	CE	CE	CE
OTHER COLOURS	-	-	-	-	-	-	-	-
NOTES	* Needle Bearing	wire cable-able *needle bearing	Wire cable-able	bush		wire cable-able *needle bearing	*needle bearing	
WEBSITE	cmigearusa.com	cmigearusa.com	cmigearusa.com	cmigearusa.com	cmigearusa.com	cmigearusa.com	cmigearusa.com	cmigearusa

	CMC	CMI	CMI	CMI	CMI	CMI	CMI	CMI	CMI
ingle 1	Rescue dbl 300302	RP101	RP101	RP102	RP102D	RC102	RP103	RP103BB	RC103
€0	£0 $0 €0	£40 $48 €46	£66 $78 €76	£60 $72 €68	£112 $134 €125	£69 $83 €78	£82 $104 €97	£90 $108 €100	£87 $104 €97
g z	249g 8.8oz	170g 6oz	0g oz	198g 7oz	510g 1lb 2oz	340g 12oz	198g 7oz	198g 7oz	340g 12oz
N lbf	- 45kN - 10116lbf	5.3 26.7kN 1200 6000lbf	5.3 26.7kN 1200 6000lbf	5.3 26.7kN 1200 6000lbf	5.3 26.7kN 1200 6000lbf	5.3 26.7kN 1200 6000lbf	5.3 26.7kN 1200 6000lbf	5.3 26.7kN 1200 6000lbf	5.3 26.7kN 1200 6000lbf
m	≤13mm ≤½"	≤16mm ≤⅝"	≤16mm ≤⅝"	≤16mm ≤⅝"	≤16mm ≤⅝"	≤16mm ≤⅝"	≤16mm ≤⅝"	≤16mm ≤⅝"	≤16mm ≤⅝"
n	2x 38mm 2x 1.5"	60mm 2.4"	60mm 2.4"	60mm 2.4"	2x 60mm 2.4"	60mm 2.4"	60mm 2.4"	60mm 2.4"	60mm 2.4"
23mm x 0.9"	117 x 64 x 43mm 4.6 x 2.5 x 1.7"	108 x 83 x 25mm 4.25 x 3.25 x 1"	165 x 89 x 25mm 6.5 x 3.5 x 1"	108 x 83 x 25mm 4.25 x3.25 x 1"	165 x 89 x 25mm 6.5 x 3.5 x 1"	111 x 89 x 25mm 4.4 x 3.5 x 1"	108 x 83 x 25mm 4.25 x 3.25x1"	108 x 83 x 25mm 4.25 x 3.25 x 1"	111 x 89 x 25mm 4.4 x 3.5 x 1"
	-	- - -	-	- - -	-	- - -	- - -	- - -	- - -
	■	■	■	■	■	■	■*	■	■*
	■	■	■	■	■	■	■	■	■
		93.3	93.3	91.4	n/a	91.4	95.6	n/a	95.6%
StSt	Alu Alu StSt	Alu Celcon StSt	Alu Celcon StSt	Alu Alu StSt	Alu Alu StSt	Alu Steel StSt	Alu Alu StSt	Alu Alu StSt	Alu Steel StSt
A	NFPA	-	-	-	-	-	-	-	CE
	-	■	-	-	-	-	-	-	-
			Discontinued				* Needle Bearing		* Needle Bearing
com	cmcpro.com	cmigearusa.com	cmigearusa.com	cmigearusa.com	cmigearusa.com	cmigearusa.com	cmigearusa.com	cmigearusa.com	cmigearusa.com

CMI PULLEYS NUMBERING 130,131, 145, 146,160.162 = Impact Blocks 139 & 143 = Trolleys. 141&151 =p64 No 128 or 150

	CMI	CMI	CMI	CMI	CMI	CMI	CMI	CMI	
5D	RP107	RP108BB	RP109	RP110	RP110	RP110D	RP111	RP112	
3 €222	£100 $120 €112	£132 $159 168	£37 $44 €42	£37 $45 €43	£48 $58 €55	£61 $74 €70	£65 $79 €74	£100 $121 €115	
g oz	822g 1lb 13oz	822g 1lb 13oz	71g 2.4oz	71g 2.5oz	71g 2.4oz	113g 4oz	318g 11.2oz	318g 11.2oz	
.9kN 00lbf	14.2 71.2kN 3200 16000lbf	14.2 71.2kN 3200 16000lbf	6.2 31.1kN 1400 7000lbf	6.2 31.1kN 1400 7000lbf	6.2 31.1kN 1400 7000lbf	6.2 31.1kN 1400 7000lbf	- 37.8kN 1700 8500lbf	7.5 37.8kN 1700 8500lbf	
n	16mm ⅝"	16mm ⅝"	≤12.7mm ≤½"	≤12.7mm ≤½"	≤12.7mm ≤½"	≤12.7mm ≤½"	16mm ⅝"	16mm ⅝"	
n	100mm 4"	100mm 4"	31mm 1.25"	31mm 1.25"	31mm 1.25"	2x 31mm 1.25"	60mm 2.4"	60mm 2.4"	
50mm 5 x 2"	190x127x26mm 7.5 x 5 x1"	190x127x26mm 7.5 x 5 x1"	70x41x24mm 2.75x1.6x1"	70x41x24mm 2.75x1.6x1"	70x41x24mm 2.75x1.6x1"	89x41x46mm 3.5 x1.6x1.8"	146x75x25mm 5.75 x 3 x1	152x83x25mm 6 x 3.25 x1	
	- - -	- - -	■ - -	■ - -	■ - -	- - ■	- - ■	- - ■	
	■	■* ■	■	■	■	■	■	■*	
	■	■	■	■	■	■	■	■	
%	93.7%	95.6%	84.1%	84.1%	?%	133.6%	91.4%	95.6%	
StSt	StSt Alu StSt	StSt Alu StSt	Alu Nylon Alu	Alu Alu Alu	Alu Alu Alu	Alu Alu Alu	StSt Alu StSt	StSt Alu StSt	
	-	-	CE	ANSI	ANSI	CE	CE	CE	
	-	-	-	-	-	■	-	-	
		*needle bearing		Alu sheave version shown	Alu sheave version shown			*needle bearing	
a.com	cmigearusa.com	cmigearusa.com	cmigearusa.com	cmigearusa.com	cmigearusa.com	cmigearusa.com	cmigearusa.com	cmigearusa.com	

Images NOT to Scale								
MANUFACTURER	CMI	CMI	CMI	CMI	CMI	CMI	CMI	CMI
MODEL VARIANT	RP113	RP114	RP115	RP116	RP116BB	RP117NFPA	RP118NFPA	RP118
ORIGIN								
COST (inc Tax) Conversion-only	£20 $24 €23	£46 $56 €53	£38 $46 €44	£44 $53 €51	£48 $65 €52	£48 $65/88 €52	£65 $79/88 €74	£60 $72
WEIGHT	43g 1.5oz	284g 10oz	198g 7oz	184g 6.5oz	184g 6.5oz	227g 8oz	340g 12oz	340g 12oz
MAX LOAD- WLL MBS	4.5 22.2kN 1000 5000lbf	6.6 33.3kN 1500 7500lbf	6.6 33.3kN 1500 7500lbf	6.6 33.3kN 1500 7500lbf	6.6 33.3kN 1500 7500lbf	7.1 35.5kN 1600 8000lbf	7.1 35.5kN 1600 8000lbf	7.1 35. 1600 80
MAX ROPE Ø	≤13mm ≤½"	≤12.7mm ≤½"	≤12.7mm ≤½"	≤12.7mm ≤½"	≤12.7mm ≤½"	≤12.7mm ≤½"	≤12.7mm ≤½"	≤12.7 ≤½"
SHEAVE/TREAD Ø	31mm 1.25"	60mm 2.4"	50mm 2"	50mm 2"	50mm 2"	50mm 2"	50mm 2"	50m 2"
DIMENSIONS ht x w x depth	75x38x20mm 3 x 1.5 x 0.8"	127x 0x24mm 5 x 2.5 x 0.9"	127x 0x24mm 5 x 2.5 x 0.9"	127x 0x24mm 5 x 2.5 x 0.9"	127x 0x24mm 5 x 2.5 x 0.9"	127x 0x21mm 5 x 2.5 x 0.8"	127x 0x21mm 5 x 2.5 x 0.8"	127x 0x2 5 x 2.5 x
PRUSIK TEND LOCK BECKET	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -
BUSHING BEARING PIN	■	■	■	■*	■	■*	■	■
CHEEKS - SWIVEL FIXED	■	■	■	■	■	■	■	■
EFFICIENCY	86.4%	89.2%	89.2%	90.6%	90.6%	90.6%	89.2%	89.2
CHEEK SHEAVE AXLE	Alu Nylon StSt	Alu StSt StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	StSt Alu StSt	StSt StSt StSt	StSt Alu
STANDARDS	CE	CE	CE	-	-	Exceeds NFPA but no cert	Exceeds NFPA but no cert	
OTHER COLOURS	-	■	-	-	-	-	-	-
NOTES				*Needle Bearing		*Needle Bearing		Alloy she version of F
WEBSITE	cmigearusa.com	cmigearusa.com	cmigearusa.com	cmigearusa.com	cmigearusa.com	cmigearusa.com	cmigearusa.com	cmigearusa

Images NOT to Scale								
MANUFACTURER	CMI	CMI	CMI	CMI	CMI	CMI	CMI	CMI
MODEL VARIANT	RP124NFPA	RP125	RP125NFPA	RP126	RP127	RP129NFPA	RP132	RP133N
ORIGIN								
COST (inc Tax) Conversion-only	£208 $250/320	£240 $288 €273	£300 $360 €341	£67 $81 €77	£112 $134 €128	£130 $156 €148	£79 $95 €90	£130 $15
WEIGHT	1792g 3lb 15oz	1792g 3lb 15oz	1792g 3lb 15oz	363g 12.8oz	476g 16.8oz	737g 1lb 10oz	397g 14oz	737g 1lb 10
MAX LOAD- WLL MBS	22.2 111.2kN 5000 25000lbf	22.2 111.2kN 5000 25000lbf	22.2 111.2kN 5000 25000lbf	- 44.5kN - 10000lbf	- 44.5kN - 10000lbf	14.2 71kN 3200 16000lbf	7.1 35.5kN 1600 8000lbf	11.5 57 2600 130
MAX ROPE Ø	≤16mm ≤⅝"	≤16mm ≤⅝"	≤16mm ≤⅝"	≤13mm ≤½"	≤13mm ≤½"	≤12.7mm ≤½"	≤12.7mm ≤½"	≤12.7 ≤½"
SHEAVE/TREAD Ø	2x 100mm 2x 4"	2x 100mm 2x 4"	2x 100mm 2x 4"	51mm 2"	2x 51mm 2x 2"	75mm 3"	50mm 2"	50m 2"
DIMENSIONS ht x w x depth	229x121x52mm 9 x 4.75 x 2"	229x121x52mm 9 x 4.75 x 2"	229x121x52mm 9 x 4.75 x 2"	152x70x22mm 6 x 2.75 x 0.8"	152x70x22mm 6 x 2.75 x 0.8"	172x132x22mm 6.75x5.2x0.8"	127x100x31mm 5 x 4 x 1.2"	172x133x 6.75x5x
PRUSIK TEND LOCK BECKET	- - ■	- - ■	- - ■	- ■ -	- ■ -	■ - -	■ - -	■ - ■
BUSHING BEARING PIN	■	■*	■*	■	■	■	■	■
CHEEKS - SWIVEL FIXED	■	■	■	■	■	■	■	■
EFFICIENCY	-	-	-	-	-	91.7%	90.7	-
CHEEK SHEAVE AXLE	StSt Alu StSt	StSt Alu StSt	StSt Alu StSt	StSt Alu StSt	StSt StSt StSt	StSt Alu StSt	StSt Alu StSt	StSt Alu
STANDARDS	NFPA	NFPA	NFPA	-	-	CE	*	*
OTHER COLOURS	-	-	-	-	-	-	-	-
NOTES		* Needle Bearing	* Needle Bearing	Intended as a ropes course pulley			*Not NFPA but exceeds test	*Not NFPA exceeds t
WEBSITE	cmigearusa.com	cmigearusa.com	cmigearusa.com	cmigearusa.com	cmigearusa.com	cmigearusa.com	cmigearusa.com	cmigearusa









Expansion Column

	CMI	CMI	CMI	CMI	CMI	CMI	CMI	CMI	
BA	RP119	RP120	RP120A	RP121	RP122NFPA	RP122SS	RP123NFPA	RP123SS	
€68	£84 $102 €97	£90 $108 €102	£81 $99 €94	£19 $22 €53	£100 $120/144	£150 $180 €0	£126$134/151	£166 $200 €190	
g z	397g 14oz	589g 20.8oz	397g 14oz	284g 10oz	998g 2lb 4oz	998g 2lb 4oz	998g 2lb 4oz	1633g 3lb 10oz	
5kN 00lbf	9.7 48.9kN 2200 11000lbf	9.7 48.9kN 2200 11000lbf	9.7 48.9kN 2200 11000lbf	- 30.2kN - 6800lbf	17.8 88.9kN 4000 20000lbf	17.8 88.9kN 4000 20000lbf	17.8 88.9kN 4000 20000lbf	17.8 88.9kN 4000 20000lbf	
nm	≤12.7mm ≤½"	≤12.7mm ≤½"	≤12.7mm ≤½"	≤16mm ≤⅝"	≤16mm ≤⅝"	≤16mm ≤⅝"	≤16mm ≤⅝"	≤16mm ≤⅝"	
n	2x 50mm 2x 2"	2x 50mm 2x 2"	2x 50mm 2x 2"	50mm 2"	100mm 4"	100mm 4"	100mm 4"	100mm 4"	
1mm 0.8"	165x66x37mm 6.5x2.6x 1.5"	165x66x37mm 6.5x2.6x 1.5"	165x66x37mm 6.5x2.6x 1.5"	140x108x31mm 5.5x4.25x1.2"	203x121x26mm 8 x 4.75 x 1"	203x121x26mm 8 x 4.75 x 1"	203x121x26mm 8 x 4.75 x 1"	203x121x26mm 8 x 4.75 x 1"	
	- - ■	- - ■	- - ■	■ - -	- - -	- - -	- - -	- - -	
	■*	■	■	■	■	■	■	■	
	■	■	■	■	■	■	■	■	
%	185.7%	172.9%	172.9%	89.2%	92.3%	92.3%	95%	95%	
StSt	StSt Alu StSt	StSt StSt StSt	StSt Alu StSt	StSt Alu ZPS	StSt Alu StSt	StSt StSt StSt	StSt Alu StSt	StSt StSt StSt	
	-	-	-	-	Exceeds NFPA but no cert	-	NFPA	-	
	-	-	-	-	-	-	-	-	
ave RP118	*Needle Bearing								
a.com	cmigearusa.com	cmigearusa.com	cmigearusa.com	cmigearusa.com	cmigearusa.com	cmigearusa.com	cmigearusa.com	cmigearusa.com	









Expansion Column

	CMI	CMI	CMI	CMI	CMI	CMI	CMI	CMI	
FPA	RP134	RP135	RP137	RP137D	RP138	RP140	RP142	RP144	
6 €0	£210 $306 €243	£232 $337 €268	£49 $66 €53	£75 $114 €85	£93 $134 €107	£46 $55 €53	£19 $22 €22	£63 $76 €73	
g 0oz	2382g 3lb 4oz	2382g 3lb 4oz	91g 3.2oz	136g 4.8oz	1270g 2lb 13oz	91g 3.2oz	71g 2.5oz	85g 3oz	
.8kN 00lbf	26.6 133kN 6000 30000lbf	26.6 133kN 6000 30000lbf	3.1 31.1kN 700 7000lbf	3.1 31.1kN 700 7000lbf	13.3 66.7kN 3000 15000lbf	3.1 31.1kN 700 7000lbf	18kN 800 4047lbf	- 35.5kN - 8000lbf	
nm	≤16mm ≤⅝"	≤16mm ≤⅝"	≤12.7mm ≤½"	≤12.7mm ≤½"	≤16mm ≤⅝"	≤12.7mm ≤½"	≤12.7mm ≤½"	≤12.7mm ≤½"	
n	3x 100mm 3x 4"	3x 100mm 3x 4"	32mm 1.25"	2x 32mm 2x 1.25"	100mm 4"	32mm 1.25"	32mm 1.25"	32mm 1.25"	
40mm 1.6"	203x121x72mm 8x4.75x2.8"	203x121x72mm 8x4.75x2.8"	76x70 x25mm 3 x 2.75 x 1"	95x70x45mm 3.75x2.75x1.8"	222x178x26mm 8.75 x7 x 1"	64 x 44.5mm 2.5 x 1.75"	70x48x20mm 2.75x1.9x08."	63x38mm 2.5x1.5"	
	- - -	- - -	■ - -	■ - ■	■ - -	- - -	- - -	- - -	
	■	■*	■	■	■	■	■	■	
	■	■	■	■	■	■	■	■	
StSt	StSt Alu StSt	StSt Alu StSt	Alu Alu Alu	Alu Alu Alu	StSt Alu StSt	Alu Alu StSt	Alu Nylon StSt	StSt Alu StSt	
	-	-	CE	CE	CE	CE	CE	CE	
	-	-	-	-	-	-	■	-	
A but test		* Needle Bearing							
a.com	cmigearusa.com	cmigearusa.com	cmigearusa.com	cmigearusa.com	cmigearusa.com	cmigearusa.com	cmigearusa.com	cmigearusa.com	

Images NOT to Scale								
MANUFACTURER	CMI	CMI	CMI	CMI	CMI	CMI	CMI	CMI
MODEL VARIANT	RP147	RP148	RP149	RP152	RP153	RP154	RP155	RP156
ORIGIN								
COST (inc Tax) Conversion-only	£107 $130 €123	£107 $130 €123	£117 $142 €134	£69 $83 €79	£102 $123 €117	£90 $110 €104	£137 $164 €155	£48 $65 €52
WEIGHT	408g 14.4oz	408g 14.4oz	692g 1lb 9oz	199g 7oz	340g 12oz	363g 12.8oz	635g 1lb 6.4oz	199g 7oz
MAX LOAD- WLL MBS	12.4 62kN 2800 14000lbf	12.4 62kN 2800 14000lbf	14.2 71.2kN 3200 16000lbf	8.7 43kN 1960 9800lbf	12.4 62kN 2780 14000lbf	8.8 44kN 1980 9900lbf	12.4 61kN 2780 13900lbf	5.8 28kN 1300 6500lbf
MAX ROPE Ø	≤9mm cable ≤⅜" cable	≤12.7mm cable ≤½" cable	25mm 1"	≤12.7mm ≤½"	≤12.7mm ≤½"	≤12.7mm ≤½"	≤12.7mm ≤½"	≤12.7mm ≤½"
SHEAVE/TREAD Ø	50mm 2"	50mm 2"	70mm 2.75"	51mm 2"	2x 51mm 2x 2"	75mm 3"	2x 75mm 2x 3"	51mm 2"
DIMENSIONS ht x w x depth	127x50x25mm 5 x 2 x 1"	127x50x25mm 5 x 2 x 1"	165x108x36mm 6.5x4.25x1.4"	100 x 75 x 23mm 4 x 3 x 0.9"	127 x 76mm 5 x 3"	152x100x23mm 6 x 4 x 0.9"	178 x 100x42mm 7 x 4 x1.7"	100x70x23mm 4 x 2.75x0.9"
PRUSIK TEND LOCK BECKET	- - -	- - -	- - -	■ - -	■ - ■	■ - -	■ - ■	- - -
BUSHING BEARING PIN	■	■	■	■	■	■	■	■
CHEEKS - SWIVEL FIXED	■	■	■	■	■	■	■	■
EFFICIENCY	n/a	n/a	n/a	93.3%	93.3%	n/a	n/a	n/a
CHEEK SHEAVE AXLE	StSt StSt StSt	StSt StSt StSt	StSt Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt
STANDARDS	CE	CE	CE	CE	CE	CE	CE	CE
OTHER COLOURS	-	-	-	-	-	-	-	-
NOTES	cheek gap lets rope direct to sheave	cheek gap lets rope direct to sheave						
WEBSITE	cmigearusa.com	cmigearusa.com	cmigearusa.com	cmigearusa.com	cmigearusa.com	cmigearusa.com	cmigearusa.com	cmigearusa.com

Images NOT to Scale		Expansion Column						
MANUFACTURER	CONTERRA		COURANT	COURANT	DMM	DMM	DMM	DMM
MODEL VARIANT	Revolution FR RPFR		Mova Eccentric	Orbit22 -	Polo pul600	Pinto pul110	Pinto Rig PUL120	Gyro pul230
ORIGIN								
COST (inc Tax) Conversion-only	£00 $90 €00		£16 $25 €16	£12 $17 €14	£55 $67 €64	£40 $60 €46	£60 $90 €70	£75 $93 €100
WEIGHT	188g 6.6oz		85g 3.4oz	110g 4.3oz	17g 0.6oz	114g 4oz	162g 6.4oz	225g 8.9oz
MAX LOAD- WLL MBS	- 38kN - 8543lbf		- 20kN - 4496lbf	- 22kN - 4946lbf	15kN 3372lbf	10 50kN 224811240lbf	10 50kN 224811241lbf	10 50kN 224811241lbf
MAX ROPE Ø	8-13mm 5/16-½"		≤11mm ≤7/16"	≤13mm ≤½"	2-6mm 3/32-¼"	≤14mm ≤9/16"	≤16mm ≤⅝"	≤13mm ≤½"
SHEAVE/TREAD Ø	50mm 2"		20mm 0.8"	21mm 0.825"	18mm 0.7"	20.4mm 0.8"	28.7mm 1.13"	38mm 1.5"
DIMENSIONS ht x w x depth	190x102x51mm 7.5x3.75x2"		73 x 43 x 28mm 2.9 x 1.7 x 1.1"	85x44x29mm 3.4 x 1.7 x 1.1"	48x23x12mm 1.9x0.9x0.5"	90x43x32mm 3.5x1.7x1.3"	100x48x37mm 4x1.9x1.5"	97x68x31mm 3.8 x 2.7 x 1.2"
PRUSIK TEND LOCK BECKET	■ - ■		- - -	- - -	- - -	- - ■	- - ■	- - -
BUSHING BEARING PIN	■		■	■	■	■	■	■
CHEEKS - SWIVEL FIXED	■		■	■	■	■	■	■
EFFICIENCY	184%		n/a	n/a	n/a	n/a	n/a	n/a
CHEEK SHEAVE AXLE	Alu Alu StSt		Alu Alu Alu	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt
STANDARDS	NFPA		CE	CE	CE	CE NFPA	CE NFPA	CE
OTHER COLOURS	-		-	-	■	■	■	
NOTES	centre eye=becket							originally for 12mm rope, uprated to 13
WEBSITE	conterra-inc.com		mycourant.com	mycourant.com	dmmwales.com	dmmwales.com	dmmwales.com	dmmwales.com

PULLEYS

				
CMI	CMI	CMI	CMI	CMI
RP157	RP158	RP159	UP101	UP102
£88 $107 €101	£118 $142 €136	£195 $233 €224	£156 $187 €179	£156 $187 €179
340g 12oz	709g 1lb 9oz	822g 2lb 13oz	737g 1lb 10oz	708g 1lb 9oz
9.8 48kN 2200 11000lbf	7.1 35kN 1600 8000lbf	12 60kN 2700 13500lbf	- 53.4kN - 12000lbf	- 53.4kN - 12000lbf
≤12.7mm ≤½"	16mm ⅝"	16mm ⅝"	≤12.7mm ≤½"	≤12.7mm ≤½"
2x 51mm 2x 2"	100mm 4"	2x 100mm 2x 4"	2x 75mm 2x 3"	2x 75mm 2x 3"
140x70x43mm 5.5x2.75x1.7"	203x114x28mm 8 x 4.5 x 1.1"	229x114x54mm 9 x 4.5 x 2.1"	190x102x51mm 7.5x3.75x2"	152x102x51mm 5.75x3.75x2"
- -	- - -	- -	- -	- - -
n/a	n/a	n/a	184%	184%
Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt
CE	CE	CE	NFPA*	NFPA*
-	-	-	-	-
			*Not NFPA but exceeds test	*Not NFPA but exceeds test
cmigearusa.com	cmigearusa.com	cmigearusa.com	cmigearusa.com	cmigearusa.com

				
DMM	DMM	EDELRID	EDELRID	EDELRID
Gyro PM PUL231	Gyro PM Twin PUL241	Turn 71789	Easy 88906	Run Down 88907
£75 $93 €87	£100 $124 €140	£26 $33 €25	£23 $26 €20	£51 $64 €44
234g 9.2oz	346g 13.6oz	94g 3.3oz	108g 3.8oz	200g 7oz
10 50kN 2248 11241lbf	10 50kN 2248 11241lbf	- 30kN - 6744lbf	- 30kN - 6744lbf	- 32kN - 7194lbf
≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"
38mm 1.5"	2x 38mm 2x 1.5"	29mm 1.1"	29mm 1.1"	50mm 2"
97x70x31mm 3.8 x 2.7 x 1.2"	125x70x52mm 4.9 x2.7 x 2"	75x44x29mm 3 x 1.7 x 1.1"	85x44x29mm 3.4 x 1.7 x 1.1"	124x70x30mm 4.9 x 2.7 x 1.2"
- -	- -	- - -	- - -	- - -
n/a	n/a	80%	80%	96%
Alu Alu StSt	Alu Alu StSt	Alu Alu Alu	Alu Alu Alu	Alu Alu Alu
CE	CE	CE	CE	CE
			-	-
originally for 12mm rope, uprated to 13	originally for 12mm rope, uprated to 13			
dmmwales.com	dmmwales.com	edelrid.com	edelrid.com	edelrid.com

Images NOT to Scale								
MANUFACTURER	EDELRID	EDELRID	EDELWEISS	EDELWEISS	EDELWEISS	EDELWEISS	EDELWEISS	EDELW
MODEL VARIANT	Roll Single 88908	Roll Double 88909	Rotor 0	Rotor 113R 0	Trafic 111 0	Trafic 116 0	Trafic 116R 0	Traffic 2 0
ORIGIN								
COST (inc Tax) Conversion-only	£75 $93 €73	£88 $122 €110	£17 $26 €24	£38 $48 €45	£23 $31 €29	£31 $41 €38	£39 $46 €43	£46 $61
WEIGHT	210g 7.4oz	345g 12.2oz	85g 3oz	85g 3oz	142g 5oz	270g 9.5oz	280g 9.9oz	475g 17oz
MAX LOAD- WLL MBS	- 32kN - 7194lbf	- 50kN - 11241lbf	- 20kN - 4496lbf	- 20kN - 4496lbf	- 20kN - 4496lbf	5 30kN 1124 6744lbf	5 30kN 1124 6744lbf	5 30k 1124 67
MAX ROPE Ø	≤13mm ≤½"	≤13mm ≤½"	8-12mm ≤5⁄16-7⁄16"	8-13mm ≤5⁄16-½"	8-11mm ≤5⁄16-7⁄16"	≤16mm ≤⅝"	≤16mm ≤⅝"	≤16m ≤⅝"
SHEAVE/TREAD Ø	50mm 2"	2x 50mm 2"	20mm 08"	28mm 1.1"	28mm 1.1"	48mm 1.9"	48mm 1.9"	2x 48m 2x 1.9
DIMENSIONS ht x w x depth	147 x 70 x 30mm 5.8 x 2.7 x 1.2"	150 x 70 x 30mm 6 x 2.7 x 1.2"	82 x 45 x 29mm 3.2 x 1.77 x 1.1"	82 x 45 x 29mm 3.2 x 1.77 x 1.1"	80 x 68 x 36mm 3.1 x 2.7 x 1.4"	118 x 83 x 36mm 4.6 x 3.3 x 1.4"	118 x 83 x 36mm 4.6 x 3.3 x 1.4"	150 x 83 x 4.6 x 3.3 x
PRUSIK TEND LOCK BECKET	- - ■	- - ■	- - -	- - -	- - -	- - -	- - -	- - ■
BUSHING BEARING PIN	■	■	■	■	■	■	■	■
CHEEKS - SWIVEL FIXED	■	■	■	■	■	■	■	■
EFFICIENCY	96%	96%	n/a	n/a	n/a	n/a	n/a	n/a
CHEEK SHEAVE AXLE	Alu Alu Alu	Alu Alu Alu	Alu Alu Zstl	Alu Alu Zstl	Alu Alu Zstl	Alu Alu Zstl	Alu Alu Zstl	Alu Alu
STANDARDS	CE	CE	CE	CE	CE UIAA	CE	CE	CE
OTHER COLOURS	-	-						
NOTES								
WEBSITE	edelrid.com	edelrid.com	edelweiss-ropes.com	edelweiss-ropes.com	edelweiss-ropes.com	edelweiss-ropes.com	edelweiss-ropes.com	edelweiss-rop

Images NOT to Scale								
MANUFACTURER	HEIGHTEC	HEIGHTEC	HEIGHTEC	ISC	ISC	ISC	ISC	ISC
MODEL VARIANT	PO1 -	PO2 -	PO4 -	UltraLink L LK101A12	UltraLink S LK100A12	Eiger Micro RP037	Eiger sm RP012	Eiger sm RP030
ORIGIN								
COST (inc Tax) Conversion-only	£15 $18 €17	£52 $65 €61	£67 $84 €78	£48 $70 €75	£48 $70 €75	£20 $21 €28	£24 $36 €38	£35 $46
WEIGHT	90g 3.2oz	174g 6.1oz	282g 9.9oz	218g* 7.7oz	208g* 7.3oz	92g 3.25oz	87g 3oz	153g 5oz
MAX LOAD- WLL MBS	2.6 26kN 0 5845lbf	3 30kN 674 6744lbf	3 30kN 674 6744lbf	- 40kN - 8992lbf	- 40kN - 8992lbf	0 28kN 0 6294lbf	- 36kN - 8093lbf	- 36k - 8093
MAX ROPE Ø	≤12mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13m ≤½"
SHEAVE/TREAD Ø	21mm 0.825"	50mm 2"	50mm 2"	32/21mm 1.2/0.8"	32/21mm 1.2/0.8	30/20mm 1.2/0.8"	32/22mm 1.6/0.9"	32/22 1.6/0.
DIMENSIONS ht x w x depth	82x45x29mm 3.2 x 1.77 x 1.1"	114x70x30mm 4.5 x 2.75 x 1.2"	114x70x30mm 4.5 x 2.75 x 1.2"	70x57x32mm* 2.75 x 2.3 x 1.3"	68x55x32mm* 2.65 x 2.1 x 1.3"	88x45x34mm 3.5 x 1.8 x 1.4"	74x45x32mm 3x1.75x1.3"	94x45x5 3.75 x 1.75
PRUSIK TEND LOCK BECKET	- - -	- - -	- - -	■	■	- - ■	- - -	- - ■
BUSHING BEARING PIN	■	■	■	■	■	■	■	■
CHEEKS - SWIVEL FIXED	■	■	■	■	■	■	■	■
EFFICIENCY	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
CHEEK SHEAVE AXLE	Alu Alu Zstl	Alu Nylon StSt	StStNylonStSt	StSt Alu StSt	StStl Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu
STANDARDS	CE	CE	CE	CE UKCA	CE UKCA	CE UKCA	CE UKCA	CE UK
OTHER COLOURS				*with sheave	-	■	-	-
NOTES		PO3 discontinued		Recall Nov'23	Recall Nov'23	bridge can be used as a textile becket		
WEBSITE	heightec.com	heightec.com	heightec.com	iscwales.com	iscwales.com	iscwales.com	iscwales.com	iscwales.










EISS	EDELWEISS	EYOLF	EYOLF	EYOLF	FIXE	FUSION CLIMB	FUSION CLIMB	FUSION CLIMB	FUSION CLIMB
216	Trafic 216R 0	Katrol S P20	Katrol V P10	Katrol L P40	Aux 746	Micro 746	Nuro 418	Strux 8152	Secura Dbl 8155
€57	£63 $77 €73	£23 $27 €26	£31 $37 €35	£46 $55 €52	£37 $47 €44	£12 $14 €13	£16 $24 €23	£17 $23 €22	£36 $43 €40
g z	500g 17.6oz	66g 2.3oz	88g 3.1oz	258g 9.1oz	91g 3.2oz	142g 5oz	85g 3oz	280g 9.9oz	500g 17.6oz
N 44lbf	5 30kN 1124 6744lbf	- 15kN - 3372lbf	- 30kN - 6744lbf	- 36kN - 8093lbf	- 20kN - 4496lbf	- 20kN - 4496lbf	- 20kN - 4496lbf	2 34kN 0 00lbf	2 32kN 0 4945lbf
m	≤16mm ≤⅝"	≤11mm ≤7⁄16"	≤11mm ≤7⁄16"	≤13mm ≤½"	≤13mm ≤½"	8-11mm ≤5⁄16-7⁄16"	8-12mm ≤5⁄16-7⁄16"	9-14mm ⅜-9⁄16"	9-15mm ⅜-9⁄16"
mm 9"	2x 48mm 2x 1.9"	32/19mm 1.25/0.8"	32/19mm 1.25/0.8"	54/37mm 2.1"	21mm 0.825"	28mm 1.1"	28mm 1.1"	50mm 2"	50mm 2"
60mm x 2.4"	150 x 83 x 60mm 4.6 x 3.3 x 2.4"	77 x 50 x 28mm 3 x 1.6 x 1.1	75 x 42 x 29mm 3 x 1.6 x 1.2"	119 x 76 x 37mm 4.7 x 3 x 1.45"	82 x 45 x 29mm 3.2 x 1.77 x 1.1"	80 x 68 x 36mm 3.1 x 2.7 x 1.4"	82 x 45 x 29mm 3.2 x 1.77 x 1.1"	118 x 83 x 36mm 4.6 x 3.3 x 1.4"	150x83x 60mm 4.6 x 3.3 x 2.4"
	- - ■	■ - -	- - -	■ - -	- - -	- - -	- - -	- - -	- - ■
	■	■*	■*	■	■	■	■	■	■
	■	■	■	■	■	■	■	■	■
	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Zstl	Alu Alu Zstl	Alu Alu St	Alu Alu St	Alu Alu St	Alu Alu Zstl	Alu Alu Zstl	Alu Alu Zstl	Alu Alu Zstl	Alu Alu Zstl
	CE	CE	CE	CE	CE	CE	CE	CE	CE
		■		■		■	■	■	■
		New for 2024 *Needle Bearing	New for 2024 *Needle Bearing	New for 2024					
pes.com	edelweiss-ropes.com	eyolf.ca	eyolf.ca	eyolf.ca	fixeclimbing.com	iusionclimb.com	iusionclimb.com	fusionclimb.com	fusionclimb.com










dbl 0	ISC Eiger Redirect RP031	ISC Eiger m RP032	ISC Eiger m dbl RP033	ISC Eiger m dbl RP034	ISC Rope Wrench RP281	ISC Prusik sm RP060	ISC Prusik sm RP060	ISC Prusik sm dbl RP061	ISC Prusik sm dbl RP061
€40	£29 $40 €35	£33 $45 €39	£46 $68 €52	£38 $50 €45	£24 $36 €29	£36 $43 €54	£67 $107 €99	£54 $77 €84	£67 $107 €99
g	124g 4oz	158g 6oz	284g 10oz	180g 6oz	76g 2.7oz	214g 8oz	396g 14oz	340g 12oz	674g 24oz
N lbf	- 30kN - 6744lbf	- 36kN - 8093lbf	- 36kN - 8093lbf	- 36kN - 8093lbf	- 36kN - 8093lbf	- 40kN - 8992lbf	- 40kN - 8992lbf	- 40kN - 8992lbf	- 40kN - 8992lbf
m	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"
mm 9"	2x 32/22mm 2x 1.6/0.9"	50/42mm 2/1.65"	2x 50/42mm 2x 2/1.65"	50/42mm 2/1.65"	32/22mm 1.6/0.9"	50/42mm 2/1.65"	50/42mm 2/1.65"	2x 50/42mm 2x 2/1.65"	2x 50/42mm 2x 2/1.65"
4mm x 2.1"	72x45x50mm 3 x 1.75 x 2"	90x52x34mm 3.5 x 2.1 x 1.4"	110x52x56mm 4.3 x 2 x 2.2"	126x52x34mm 5 x 2 x 1.4"	75x45x32mm 3x 1.75 x 1.3"	103x70x34mm 4.1 x 5.1 x 1.4"	103x70x34mm 4.1 x 5.1 x 1.4"	128x70x58mm 5 x 5.1 x 2.3"	128x70x58mm 5 x 5.1 2.3"
	- - -	- - -	- - ■	- - ■*	- - -	■ - -	■ - -	■ - ■	■ - ■
	■	■	■	■	■	■ ■	■ ■	■ ■	■ ■
	■	■	■	■	■	■	■	■	■
	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	StSt StSt StSt	Alu Alu StSt	StSt StSt StSt
CA	CE UKCA	CE UKCA	CE UKCA	CE UKCA	CE UKCA	CE NFPA UKCA	CE NFPA UKCA	CE NFPA UKCA	CE NFPA UKCA
	-	-	-	-	■	■	-	■	-
				*Fully load-bearing double ended eyes	won't rotate >200kg load				
com	iscwales.com	iscwales.com	iscwales.com	iscwales.com	iscwales.com	iscwales.com	iscwales.com	iscwales.com	iscwales.com

Images NOT to Scale								
MANUFACTURER	ISC	ISC	ISC	ISC	ISC	ISC	ISC	ISC
MODEL VARIANT	Prusik m RP063	Prusik m RP063	Prusik m dbl RP064	Prusik m dbl RP064	Prusik m RP065	Prusik m RP065	Prusik lg RP066	Prusik RP06
ORIGIN								
COST (inc Tax) Conversion-only	£50 $65 €60	£55 $81 €75	£66 $108 €100	£92 $140 €130	£53 $78 €72	£63 $93 €86	£52 $66 €61	£67 $96
WEIGHT	280g 9.9oz	584g 20.6oz	555g 20oz	1036g 37oz	0g 0oz	620g 22oz	463g 1lb	896g 2lb
MAX LOAD- WLL MBS	- 50kN - 11240lbf	- 50kN - 11240lbf	- 50kN - 11240lbf	- 50kN - 11240lbf	- 50kN - 11240lbf	- 50kN - 11240lbf	- 70kN - 15736lbf	- 50k - 1124
MAX ROPE Ø	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤16mm ≤⅝"	≤16m ≤⅝
SHEAVE/TREAD Ø	50/42mm 2/1.65"	50/42mm 2/1.65"	2x 50/42mm 2x 2/1.65"	2x 50/42mm 2x 2/1.65"	50/42mm 2/1.65"	50/42mm 2/1.65"	67/55mm 2.6/2.16"	67/55 2.6/2.1
DIMENSIONS ht x w x depth	130x 88x35mm 5.1 x 3.5 x 1.4"	130x88x35mm 5.1 x 3.5 x 1.4"	158x88x58mm 6.2 x 3.5 x 2.3"	158x88x58mm 6.2 x 3.5 x 2.3"	157x88x34mm 6.1 x 3.5 x 1.4"	157x88x34mm 6.1 x 3.5 x 1.4"	156x105x37mm 6.1 x 4 x 1.47"	156x105x 6.1 x 4.1 x
PRUSIK TEND LOCK BECKET	- - -	- - -	■ - ■	■ - ■	■ - ■	■ - ■	■ - -	■ -
BUSHING BEARING PIN	■ ■	■ ■	■ ■	■ ■	■ ■	■ ■	■ ■	■ ■
CHEEKS - SWIVEL FIXED	■	■	■	■	■	■	■	■
EFFICIENCY	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
CHEEK SHEAVE AXLE	Alu Alu StSt	Alu StSt StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	StSt StSt StSt	Alu Alu StSt	StSt StSt
STANDARDS	CE NFPA UKCA	CE NFPA UKCA	CE NFPA UKCA	CE NFPA UKCA	CE NFPA UKCA	CE NFPA UKCA	CE NFPA UKCA	CE NFPA
OTHER COLOURS	■	-	■	■	■	-	■	-
NOTES							Bushing option same spec as bearing	
WEBSITE	iscwales.com	iscwales.com	iscwales.com	iscwales.com	iscwales.com	iscwales.com	iscwales.com	iscwales.

Images NOT to Scale								
MANUFACTURER	ISC	KAILAS	KAILAS	KONG	KONG	KONG	KONG	KON
MODEL VARIANT	Double Rescue RP700701	Mini K010613	Rescue EP103,20014	Turbo Roll 0	Swing 993N(P)	Swing Steel 994	Mini Twin Evo 0	Refle 0
ORIGIN								
COST (inc Tax) Conversion-only	£67 $107 €99	£25 $30 €29	£71 $85 €79	£48 $25 €24	£0 $29 €23	£0 $30 €0	£0 $87 €72	£64 $0
WEIGHT	660g 23oz	155g 5.5oz	367g 13oz	65g 2.3oz	120g 4.2oz	162g 5.7oz	171g 60oz	270g 9.5o
MAX LOAD- WLL MBS	- 3040kN - 67448992lbf	8 28kN 17986295lbf	8 50kN 179811240lbf	- 26kN - 5845lbf	- 30kN - 6744lbf	- 30kN - 6744lbf	- 32kN - 7194lbf	- 26k - 5845
MAX ROPE Ø	10-13mm 25/64-½"	≤12mm ≤½"	7-13mm 9/32-½"	≤11mm ≤7/16"	≤11mm ≤7/16"	≤11mm ≤7/16"	≤13mm ≤½"	≤13m ≤½"
SHEAVE/TREAD Ø	2x 67/55mm 2x 2.6/2.16"	26mm 1"	51mm 2"	40.5/27mm 1.6/1"	40.5/27mm 1.6/1"	40.5/27mm 1.6/1"	2x 35mm 2x 1.5"	60mm 2.4"
DIMENSIONS ht x w x depth	154 x 74 x 62mm 6 x 3 x 2.4"	81 x 58 x 29mm 3.2 x 2.3 x 1.1"	121 x 85x 23mm 4.8 x 3.3 x 0.9"	98 x 30 x 26mm 3.9 x 1.2 x 1"	77 x 52 x 26mm 3 x 2 x 1"	77 x 52 x 26mm 3 x 2 x 1"	106 x 62 x 47mm 4.2 x 2.4 x 1.9"	154 x 80 x 6 x 3.1 x
PRUSIK TEND LOCK BECKET	■ - -	■ - -	■ - -	- - ■	- - -	- - -	■ - ■	- - ■
BUSHING BEARING PIN	■	■	■	■	■	■	■	■
CHEEKS - SWIVEL FIXED	■	■	■	■	■	■	■	■
EFFICIENCY	n/a	94%	94%	93%	87%	87%	91%	96%
CHEEK SHEAVE AXLE	Alu StSt StSt	Alu Alu StSt	S.Steel Alu	Alu Nylon StSt	AluNylonStSt	AluNylonStSt	Alu Alu StSt	Alu Alu
STANDARDS	CE NFPA UKCA	CE UIAA	CE NFPA	CE EAC	CE UIAA	CE UIAA	CE UIAA	CE UI
OTHER COLOURS	■	-	-		□	□	■	-
NOTES	700=1-way sheave		Also a Double Sheave version	alloy red side plate version discontinued	Polished model=$21	PHASING OUT		*Fully load-b double ende
WEBSITE	iscwales.com	kailasgear.com	kailasgear.com	kong.it	kong.it	kong.it	kong.it	kong.

				
	ISC	ISC	ISC	ISC
lg	Prusik lg dbl RP067	Prusik lg dbl RP067	Prusik lg RP068	Prusik xl RP069
€89	£84 $129 €120	£99 $151 €140	£53 $78 €72	£67 $107 €99
g	818g 29oz	1.62kg 3.6lb	477g 1lb1oz	466g 16oz
N 0lbf	- 70kN - 15736lbf	- 50kN - 11240lbf	- 70kN - 15736lbf	- 70kN - 15736lbf
m	≤16mm ≤⅝"	≤16mm ≤⅝"	≤16mm ≤⅝"	≤20mm ≤¾"
mm 16"	2x 67/55mm 2x 2.6/2.16"	2x 67/55mm 2x 2.6/2.16"	67/55mm 2.6/2.16"	80mm 3"
37mm 1.47"	180x105x60mm 7 x 4.1 x 2.4"	203x106x60mm 8 x 4.2 x 2.4"	180x105x35mm 7 x 4.1 x 1.4"	156x105x54mm 6.1 x 4.1 x 2.1"
	■ - ■	■ - ■	■ - ■	■ - -
	■ ■	■ ■	■ ■	■ ■
	■	■	■	■
	n/a	n/a	n/a	n/a
: StSt	Alu Alu StSt	StSt StSt StSt	Alu Alu StSt	Alu Alu StSt
UKCA	CE NFPA UKCA	CE NFPA UKCA	CE NFPA UKCA	CE NFPA UKCA
	■	-	■	■
	Bushing option same spec as bearing		Bushing option same spec as bearing	
com	iscwales.com	iscwales.com	iscwales.com	iscwales.com
				
G	KONG	KONG	LRV8	NOTCH
x	Extra-Roll 0	Twin 0	P3Ta	Micro P52
€0	£46 $63 €53	£60 $87 €65	AU$185 $120	£26 $32 €31
g z	245g 8.6oz	490g 1lb 1oz	486g 19oz	73g 2.56oz
N lbf	- 30kN - 6744lbf	- 50kN - 11240lbf	24 120kN 539526977lbf	- 30.6kN - 6900lbf
m	≤13mm ≤½"	≤13mm ≤½"	8-24mm 5/16-<1"	≤13mm ≤½"
m "	60mm 2.4"	2x 60mm 2x 2.4"	60/52mm 2.4/2"	33mm 1.3"
29mm 1.1"	110 x 83 x 29mm 4.3 x 3.2 x 1.1"	132 x 83 x 54mm 5.2 x 3.2 x 2.1"	140x80x60mm 5.5x3.2x2.4"	75 x 43mm 3 x 1.7"
"	- - -	- - ■	- - -	- - -
	■	■	■	■
	■	■	■	■
%	96%	96%	-	n/a
StSt	Alu Alu* StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt
AA	CE EAC UIAA	CE UIAA	CE NFPA	ANSI
	■	■		
bearing ed eyes	*Nylon sheave option discontinued		Remake of SRTe original	
it	kong.it	kong.it	lrv8.com.au	notchequipment.com

Images NOT to Scale								
MANUFACTURER	OMEGA PACIFIC	PALM	PETZL	PETZL	PETZL	PETZL	PETZL	PETZ
MODEL VARIANT	Revo Ice -	Whitewater 12602	Mobile PO3	Fixe P05	Oscillante P02	Partner P52	Mini P59	Gemi P66
ORIGIN								
COST (inc Tax) Conversion-only	£14 $16 €15	£35 $32 €31	£22 $28 €25	£23 $32 €24	£15 $23 €18	£37 $55 €38	£48 $65 €52	£86 $95
WEIGHT	52g 1.83oz	90g 3.2oz	75g 2.6oz	90g 3.2oz	42g 1.5oz	56g 2oz	80g 2.8oz	135 4.8o
MAX LOAD- WLL MBS	- 22kN - 4945lbf	5 30kN 1124 6744lbf	5 15kN 1124 3372lbf	5 23kN 1124 5171lbf	4 15kN 899 3372lbf	4 15kN 899 3372lbf	5 23kN 1124 5171lbf	6 23k 1349 51
MAX ROPE Ø	≤12.7mm ≤½"	≤11mm ≤7/16"	7-13mm 9/32-½"	7-13mm 9/32-½"	7-11mm 9/32-7/16"	7-11mm 9/32-7/16"	7-11mm 9/32-7/16"	7-11m 9/32-7/1
SHEAVE/TREAD Ø	20mm 0.8"		21mm 0.8"	21mm 0.8"	25mm 1"	25mm 1"	25mm 1"	2x 25 1"
DIMENSIONS ht x w x depth	67 x 45 x 28mm 2.6 x 1.8 x 1.1"	75 x 63mm 3 x 2.5"	64 x46 x29mm 2.5 x 1.8 x 1.15"	76 x 44 x 29mm 3 x 1.75 x 1.15"	68 x 47 x 26mm 2.7 x 1.9 x 1"	68 x 47 x 26mm 2.7 x 1.9 x 1"	78 x 60 x 25mm 3 x 2.4 x 1"	96 x 60 x 5.5 x 3.5
PRUSIK TEND LOCK BECKET	■ - -	■ - -	■ - -	- - -	- - -	- - -	■ - -	■ -
BUSHING BEARING PIN	■	■	■	■	■	■	■	■
CHEEKS - SWIVEL FIXED	■	■	■	■	■	■	■	■
EFFICIENCY	n/a	n/a	71%	71%	71%	91%	91%	91%
CHEEK SHEAVE AXLE	Alu Nylon StSt	Alu Alu Alu	Alu Alu StSt	Alu Alu StSt	Alu Nylon Alu	Alu Alu Alu	Alu Alu Alu	Alu Alu
STANDARDS	CE	CE UIAA UKCA	CE UIAA UKCA	CE UKCA	CE UIAA UKCA	CE UIAA UKCA	CE	CE NF
OTHER COLOURS	-		-	■ ■	■	■	-	-
NOTES					Emergency pulley			
WEBSITE	omega-pacific.com	palmequipmenteurope.com	petzl.com	petzl.com	petzl.com	petzl.com	petzl.com	petzl.co

Images NOT to Scale								
MANUFACTURER	PROTEKT	PROTEKT	PROTEKT	PROTEKT	RNR	RNR	RNR	RNF
MODEL VARIANT	TREE UP TU 430	TREE UP TU 431	TREE UP TU 440	TREE UP PL 101	Poseidon PMP 2"	Poseidon PMP 2"Double	Poseidon PMP 3"	Poseidon 3"Doub
ORIGIN								
COST (inc Tax) Conversion-only	£34 $42 €39	£40 $49 €45	£83 $101 €95	£78 $52 €48	£63 $77 €72	£75 $92 €86	£67 $82 €77	£99 $122
WEIGHT	257g 9oz	470g 16.6oz	153g 5.4oz	450g 15.8oz	210g 7.4oz	354g 12.5oz	374g 13.2oz	652 1.44
MAX LOAD- WLL MBS	6 30kN 1349 6744lbf	6 30kN 1349 6744lbf	5 25kN 1124 5620lbf	5 30kN 1124 6744lbf	- 43kN - 9800lbf	- 62kN - 1400lbf	- 44kN - 9900lbf	- 61k - 1390
MAX ROPE Ø	≤15mm ≤⅝"	≤15mm ≤⅝"	≤10mm ≤25/64"	8-12mm* 5/16-½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13m ≤½"
SHEAVE/TREAD Ø	60mm 2.4"	2x 60mm 2x 2.4"	30/22mm 1.2/0.9"	108mm 4.25"	50mm 2"	2x 50mm 2x 2"	75mm 3"	2x 75 2x 3
DIMENSIONS ht x w x depth	122 x 80 x 38mm 4.8 x3.1 x 1.5"	162 x 80 x 63mm 6.4 x 3.1 x 2.5"	85 x 40 x 39mm 3.3 x 1.6 x 1.6"	133x128x56mm 5.2 x 5 x 2.2"	100 x 23mm 4 x 3 x 0.9"	127 x 76mm 5 x 3"	152x100x23mm 6 x 4 x 0.9"	178 x 10 7 x 4
PRUSIK TEND LOCK BECKET	- - -	- - ■	- - -	- - -	■ - -	■ - ■	■ - -	■ -
BUSHING BEARING PIN	■	■	■	■	■	■	■	■
CHEEKS - SWIVEL FIXED	■	■	■	■	■	■	■	■
EFFICIENCY	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
CHEEK SHEAVE AXLE	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Nylon StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu
STANDARDS	CE	CE	CE	CE	-	-	-	-
OTHER COLOURS	■ ■ ■ ■	■ ■ ■ ■	■ ■ ■	-	-	-	-	-
NOTES			<21mm Webbing on hidden load pin	*or 6mm cable				
WEBSITE	protekt.pl	protekt.pl	protekt.pl	protekt.pl	rocknarbor.com	rocknarbor.com	rocknarbor.com	rocknarbo

	PETZL Jag P45	PETZL Rescue P50	PETZL Minder P60	PETZL Twin P65	PROCLIMB USR-PFB-AU	PROCLIMB USR-PMS-AU	PROCLIMB USR-PSW-AU	PROCLIMB USR-PTW-AU	PROTEKT TREE UP TU 420
									
	€64 $90 €55	£56 $68 €60	£72 $80 €70	£116 $194 €125	£13 $16 €15	£13 $16 €15	£13 $35 €15	£13 $45 €15	£26 $33 €30
	120g 4.2oz	185g 6.5oz	295g 10.4oz	450g 15.8oz	85g 3.5oz	130g 5.1oz	247g 8.7oz	425g 15oz	120g 4.2oz
	6 22kN 1349 4945lbf	8 36kN 1798 8093lbf	8 35kN 1798 7868lbf	8 35kN 1798 7868lbf	- 22kN - 4945lbf	- 20kN - 4496lbf	5 30kN 1124 6744lbf	5 30kN 1124 6744lbf	5 25kN 1124 5620lbf
	8-11mm 5/16-7/16"	7-13mm 9/32-1/2"	7-13mm 9/32-1/2"	7-13mm 9/32-1/2"	≤13mm ≤1/2"	≤11mm ≤7/16"	≤16mm ≤5/8"	≤16mm ≤5/8"	≤13.5mm ≤1/2"
	2x 28mm 1.1"	46/38mm 1.8/1.5"	51mm 2"	2x 51mm 2"	32/21mm 1.25/0.825"	37/25mm 1.5/1"	30.5mm* 1.2"	2x 30.5mm* 2x 1.2"	34/24mm 1.3/0.9"
	70 x 40 x 44mm 2.75 x 1.6 x 1.7"	96 x 70 x 32mm 3.8 x 2.75 x 1.3"	124 x 90 x 31mm 4.9 x 3.5 x 1.2"	143 x 90 x 51mm 5.6 x 3.5 x 2"	80.5 x 44 x 29mm 3.2 x 1.7 x 1.2"	80 x 57 x 33mm 3.2 x 2.2 x 1.3"	121 x 82 x 30.5mm* 4.8 x 3.2 x 1.2"	143 x 82 x 57mm* 5.6 x 3.2 x 2.1"	86 x 44 x 40mm 3.4 x 1.7 x 1.6"
	- - -	- - -	■ - -	■ - ■	- - -	■ - -	- - -	- - ■	- - -
	■	■	■	■	■	■	■	■	■
	■	■	■	■	■	■	■	■	■
	91%	95%	97%	97%	n/a	n/a	n/a	n/a	n/a
	Alu Alu Alu	Alu Alu Alu	Alu Alu Alu	Alu Alu Alu	Alu Alu Zstl	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt
	CE NFPA	CE NFPA UIAA AUKCA	CE NFPA	CE NFPA	CE UIAA	CE UIAA	CE* UIAA	CE* UIAA	CE
	-	■	-	-		-			■ ■
	designed to be part of Jag mini-haul kit						*Spec does not match scaling.	*Spec does not match scaling.	Updated model '23
	petzl.com	petzl.com	petzl.com	petzl.com	usrigging.com	usrigging.com	usrigging.com	usrigging.com	protekt.pl

	RNR Poseidon 2"	RNR Poseidon 2"Double	RNR Poseidon 4"	RNR Poseidon 4" Double	RNR Poseidon 3"Companion Dbl	ROCK EMPIRE Mini ZWP018	ROCK EMPIRE Small SS ZWP121	ROCK EMPIRE Big ZWP119	ROCK EMPIRE Big Double ZWP121
									
	£39 $48 €45	£64 $78 €73	£86 $106 €99	£141 $174 €163	£113 $139 €130	£24 $31 €28	£20 $25 €23	£41 $51 €47	£72 $89 €83
	204g 7.2oz	340g 12oz	703g 1.55lb	1270g 2.8lb	737g 1lb 10oz	88g 3.5oz	130g 5.1oz	250g 9.8oz	440g 17.3oz
	- 28.9kN - 6500lbf	- 40kN - 1100lbf	- 35.6kN - 8000lbf	- 60kN - 13500lbf	- 53.4kN - 12000lbf	- 24kN - 5395lbf	- 20kN - 4496lbf	8 36kN 1798 8093lbf	8 36kN 1798 8093lbf
	≤13mm ≤1/2"	≤13mm ≤1/2"	≤16mm ≤5/8"	≤16mm ≤5/8"	≤12.7mm ≤1/2"	≤12mm ≤1/2"	≤11mm ≤7/16"	≤13mm ≤1/2"	≤13mm ≤1/2"
	50mm 2"	2x 50mm 2x 2"	100mm 4"	2x 100mm 2x 4"	2x 75mm 2x 3"	21mm 0.825"	37/25mm 1.5/1"	50mm 1.9"	2x 33mm 2x 1.3"
	100x70x23mm 4 x 2.75x0.9"	140x70x43mm 5.5x2.75x1.7"	203x114x28mm 8 x 4.5 x 1.1"	229x114x54mm 9 x 4.5 x 2.1"	190x102x51mm 7.5x3.75x2"	82x45x29mm 3.2 x 1.77 x 1.1"	80 x 57 x 33mm 3.2 x 2.2 x 1.3"	117 x 82 x 35mm 4.6 x 3.2 x 1.3"	107 x 80 x 35mm 4.2 x 3.1 x 1.4"
	- - -	- ■ -	- - -	- - ■	- - ■	- - -	■ - -	- - -	- - ■
	■	■	■	■	■	■	■	■	■
	■	■	■	■	■	■	■	■	■
	n/a	n/a	n/a	n/a	184%	n/a	n/a	n/a	n/a
	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu Zstl	Alu Alu StSt	Alu Alu StSt	Alu StSt StSt
	-	-	-	-	NFPA*	CE	CE UIAA	CE UIAA	CE UIAA
	-	-	-	-	-	-	-	-	-
					*Not NFPA but exceeds test				
	rocknarbor.com	rocknarbor.com	rocknarbor.com	rocknarbor.com	rocknarbor.com	rockempire.cz	rockempire.cz	rockempire.cz	rockempire.cz

Images NOT to Scale								
MANUFACTURER	ROCK EXOTICA	ROCK EXOTICA	ROCK EXOTICA	ROCK EXOTICA	SINGING ROCK	SINGING ROCK	SINGING ROCK	SINGING
MODEL VARIANT	1.1" Mini P21	1.1" Mini Dbl P21D	1.5" Rescue P22	1.5" Rescue Dbl P22D	Small RK800	Extra RK801	Extra+ RK808	Twi RK80
ORIGIN								
COST (inc Tax) Conversion-only	£55 $68 €64	£93 $115 €108	£61 $75 €70	£106 $130 €122	£20 $30 €30	£37 $50 €33	£44 $55 €40	£64 $90
WEIGHT	83g 2.9oz	141g 5oz	144g 5.1oz	254g 9oz	92g 3.3oz	257g 9.5oz	276g 9.7oz	421 14.9
MAX LOAD- WLL MBS	5 30kN 1124 6744lbf	8 36kN 1798 8093lbf	8 36kN 1798 8093lbf	8 36kN 1798 8093lbf	- 22kN - 4946lbf	6 32kN 1349 7194lbf	6 32kN 1349 7194lbf	6 32 1349 71
MAX ROPE Ø	≤11mm ≤7/16"	≤11mm ≤7/16"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13n ≤½
SHEAVE/TREAD Ø	28mm 1.1"	2x 28mm 2x 1.1"	38mm 1.5"	2x 38mm 2x 1.5"	29mm 1.1"	56mm 2.2"	56mm 2.2"	2x 56 2x 2.
DIMENSIONS ht x w x depth	76 x 62 x 19mm 3 x2.45 x0.75"	100 x 62 x 37mm 3.95x2.45x1.45"	89 x 64 x 23mm 3.5 x 2.5 x 0.9"	117x 64x43mm 4.6 x 2.5 x 1.7"	76 x 44 x 34mm 3 x 1.7 x 1.3"	117 x 88 x 28mm 4.6 x 3.5 x 1."	146 x 88 x 33mm 5.7 x 3.5 1.3"	141 x 88 x 0 x 3.5 x
PRUSIK TEND LOCK BECKET	■ - -	■ - ■	■ - -	■ - ■	- - -	■ - -	■ - ■	■ -
BUSHING BEARING PIN	■	■	■	■	■	■	■	■
CHEEKS - SWIVEL FIXED	■	■	■	■	■	■	■	■
EFFICIENCY	n/a	n/a	n/a	n/a	81%	94%	94%	94%
CHEEK SHEAVE AXLE	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu
STANDARDS	CE UIAA	CE UIAA	CE UIAA	CE UIAA	CE	CE	CE	CE
OTHER COLOURS	-	-	-	-	■	■	■	■
NOTES	Machined alloy	Machined alloy	Machined alloy	Machined alloy. 2"model discontinued				
WEBSITE	rockexotica.com	rockexotica.com	rockexotica.com	rockexotica.com	singingrock.com	singingrock.com	singingrock.com	singingroc

Images NOT to Scale								
MANUFACTURER	SKYLOTEC	SKYLOTEC	SKYLOTEC	SKYLOTEC	SKYLOTEC	SKYLOTEC	SKYLOTEC	SKYLO
MODEL VARIANT	CT Up Roll 2P671	CT Orbiter F 2P663	CT Orbiter D 2P661	CT Orbiter T 2P662	Darios -	Pollux -	Castor -	Castor -
ORIGIN								
COST (inc Tax) Conversion-only	£52 $65 €58	£22 $30 €23	£66 $82 €74	£84 $104 €99	£72 $89 €82	£80 $104 €97	£75 $120 €111	£78 $125
WEIGHT	115g 4oz	100g 3.5oz	215g 7.6oz	310g 10.9oz	100g 3.5oz	290g 10.2oz	310g 10.9oz	540 19o
MAX LOAD- WLL MBS	5 30kN 1124 6744lbf	5 30kN 1124 6744lbf	8kN 32kN 1798 7194lbf	12kN 50kN 269811240lbf	- 30kN - 6744lbf	- 36kN - 8093lbf	- 36kN - 8093lbf	- 48 - 1079
MAX ROPE Ø	8-11mm 5/16-7/16"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤14mm ≤9/16"	≤13mm ≤½"	≤13mm ≤½"	≤14m ≤9/16
SHEAVE/TREAD Ø	2x 25mm 1 x 1""	39mm 1.5"	39mm 1.5"	2x 39mm 2x 1.5"	44mm 1.7"	64/51mm 2.5/2"	64/51mm 2.5/2"	2x 64/5 2x 2.5
DIMENSIONS ht x w x depth	89x36x44mm 3.5x1.4x1.7"	85x48x29mm 3.3x1.9x1.1"	140x70x32mm 5.5x2.7x 1.3"	137x70x55mm 5.4x2.7x2.2"	85 x 50 x 32mm 3.3 x2x 1.25"	130 x 80 x 35mm 5.1 x 3.1 x1.4"	170 x 80 x 35mm 6.7 x 3.1 x 1.4"	170 x 80 x 6.7 x 3.1
PRUSIK TEND LOCK BECKET	- - ■	- - -	- - -	- - ■	- - -	- - -	- - ■	- -
BUSHING BEARING PIN	■	■	■	■	■	■	■	■
CHEEKS - SWIVEL FIXED	■	■	■	■	■	■	■	■
EFFICIENCY	90%	80%	96%	96%	-	-	-	-
CHEEK SHEAVE AXLE	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu
STANDARDS	CE	CE UIAA	CE UIAA	CE UIAA	CE	CE	CE	CE
OTHER COLOURS	-	-	-	-	-	■	■	■
NOTES	designed for 'UP' pulley system							
WEBSITE	climbingtechnology.com	climbingtechnology.com	climbingtechnology.com	climbingtechnology.com	climbingtechnology.com	skylotec.com	skylotec.com	skylotec

									Expansion Column
ROCK	SKEDCO	SKEDCO	SKEDCO	SKYLOTEC	SKYLOTEC	SKYLOTEC	SKYLOTEC	SKYLOTEC	
n	Micro Dbl	3"Double	3" Double Bck	CT Orbiter S	CT Dual	CT Orbiter M	CT Orbiter L	CT Orbiter H	
2	712M	711	712	2P660	2P668	2P664	2P666	2P667	
0 €72	£58 $71 €67	£145 $178 €167	£145 $178 €167	£55 $71 €67	£26 $30 €20	£18 $30 €21	£94 $116 €99	£99 $121 €113	
g oz	113g 4oz	708g 1lb 9oz	737g 1lb 10oz	180g 6.4oz	123g 4.3oz	90g 3.2oz	445g 15.7oz	465g 16.4oz	
kN 194lbf	6.2 31.1kN 1400 7000lbf	- 53.4kN - 12000lbf	- 53.4kN - 12000lbf	8kN 32kN 1798 7194lbf	5 30kN 1124 6744lbf	5 30kN 1124 6744lbf	12kN 45kN 269810116lbf	12kN 45kN 269810116lbf	
mm "	≤12.7mm ≤½"	≤12.7mm ≤½"	≤12.7mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	
mm 2"	32mm 1.25"	2x 75mm 2x 3"	2x 75mm 2x 3"	19mm 0.75"	2x 19mm 2x 0.75"	19mm 0.75"	3x 39mm 3x 1.5"	3x 39mm 3x 1.5"	
x 54mm x 2.1"	89 x 41 x 46mm 3.5 x 1.6 x 1.8"	152 x 102 x 51mm 5.75 x 3.75 x 2"	190 x 102 x 51mm 7.5 x 3.75 x 2"	110 x 70 x 32mm 4.3 x 2.7 x 1.3"	73 x 49 x 52mm 2.9 x 2 x 2"	73 x 48 x 29mm 2.9 x 1.9 x 1.1"	108 x 70 x 78mm 4.2 x 2.7 x 3.1"	139 x 70 x 78mm 5.5 x 2.7 x 3.1"	
	- -	- - -	- -	- - -	- - -	- - -	- - -	- -	
%	133.6%	184%	184%	96%	80%	80%	96%	96%	
StSt	AluAluAlu	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt	
	ANSI	NFPA*	NFPA*	CE UIAA	CE	CE UIAA	CE UIAA	CE UIAA	
	-	-	-	-	-	-	-	-	
		*Not NFPA but exceeds test	*Not NFPA but exceeds test				Discontinued		
ck.com	skedco.com	skedco.com	skedco.com	skylotec.com	skylotec.com	skylotec.com	climbingtechnology.com	climbingtechnology.com	
											
TEC	SMC	SMC	SMC	SMC	SMC	SMC	SMC	SMC	SMC
Dbl	Apex Direct 1.1	Apex Direct 1.5	CRX Crevasse	Tiny Rescue	Advance Tech	JR (Jigger Rescue)	JRB (with Becket)	Micro	Micro Double
	16501	165110	RP030	RP030	NFPA154801	1590	15970	15300	15305
5 €116	£93 $85 €79	£97 $89 €83	£17 $20 €19	£37 $45 €42	£85 $105 €98	£32 $39 €37	£35 $43 €41	£32 $39 €37	£85 $105 €98
g oz	122g 4.3oz	208g 7.3oz	52g 1.8oz	66g 2.3oz	154g 5.44oz	89g 3.2oz	94g 3.3oz	99g 3.5oz	164g 5.8oz
kN 91lbf	6 24kN 1349 5395lbf	9.5 38kN 2136 8543lbf	- 22kN - 4946lbf	- 26kN - 5845lbf	- 34kN - 7644lbf	- 22kN - 4946lbf	- 22kN - 4946lbf	- 22kN - 4946lbf	- 40kN - 8992lbf
mm "	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	7-12.5mm 9/32-½"	≤9mm ≤⅜"	≤9mm ≤⅜"	≤13mm ≤½"	≤13mm ≤½"
51mm /2"	38/28mm 1.5/1.1"	50/38mm 2/1.5"	30mm 1.2"	30mm 1.2"	2x 35mm 2x 1.37"	2x 30mm 2x 1.2"	2x 30mm 2x 1.2"	35mm 1.37"	2x 35mm 2x 1.37"
x 60mm x 2.4"	72 x 60 x 28mm 2.8 x 2.3 x 1.1"	97 x 74 x 28mm 3.8 x 2.9 x 1.1"	69 x 45 x 25mm 2.7 x 1.75 x 1"	75 x 45x 25mm 3 x 1.75 x 1"	75 x 61 x 46mm 3 x 2.4 x 1.8"	72 x 45 x 40mm 2.8 x 1.75 x 1.5"	91 x 45 x 40mm 3.6 x 1.75 x 1.5"	95 x 65 x 28mm 3.75 x 2.5 x 1.1"	118 x 65 x28mm 4.65 x 2.5 x 1.1"
	-	- -	- -	- - -	- -	- -	-	- -	-
	-	-	-	-	-	-	-	-	-
StSt	Alu Alu StSt	Alu Alu StSt	AluDelrin StSt	Alu Alu StSt	Alu Alu StSt	AluNylonStSt	AluNylonStSt	Alu Alu Alu	Alu Alu Alu
	CE UKCA	CE UKCA	CE	CE	NFPA	UIAA	UIAA	NFPA	NFPA
	-	-		-	-			-	-
	See Also Swivel Pulleys	See Also Swivel Pulleys			Intended as part of AdvanceTech Kit				
.com	smcgear.com	smcgear.com	smcgear.com	smcgear.com	smcgear.com	smcgear.com	smcgear.com	smcgear.com	smcgear.com

Images NOT to Scale							
MANUFACTURER	SMC	SMC	SMC	SMC	SMC	SMC	SMC
MODEL VARIANT	Swiftwater 147000	2" PMP NFPA1527	2" PMP Dbl NFPA1528	2"RussAnderson NFPA1500	2"RussAnderson NFPA1505	3" PMP RP281	3" PMP Dbl NFPA1505
ORIGIN							
COST (inc Tax) Conversion-only	£47 $58 €55	£65 $80 €75	£105 $130 €122	£71 $87 €82	£50 $61 €57	£96 $117 €110	£142 $174 €163
WEIGHT	170g 6oz	179g 6.3oz	295g 10.4oz	244g 8.6oz	244g 8.6oz	354g 12.5oz	590g 20.8oz
MAX LOAD- WLL MBS	- 34kN - 7644lbf	- 36kN - 8093lbf	- 46kN - 10341lbf	- 29kN - 6520lbf	- 29kN - 6520lbf	-38kN - 8543lbf	- 48kN - 10791lbf
MAX ROPE Ø	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"	≤13mm ≤½"
SHEAVE/TREAD Ø	50mm 2"	50mm 2"	2x 50mm 2x 2"	50mm 2"	50mm 2"	75mm 3"	2x 75mm 2x 3"
DIMENSIONS ht x w x depth	100 x 75 x 32mm 4 x 3 x 1.25"	101 x 74 x 35mm 4 x 2.9 x 1.4"	130 x 74 x 56mm 5.1 x 2.9 x 2.2"	117 x 63 x 36mm 4.6 x 2.5 x 1.4"	117 x 63 x 36mm 4.6 x 2.5 x 1.4"	149 x 106 x 35mm 5.8 x 4.2 x 1.4"	180 x 106 x 56mm 7.1 x 4.2 x 2.2"
PRUSIK TEND LOCK BECKET	■ - -	■ - -	■ - ■	- - -	- - -	■ - -	■ - ■
BUSHING BEARING PIN	■	■	■	■	■	■	■
CHEEKS - SWIVEL FIXED	■	■	■	■	■	■	■
EFFICIENCY	-	-	-	-	-	-	-
CHEEK SHEAVE AXLE	Alu Alu Alu	Alu Alu Alu	Alu Alu Alu	StSt Alu StSt	StSt Alu StSt	Alu Alu Alu	Alu Alu Alu
STANDARDS	UIAA	NFPA	NFPA	NFPA	NFPA	NFPA	NFPA
OTHER COLOURS	-	■	■	-	-	-	-
NOTES							
WEBSITE	smcgear.com	smcgear.com	smcgear.com	smcgear.com	smcgear.com	smcgear.com	smcgear.com

Images NOT to Scale							
MANUFACTURER	SMC	SMC	SPIDER	STEIN	TRANGO	TREEHOG	TREERUNNER
MODEL VARIANT	3"RA Single NFPS1510	4"RA Double NFPA15705	Highline -	Rope Wrench Pulley -	Rock Prodigy	Fixed Pulley THPUL1	71-993
ORIGIN							
COST (inc Tax) Conversion-only	£89 $109 €102	£200 $245 €230	£31 $38 €35	£21 $26 €25	£13 $15 €14	£20 $25 €23	£22 $39 €36
WEIGHT	454g 16oz	1142g 40.3oz	91g 3.2oz	76g 2.7oz	91g 3.2oz	91g 3.2oz	285g 10oz
MAX LOAD- WLL MBS	- 51kN - 11465lbf	- 63kN - 14163lbf	4 20kN 899 4497lbf	- 36kN - 8093lbf	- 26kN - 5845lbf	- 22kN - 4946lbf	6 42kN 1349 6744lbf
MAX ROPE Ø	≤13mm ≤½"	≤16mm ≤⅝"	24-26mmWEB 1-1.1"WEB	≤13mm ≤½"	≤12mm 0"	≤13mm ≤½"	≤15mm ≤⅝"
SHEAVE/TREAD Ø	75mm 3"	2x 100mm 2x 4"	25mm 1"	32/22mm 1.6/0.9"	24/17mm 0.9/0.7"	21mm 0.825"	60mm 2.4"
DIMENSIONS ht x w x depth	168 x 91 x 38mm 6.6 x 3.6 x 1.5"	252 x 117 x 61mm 9.9 x 4.6 x 2.4"	79 x 44mm 3.1 x 1.7"	75 x 45 x 32mm 3x 1.75 x 1.3"	57 x 35x 30mm 2.3 x 1.3 x 1.2"	57 x 58 x 32mm 2.3 x 2.7 x 1.3"	122 x 82 x 38mm 4.8 x 3.1 x 1.5"
PRUSIK TEND LOCK BECKET	- - -	- - ■	- - -	- - -	- - -	- - -	- - -
BUSHING BEARING PIN	■	■ ■	■	■	■	■	■
CHEEKS - SWIVEL FIXED	■	■	■	■	■	■	■
EFFICIENCY	-	-		n/a	-	-	n/a
CHEEK SHEAVE AXLE	StSt Alu StSt	StSt Alu StSt	Alu Alu StSt	Alu Alu Alu	Alu Alu StSt	Alu Alu StSt	Alu Alu StSt
STANDARDS	NFPA	NFPA	NOT PPE	CE UKCA	CE	CE	CE
OTHER COLOURS	-	-	■	■	-	-	
NOTES			Load transport only	won't rotate >200kg load			
WEBSITE	smcgear.com	smcgear.com	spider-slacklines.com	stein.com	trango.com	treehog.co.uk	grube.eu

UPDATING Jan '24

Kootenay Carriages

KNOT-PASSING PULLEYS

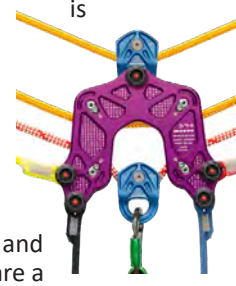
Our own Reed Thorne's mentor, the great Arnor Larson, came up with the concept of a pulley large enough to negotiate the knot in a tied-rope highline. This was in the late Neolithic in the last century and it was originally made by Rock Thompson of *Rock Exotica* as the *Kootenay Carriage*, a giant blue and white behemoth with a plastic wheel and plenty of attachment eyes on the frame for control lines. When Rock sold *RE* to *Petzl*, they took the name so have the *Petzl Kootenay* but the resurrected *Rock Exotica* now has a smaller, alloy sheave model co-produced with/for *CMC* and also using the name *Kootenay*, it being the name of Arnor's local stomping ground in BC Canada, Kootenay National Park. Because the sheave was so large to accommodate a triple fisherman's knotted half inch rope, it didn't take long to also realise its potential as an edge roller/protector (properly secured of course) and a high strength anchor tie-off, a considerably better engineered modification of what we had previously called a Thor tube. This was a mobile version of a tree trunk enabling you to wrap the rope around a larger than 100mm/4" diameter tube and retain the vast majority of the strength of the rope instead of losing a half to the knot. The *CMC Kootenay Ultra* on the right shows how this can be achieved with the tie-off knot passing through the *Ultra*'s enormous square sided 'eye' the largest such opening of any of the 4 models below. To better facilitate this function and later to create sheer reduction for lowering (not sure that was part of the original thinking in the 80s) lock-off pins were installed through the frame and into the sheave to stop it revolving. Two pins are used on 3 of these models but *Rock Exotica/CMC* just use the one and store it in the hollowed axle when not in use. For sheer reduction during lowering, the nylon or alloy sheave is naturally quite slippery so one or even two turns around it enables much higher loads than you could normally control, to be easily lowered. These are the largest pulleys in your arsenal, larger even than the big impact blocks but maybe not so heavy. Still a must have for tyrolean traverses using virtually any rope size and combinations with multiple control lines, reeve configurations and of course ropes tied together or bed sheets if you're trying to escape.

Images NOT to Scale					
MANUFACTURER	CMI	KAILAS	PETZL	ROCK EXOTICA/CMC	SMC
MODEL VARIANT	Tandem RP143	Kootenay Yak EP303	Kootenay P67	Kootenay Ultra -	Kootenay HX NFPA125500
ORIGIN					
COST (inc Tax) Conversion-only	£205 $262 €239	£318 $405 €370	£250 $230 €0	£195 $282 €298	£0 $265 €0
WEIGHT	1134g 2lb 8oz	1385g 13.8oz	1389g 3lb 1oz	709g 1lb 9oz	750g 1lb 11oz
MAX LOAD- WLL MBS	13.3 66.7kN 3000 15000lbf	10 40kN 2248 8994lbf	10 40kN 2248 8994lbf	6 38kN - 8543lbf	- 28kN - 8542lbf
MAX ROPE Ø	13mm ½"	8-19mm 5/16-¾"	8-19mm 5/16-¾"	8-19mm 5/16-¾"	<19mm <¾"
SHEAVE/TREAD Ø	75mm 3"	76mm 3"	0mm 0"	64 57mm 2.5 2.25"	89mm 3.5"
DIMENSIONS ht x w x depth	216 x 100 x 72mm 8.5 x 4 x 2.8"	258 x 128 x 78mm 10.1 x 5 x 3.1"	265 x 127mm 10.25 x 0"	218 x 104 x75mm 8.6 x 4.1 x 3"	220 x 110mm 8.7" x 4.34"
BUSHING BEARING PIN	■	■	■	■	■
CHEEKS - SWIVEL FIXED	■	■	■	■	■
EFFICIENCY	n/a	n/a	n/a	n/a	n/a
CHEEK SHEAVE AXLE	StSt Alu StSt	Alu Nylon StSt	Alu Nylon StSt	Alu Alu StSt	Alu Alu StSt
STANDARDS			CE	NFPA-G	NFPA-G
SHEAVE LOCK PINS	■	■	■	■	■
NOTES			19 & 38mm eyes	19 & 25mm eyes. locking pin stores in axle	
WEBSITE	cmigear.com	kailasgear.com	petzl.com	rockexotica.com cmcpro.com	smcgear.com

UPDATED Jan '24

TANDEM PULLEYS & CABLE CAR TROLLIES

Tandem pulleys have sheaves that are in-line rather than side-by-side as we see with MA system pulleys. Most of these can be used to create MA systems but their rigid, wide profile make them impracticable. In-line tandem pulleys were originally for tyrolean traverses in mountaineering. Now, arborists use them on high-load zip or speed lines to move branches and wood away from the tree. In the burgeoning field of high-ropes, activity/play areas use them for high speed zip-lines and in rescue they are used to access or evacuate. In arb they are used only for material handling and not as often as they could be in favour of simpler and cheaper single pulleys or just sliding carabiners. Nevertheless, we also included Tandems in the **ARBORIST BUYERSGUIDE** for those shifting heavy wood sections or seeking a better load spread on a more efficient pulley combination, many of which have steel sheaves intended for wire cables but with the benefit of very high wear resistance if using a rope. All of these models can take multiple attachments in the main eye to allow for two control lines as well as the load itself to be clipped in. Some have separate control line eyes like the *CMI* and *ISC* models or more complex basal eyes like the *Petzl Reeve*, *SMC Shuttles* and *CMI LHT* for use with a separate rigging plate. Several have a top eye to allow connection to a redundant system (second or safety zip-line). Many of these designs are variations on the *Petzl Tandem* which has been around for decades for mountaineering and is a design that has barely changed. Most use bearings instead of bushings because high-speed efficiency is the name of the game rather than any degree of dynamic absorbency which can be achieved by the zip-line rope itself which, although tensioned, is often of significant enough length to absorb the necessary impact load 'dropped' on it though this should obviously be kept to a minimum. Of particular mention is the *Petzl Reeve*, a solid, simple, mid-line attachable 'trolley' utilising the *Spin* pulleys. Far from simple and nowhere near as aesthetically pleasing as the *Reeve* is *DMM*'s *Keanu* (right) , a complex, modular frame with tandem sheaves but the ability to alter/add sheaves and control lines and a rig-pate as per the *CMIHD* above. Note that some 'CE' adherence may be to the new Adventure Parks standard rather than the work & rescue standards we are used to.



Cable car pulleys/trollies are for alpine cable cars and wire-guided cars/gondoliers in theme parks and are a simple slot-over wheel or pair of wheels that ride on the wide gauge wire to get rescuers down the a stranded cable car. Some of the wire-capable tandems might also be applicable but generally don't have the capacity for cables that may be 1-2.5" in diameter. There are 5 cable-car specific models in this guide (meeting EN1909 for cable car rescue rather than the normal pulley standards)and all have huge plastic/nylon sheaves with an extended attachment point beneath.

Images NOT to Scale					
MANUFACTURER	**ALPIDEX**	**BEAL**	**CMI**	**CMI**	**CMI**
MODEL VARIANT	**Tandem** 2P654	Transf'air Twin B -	**Trolley HD (+ Plate)**	**Velocity Micro½ ⅝** -	**Rapid Transit** -
ORIGIN					
COST (inc Tax) Conversion-only	£39 $50 €37	£66 $70 €66	£270 $327*€311	£135 $163 €156	£231 $280 €266
WEIGHT	280g 9.9oz	290g 13.8oz	1.9kg* 2.4lb*	368/397g 13/14oz	648g 1lb 6oz
MAX LOAD- WLL MBS	10 20kN 2248 4497lbf	8 30kN 1798 6744lbf	- 62.3kN - 14000lbf	- 62.3kN - 14000lbf	- 62.3kN - 14000lbf
MAX ROPE CABLE Ø	13 12mm ½ ½"	≤13 12mm ≤½ ½"	≤16mm ≤⅝"	≤12.7 12.7-16mm ≤½ ½-⅝"	9-12.7mm ⅜-½"
SHEAVE/TREAD Ø	2x 27mm 2x 1.1"	2x 27mm 2x 1.1"	2x 75mm 2x 3"	2x 38mm 2x1.5"	2x 50mm 2x 2"
DIMENSIONS ht x w x depth	83 x 108 x 28mm 3.3 x 4.2 x 1.1"	108 x 78 x 36mm 4.3 x 3.1 x 1.4"	75 x 127 x 26*mm 9.5 x 6 x 1"	75 x 127x23/27*mm 3 x 5 x.0.9/1.1"	142 x 95x26.8*mm 5.6 x 3.75 x 1"
BUSHING BEARING PIN	■	■	■	■	■
CHEEKS - SWIVEL FIXED	■	■	■	■	■
EFFICIENCY	n/a	n/a	n/a	n/a	n/a
CHEEK SHEAVE AXLE	Alu StSt StSt	Alu StSt StSt	Alu Alu StSt	StSt StSt StSt	StSt StSt StSt
STANDARDS	CE	CE	CE	CE	CE
MAX SPEED	-	33mph 15m/s	60mph 27m/s	60mph 27m/s	90mph 40m/s
NOTES	7 Colour options		*Exc mandatory use of CMI Maxi-Plate attached to bottom pins	depth does not include bolt *heads	depth does not include bolt *heads
WEBSITE	alpidex.com	beal-planet.com	cmigear.com	cmigear.com	cmigear.com

TANDEM PULLEYS/TROLLEYS

Images NOT to Scale					
MANUFACTURER	CAMP	CMI	CAMP	DMM	EDELRID
MODEL VARIANT	Wing2 -	Trolley½ ⅝	Flyte 3121	Keanu TR400	Rail 71791
ORIGIN					
COST (inc Tax) Conversion-only	£121 $160 €138	£231 $280 €266	£0 $150 €82	£550 $700 €655	£70 $87 €80
WEIGHT	347g 12.2oz	648g 1lb 6oz	280g 9.9oz	1698g 3lb 12oz	290g 13.8oz
MAX LOAD- WLL MBS	6 15kN 1349 3372lbf	- 62.3kN - 14000lbf	10 20kN 2248 4497lbf	10 50kN 2248 11240lbf	- 25kN - 5620lbf
MAX ROPE CABLE Ø	≤13 12mm ≤½ ½"	9-12.7mm 16mm ⅜-½" ⅝"	≤13 12mm ≤½ ½"	≤13 12mm ≤½ ½"	≤13 12mm ≤½ ½"
SHEAVE/TREAD Ø	2x 26mm 2x 1"	2x 50mm 2x 2"	2x 27mm 2x 1.1"	2x 38mm 2x 1.5"	2x 28mm 2x 1.1"
DIMENSIONS ht x w x depth	125 x 75 x 30mm 5 x 3 x 1.2"	165 x 152 x 24*mm 6.5 x 6 x 1"	83 x 108 x 28mm 3.3 x 4.2 x 1.1"	250 x 220 x 40mm 9.8 x 8.7 x 1.6"	80 x 100 x 33mm 3.2 x 3.9 x 1.3"
BUSHING BEARING PIN	■	■	■	■	■
CHEEKS - SWIVEL FIXED	■	■	■	■	■
EFFICIENCY	n/a	n/a	n/a	n/a	90%
CHEEK SHEAVE AXLE	Alu StSt StSt	StSt StSt StSt	Alu StSt StSt	Alu Alu StSt	Alu StSt StSt
STANDARDS	CE	CE	CE	CE	CE
MAX SPEED	45mph 20m/s	90mph 40m/s	45mph 20m/s	-	-
NOTES	DISCONTINUED Sprung gate. Hooks each end are to store backups during travel	depth does not include bolt *heads		Also in Purple. Modular sheaves, pins and rig plate	
WEBSITE	camp.it	cmigear.com	camp.it	dmmwales.com	edelrid.com

Images NOT to Scale					
MANUFACTURER	EDELWEISS	FIXE	FUSION CLIMB	FUSION CLIMB	ISC
MODEL VARIANT		DB2 Cable 418	Advent GT Tactical FP-8160-SS-SILBLK	Tesa Speed FP-8154-7-BLU	ZipSpeed S L RP075
ORIGIN					
COST (inc Tax) Conversion-only	£55 $68 €38	£75 $92 €86	£73 $89 €84	£52 $63 €59	£145 $230 €200
WEIGHT	290g 13.8oz	291g 10.3oz	765g 1lb 11oz	311g 11oz	875g 1lb 14oz
MAX LOAD- WLL MBS	8 30kN 1798 6744lbf	10 20kN 2248 4497lbf	- 50kN - 11240lbf	10 24kN 2248 5395lbf	- 40kN - 8992lbf
MAX ROPE CABLE Ø	≤13 12mm ≤½ ½"	≤13 12mm ≤½ ½"	9-13 8-12mm ⅜-½ 15⁄16-½"	9-13 8-12mm ⅜-½ 15⁄16-½"	13-2013-20mm ½-¾ ½-¾"
SHEAVE/TREAD Ø	2x 27mm 2x 1.1"	2x 27mm 2x 1.1"	2x 50/40mm 2x 2/1.6"	2x 35/27mm 2x 1.4/1.1"	2x 50/75mm 2x 2/3"
DIMENSIONS ht x w x depth	78 x 108 x 36mm 3.1 x 4.3 x 1.4""	83 x 108 x 28mm 3.3 x 4.2 x 1.1"	100 x 168 x 39mm 3.9 x 6.6 x 1.5"	78.5 x 108 x 27mm 3.1 x 4.25 x 1.1"	111x206x31mm 4.4 x 8.1 x 1.2"
BUSHING BEARING PIN	■	■	■	■	■
CHEEKS - SWIVEL FIXED	■	■	■	■	■
EFFICIENCY	n/a	n/a	n/a	n/a	n/a
CHEEK SHEAVE AXLE	Alu StSt StSt	Alu StSt StSt	StSt Alu StSt	Alu Alu StSt	Alu StSt StSt
STANDARDS	CE	CE	CE	CE ANSI	CE
MAX SPEED	33mph 15m/s	-	-	89mph 20m/s	69mph 30.8m/s
NOTES			Tactical version=Black		Primarily for wire ziplines with versions with end stops and 75mm sheave model
WEBSITE	edelweiss.com	fixeclimbing.com	fusionclimb.com	fusionclimb.com	iscwales.com

Images NOT to Scale						
MANUFACTURER	KAILAS	KAILAS	KONG	KONG	KONG	
MODEL VARIANT	Trolley Double	Zippy RP075	Pamir Fast 94600(4/N)401KK	MegaZip 91200ON00KK	Zip Evo Hook 826040400KK 826050400KK	Doul
ORIGIN						
COST (inc Tax) Conversion-only	£105 $130 €120	£00 $00 €150	£80 $100 €90	£250 $289 €285	£106 $125 €120	£0
WEIGHT	372g 13.1oz	418g 14.75oz	365g 12.9oz	1310g 2lb 14oz	440 470g 15.5 16.6 oz	
MAX LOAD- WLL MBS	12 26kN 2697 5845lbf	5 20kN 1124 4497lbf	8 30kN 1798 6744lbf	- 21kN - 4721lbf	- 22kN - 5000lbf	
MAX ROPE CABLE Ø	≤13 12mm ≤½ ½"	≤15 14mm ≤⅝ ½"	≤13 13mm ≤½ ½"	12-16mm ½-⅝"	≤13mm ≤½"	
SHEAVE/TREAD Ø	2x 28mm 2x 1.1"	2x 28mm 2x 1.1"	2x 37mm 2x 1.5"	2x 55mm 2x 2.16"	2x 40mm 2x 1.6"	
DIMENSIONS ht x w x depth	87 x 104 x 31mm 3.4 x 4.1 x 1.2"	170 x 122 x 30mm 6.7 x 4.1 x 1.2"	86.5 x 113 x 29mm 3.4 x 4.5 x 1.1"	200 x 215 x 35mm 7.9 x 8.5 x 1.4"	200 x 170 x 35mm 7.9 x 6.7 x 1.4"	50 2
BUSHING BEARING PIN	■	■	■	■	■	
CHEEKS - SWIVEL FIXED	■	■	■	■	■	
EFFICIENCY	n/a	n/a	n/a	n/a	95%	
CHEEK SHEAVE AXLE	Alu Alu StSt	Alu Alu StSt	Alu StSt StSt	Alu Steel StSt	Alu StSt StSt	Alu
STANDARDS	CE	CE	CE	CE	CE	C
MAX SPEED	-	-	-	-	-	
NOTES			Top-cap=finger protector. Also available in Blue		Sprung safety gate for sheaves. Hook version (shown) avoids safety backup wear on wire cable	
WEBSITE	kailas.com	kailas.com	kong.it	kong.it	kong.it	k

Images NOT to Scale						
MANUFACTURER	PROTEKT	ROCK EMPIRE	ROCK EMPIRE	SINGING ROCK	SKYL EC	SK
MODEL VARIANT	Tree-Up Dbl Transport CD101	Tandem ZWP120	Lambda ZWP120	Tandem RK803	CT Easy Rescue 2P654	CT
ORIGIN						
COST (inc Tax) Conversion-only	£40 $50 €46	£78 $97 €90	£0 $0 €0	£65 $76 €71	£0 $0 €0	£66
WEIGHT	250g 8.8oz	280g 9.9oz	0g 0oz	290g 10.2oz	0g 0oz	
MAX LOAD- WLL MBS	4.8 24kN 1079 5395lbf	- 20kN - 4496lbf	- 00kN - 00lbf	5 25kN 1124 5620lbf	- 00kN - 00lbf	1 224
MAX ROPE CABLE Ø	≤13mm ≤/₂"	≤13 12mm ≤½ ½"	0-0mm 3/32- ½"	≤13 12mm ≤½ ½"	0-0mm 3/32- ½"	≤1
SHEAVE/TREAD Ø	2x 28mm 2x 1.1"	2x 27mm 2x 1.1"	0mm 0"	2x 28mm 2x 1.1"	0mm 0"	2x 2
DIMENSIONS ht x w x depth	90 x 103 x 36.5mm 35.4 x 4 x 1.4"	83 x 108 x 28mm 3.3 x 4.2 x 1.1"	0 x 0mm 0 x 0"	80 x 101mm 31.4 x 4"	0 x 0mm 0 x 0"	80 x 1 3.2 x
BUSHING BEARING PIN	■	■	■	■	■	
CHEEKS - SWIVEL FIXED	■	■	■	■	■	
EFFICIENCY	n/a	n/a	0%	n/a	0%	
CHEEK SHEAVE AXLE	Alu StSt StSt	Alu StSt StSt	Alu Nylon StSt	Alu StSt StSt	Alu Nylon StSt	Alu
STANDARDS	CE		CE1909		CE1919	
MAX SPEED mph m/s	-	-	-	-	-	
NOTES						
WEBSITE	protekt.pl	rockempire.com	rockempire.com	singingrock.com		skyl

TANDEM PULLEYS & CABLE CAR TROLLIES

						
KONG	KONG	PETZL	PETZL	PETZL	PETZ	PETZL
ble Rolley 000	Single Rolley 83301NP00KK	Tandem P21	Tandem Speed P21 SPE	Reeve P21 SPE	Rollcab P47	Rollcab P47
0 $0 €0	£0 $0 €0	£46 $85 €43	£72 $100 €73	£204 $220 €207	£260 $0 €0	£144 $0 €0
1500g 3lb 5oz	1360g 3lb	195g 6.9oz	270g 9.5oz	650g 1lb 7oz	1470g 3lb 4oz	0g 0oz
- 25kN 5620lbf	- 30kN - 6744lbf	10 24kN 2248 5395lbf	10 24kN 2248 5395lbf	- 36kN - 8093lbf	5 00kN 1124 00lbf	- 00kN - 00lbf
0-0mm /32- ½"	<60mm <2.3"	≤13mm ≤½"	≤13 13mm ½ ½"	7-13mm 9/32- ½"	<55mm <2.3"	0-0mm 9/32- ½"
60mm 2.3"	60mm 2.3"	2x 21mm 2x 0.8"	2x 27.5mm 2x 1.1"	2x 38mm 2x 1.5"	55mm 2.16"	0mm 0"
8 x 0mm 20 x 0"	508 x 0mm 20 x 0"	75 x 108 x 32mm 3 x 4.2 x 1.25"	75 x 108 x 32mm 3 x 4.2 x 1.25"	132 x 195mm 5.2 x 7.7"	470 x 0mm 0 x 0"	0 x 0mm 0 x 0"
■	■	■	■	■	■	■
■	■	■	■	■	■	■
0%	0%	71%	95%	95%	0%	0%
Nylon StSt	Alu Nylon StSt	Alu Alu StSt	Alu StSt StSt	Alu StSt StSt	Alu Nylon StSt	Alu Nylon StSt
E1909	CE1909	CE UIAA UKCA	CE UIAA UKCA	CE NFPA UKCA	CE1909	CE
-	-	22mph 10m/s	89mph 20m/s	-	-	-
ong.it	kong.it	petzl.com	petzl.com	petzl.com	petzl.com	petzl.com

			Expansion column
YLOTEC	SMC	SMC	
Duetto 2P654	Shuttle 156302	Shuttle Extreme 156304	
$75 €64	£58 $69 €65	£105 $128 €120	
290g 13.8oz	162g 5.7oz	227g 8oz	
0 25kN 8 5620lbf	- 26kN - 5845lbf	- 26kN - 5845lbf	
3 12mm ≤½ ½"	≤13 13mm ≤½ ½"	≤13 13mm 1≤/2 ½"	
x 27mm 2x 1.1"	2x 35mm 2x 1.37"	2x 35mm 2x 1.37"	
100 x 33mm 3.9 x 1.3"	82 x 108 x 27mm 3.2 x 4.25 x 1.1"	82 x 108 x 27mm 3.2 x 4.25 x 1.1"	
■	■	■	
■	■	■	
90%	n/a	n/a	
StSt StSt	Alu StSt StSt	Alu StSt StSt	
CE	-	-	
-	-	-	
		Replaceable bearings. For high volume jobs	
otec.com	smcgear.com	smcgear.com	

NON-HANDLED ASCENDERS & LEVER CAMS

CHEST ASCENDERS
HAND ASCENDERS
ROPE GRABS
EMERGENCY ASCENDERS

Petzl Croll 1975

Petzl Croll Lg 2023

Last time we thanked Mountaineers for the handled ascenders but the chest ascender in the form of *Petzl's Croll* and the rope grab or lever-cam ascender in the form of the *Gibbs* are firmly back in the cavers' camp having first appeared as manufactured products in the 60s and 70s. We'll cover lever-cams on page 168 as a separate development because they are rarely used as rope climbing ascenders by arborists and instead used in secondary systems and for hauling. It must be clearly stated at the outset, that we consider ANY toothed cam ascender, which is necessarily aggressive in order to grip even a wet or icy rope during ascending, to be best used ONLY for ascending/rope climbing. That's why the second part of this guide has r*ope grabs* like the *Petzl Rescuecender*(2) and *CMC Ascender*(7) and with a range of uses while these hand and chest ascenders don't. The risk of imparting shock load or much higher loads than you might intend when using them as a back up or a haul-cam is great and potentially catastrophic. This can even be the case in something as seemingly benign as a flip-line because you could slip and fall onto it but this is admittedly unlikely to do much more than damage the sheath. Nevertheless, a more forgiving smooth or ribbed cam wouldn't and is a better choice. This does not alter the fact that with good management you could easily use most of these devices and especially the six 'emergency' ascenders we've included for all of the uses shown in the rope grab/lever cam guide. But we wouldn't want to recommend ANY of those other uses in this first part - it's up to you to decide if you're OK to use toothed cams as lanyard adjusters or haul cams etc. When you ascend you regularly generate 2kN of load simply because of the 'bounce' and dynamic activity of moving so it wouldn't take much of a harsh sit-back to start pushing 4 or 5kN. If you can generate such forces in ascending, anything more in activities that can or do accumulate extra force is likely to be too close for comfort so why take the chance? Ascenders for ascending because they grip all kinds of rope in all kinds of conditions and rope grabs with their more rope-friendly cams for all the other jobs (including ascending in most cases!).

Clog 1960s

(Clog/)ISC RP229 2023

Clog/Wild Country 2023

Gibbs 1965

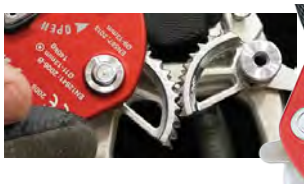
Gibbs 2023

HAND ASCENDERS

HISTORY

While the most basic of hand ascenders existed from the 60's, in the form of devices like Denny Moorehouse's '*Clogger*' hand ascender, *Petzl*'s first entry into the rope ascender market wasn't until 1975 with *Croll* chest ascender. This was a direct evolution of the mountaineering Jumar rather than handle-less *Clogger* and was intended, by inventor Dressler, to be specifically for use in caving. Fernand Petzl had been one of the world's leading cavers since the 30's and was already producing kit like caving ladders, mountaineering bivi platforms and of course his revolutionary electric headlamps, but it was actually other luminaries of the 60's like Moorhouse, Dressler, Jusi and Marbach who came up with ascender and descender designs which Fernand Petzl was able to refine and bring to production before beginning his own prolific rope hardware inventing. The *Croll* was designed to sit flatter against the chest, with a top eye that angles backwards and a bottom eye that extends around the curve of the channel to allow the harness carabiner to sit flat. Chest ascenders are connected between the sit harness and chest harness so as to limit rotation during ascent and therefore be more efficient for climbing. It was a design quickly taken up by the *Kong Cam Clean* (1) and these two models remain largely unchanged in design to this day. The silver *Croll* opposite from Doc Storrick's collection is one of the earliest, probably from 1975/76 because it has the F. PETZL stamp rather than simply PETZL but you can see from the modern *Kong Cam Clean* (1) from 2023 and a plethora of similar models in these tables, that the traditional design of the *Croll* is still a market leader. Incidentally, *ISC* went away from the *Clog*-style ascender and instead concentrate on lever-cam rope grabs. As a sign of the times, the red model shown opposite is not actually made by *ISC*.

MODERN DESIGN



That's not to say there haven't been developments and improvements in cam design and safety. In 2024 *Harken* introduced their *Ninja* double cam hand and chest ascender (a modification of their *Ninja* foot ascender). *Harken* say that having the rope run between two cams means a smoother lift-phase with less resistance than a regular single cam pressing against a flat surface on the frame. Prior ro the *Ninja*, perhaps the most obvious new features are *CAMP*'s rollers on their *Turbo-Chest* (3 -of which more later), and the incorporation of a swivel-eye in the Czech, *Rock Empire Chest Up* (4) and *Skylotec*'s *Get Up* (5). *Skylotec*'s is a 180° integral shackle bolted to the frame while *Rock Empire*'s is a 360° swivel incorporated 'within' the frame with the addition of a bolt-on retainer. It will be interesting to see how this stands up to prolonged wear. All four of these models and a few others also exhibit the modern trend towards a 'tab' on the safety cam to enable easier manipulation of the cam for large or gloved hands. If you're looking for something different, these and *Kong's Futura Body* (9) with it's diminutive size and angled and twisted bottom eye along with *Beal/Edelweiss's Hold-Up/ B16* (6) with their extraneous eye or the similarly extruded *Kalias Chest-Up* model might be worth a look. What's with the preponderance of 'Up'-named models these days?

EXCLUSIONS

We have NOT included in this Guide, Fall arresters like the *Rockers, UAscend, CAMP Lift* etc. even though they will function well as an ascender because we have to draw the line somewhere and, in reality, if we were to include ALL devices that can function as an ascender that would include all cam descenders and hybrids! We have also not included the larger dedicated Progress Capture Devices like the *Petzl ProTraxion* or *SMC Advanced HX*, but we have included smaller 'emergency' ascenders which include smaller PCDs like the *Kong Duck* (8), *Edelrid Spoc* and *CT RollNLock*. The *Petzl 'Traxion'* family and all other Progress Capture Pulleys have a separate guide and all meet EN567 as an ascender (while also functioning as a pulley. The *Wild Country Ropeman* style mini ascenders are all considered to be 'emergency' ascenders but they do function well across a variety of tasks. The ultimate emergency ascenders, the *Petzl Tibloc* and *Skylotec Ringo* are included in the second part of this guide because they load directly through the cam rather than the frame. We haven't included the heavy-duty fall-arrest 'grabs' like the original *Altochute* or *Stickrun*. These are intended to run up AND down even though they are superficially very similar to lever cam ascenders like the *Gibbs* and *Rescuecender*. Where there's any doubt we've simply gone for those aimed at climbers rather than industry.

images NOT to scale

If we leave out the *CAMP TURBO CHEST* for now, the difference between a CHEST and HAND/BASIC ascender is pretty much just the orientation of the

attachment eyes which extend 'around-the-corner' on the chest versions to enable it to sit flat on the chest. But there can be other subtle differences. The two *Petzl* models here show this well - the Hand or Basic ascender on the left is designed to be grasped in the palm of the hand and has a 'comfort' grip on the shoulder. The *Croll* on right is *Petzl*'s smaller model with a reinforced cam-enclosure to improve wear. [NB: an early report from Italian and UK cavers indicating that the reinforcement wear could cause rope damage was investigated and dealt with- see Emag#28]. The cam safeties are different because the hand is in a different position on each during use. Both clip onto the frame out of way during rope installation (CAM-PARK in our tables). The new crop of swivel versions mentioned earlier are labelled as 'chest' ascenders by the manufacturer but can easily be used for all of the same purposes as hand/basic ascenders bearing in mind the reservations we expressed earlier about overloading toothed cams:

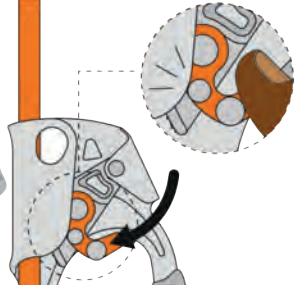
- Progress Capture in haul systems
- Lanyard/Flip line/Rope length adjusters
- Top Ascender
- Self Belay/Fall Arrest (maybe but beware!)

OTHER FEATURES...

TOP EYE: That obvious top eye can serve the same purpose it did on the handled models but for chest ascenders it is a specific chest harness attachment point, so, the other uses are:
1) to clip a carabiner around the rope thus ensuring the ascender cannot detach completely
2) as a hauling aid or to anchor for hauling - in this function the little man symbol or 'UP' arrows should be upside down!

SAFETY CATCH: If the safety catch clicks to the disengaged position too easily during use you could be in for a scary drop. You never downclimb by releasing the cam via the safety catch and should instead press or 'thumb' the actual cam where sideways and/or downward pressure from your thumb or finger on the cam itself is enough to release the rope but will then enable it to re-engage the second you removed your thumb. For this reason some cams have a more pronounced bottom edge while others have an opening or additional material to facilitate better thumb purchase. The latest ascender range from Edelrid (right) makes sure you can't miss the safety!

RELEASABLE CAM UNDER LOAD: Climbing Technology now has an additional pillar on their safety catch which, in the event of a rope or debris-jam halting your progress, or for safer downclimbing, acts as a pivot-post to provide leverage against the frame and force the cam off the rope. This takes some force if the cam is under load so cannot be released by accident. We have previously seen this on *Krok* ascenders and will crop up on others but we're told it's a patented *CT* design. Shown as



■=**leverage cam** in the CAM-PARK column the tables.

ROLLERS: *CAMP* has incorporated rollers into their excellent *Turbo-Chest (*above & right). This isn't a new idea, roller-boxes were used in caving systems back in the 60's and 70's as a separate chest or waist attachment to improve rope glide and climbing efficiency but not integrated into the ascender itself. This helps keeps the rope and cam in line during twisting and manoeuvring which otherwise creates unequal loading and stresses along the length of the cam enclosure. The top roller can also function as a deviation pulley during hauling (right).

CHINESE & RUSSIAN MANUFACTURE

China is a continual problem for us because, in between counterfeits, so many prominent companies (even manufacturers) in the access and rescue sectors buy in Chinese products to rebadge as their own. We have only recently included Chinese companies under their own names because some have transparent and comprehensive websites and can be contacted for information, most notably *Anpen and Kailas*. But no sooner had we included *Xinda* products in our magazines than they were seriously called out by trading standards in the US and Europe for having helmets mislabelled as meeting standards that they absolutely did not. We can be fairly sure that European companies rebadging products have satisfied themselves of standards adherence but we remain a little bit sceptical because companies like *Lixada, Magideal, GM, New Doar, SUT, Camnal, Lepard, Tupa* and *Yundxi* are difficult to pin down or tell their products apart. You ***will*** find models on *Amazon* etc that look identical but have different specification. We can only quote the data supplied to us but we often double-check by scaling the image. We've included *Anpen* and cautiously included *SOB, Xinda* and *SE Peak* but ***don't*** take that as an endorsement. *SE Peak* is a German brand used by Shanghai's *Liedell* and maybe also Taiwan's *NalHon* which seems to have identical products! We haven't included Camnal/ Lixada's Camp Turbo look-a-like or *NalHon's 'CMI Ropewalker*'. We usually include *Kailas* but their hand ascender seems to be discontinued even though they have expanded their range of handled ascenders. Unlike *Anpen* etc. *Kailas* only seem to make their own products which seem well specified with unique features, some of their hot-forged products even incorporate the *Kailas* name so they're not 'rebadging' these things. They have a comprehensive website but more geared to outdoor soft products. We had to delete Taiwanese company *Adela* for lack of data and responses. It's even harder to track down Russian companies which often develop their own unique and interesting products but unfortunately also make close copies. As do *KROK* which we would have stuck with as the sole

Russian entry because they have a comprehensive website and answer emails but they're currently sanctioned until they get a less despotic government that stops invading neighbouring democratic countries.

ARBORIST USE of ASCENDERS/CAMS

It has to be said that the use of chest ascenders and hand ascenders in particular is currently quite limited amongst arborists. Most arborists use either a hybrid system with a descender/ascender like the *ZigZag, Akimbo, SpiderJack* or *Roperunner* or a *hitchclimbing* knot system. If they are used, chest/hand ascenders are most often a third ascender set up on the harness between a foot and/or knee ascender below and a handled ascender above. Competition climbers are regular users as they look for increased speed and efficiency between point A and point B with no pesky tree work to undertake in between but most arborists prefer a system which allows much greater upper-body manoeuvrability. However, a chest ascender worn between the sit and chest harness can be a useful reserve or intermittent item even if it is not the primary system and not always connected to the rope. If it's on your harness it's out of the way and can be attached temporarily for long entry climbs but released from the main rope during canopy work.

Some folk prefer a non-handled ascender as their top ascender instead of the much bulkier handled models and old-hands in particular like the ease of movement of the ascender afforded by simply grasping the frame rather than inserting into a handle particularly with gloved hands. However, for rope climbing, the hand or basic ascenders are most often seen as a knee or floating cam between a foot ascender and the chest and/or top (handled) ascender.

While the four types of ascender we are describing here are largely interchangeable for all tasks, some are better at one or more tasks than others. Chest ascenders, by definition are best used directly attached to your harness but most, if not all can still do what the hand and lever-cam ascenders can. The commonest uses for all ascenders and rope grabs are:

- Ascending/Rope-climbing
- Self-belay/back-up during climbing and this is a use that may increase if two-rope systems are mandated NB: this is largely for dedicated fall-arresters but also smooth cam and some ribbed cam devices - ***there are huge risks to using toothed cams for self-belay even where it is implied or stated as an acceptable use for any given device***
- lanyard & flip-line/pole strap rope length adjustment
- direct hauling and progress capture in a haul /raising system *but monitor your input forces and loads carefully*.

The key proviso to all that we have written so far and will write in the Lever-Cam/Rope Grab section is that ***any ascender with teeth is best used for ascending-only because it will cut into and maybe sever the rope if over-loaded***. Some Rope grabs will too but are more often designed to slip at around 4 or 5kN, toothed ascenders will rarely slip unless they're stripping rope!

IN THE FOLLOWING TABLES:

ORIGIN:

The country selling the product but this is not always the same as the country of manufacture. Where we know, there is an inset flag to show where it is made.

COST: approximate, rounded up and inclusive of local taxes which are generally from 10% and more often 20% in Europe. Often priced much lower locally or online.

WEIGHT: for a single ascender/cam without a carabiner

DIMENSIONS: Width x Height x Depth/thickness but this last one is not always given - the depth is dictated by the cam enclosure but in lever cams this is also increased by the length of the axle pin which may have a locking nut or spring-release mechanism (pip-pin). Even for hand and chest ascenders the depth may vary from reality if the quoted measurements don't include protruding rivet heads etc.

MATERIALS: When we say 'Alu' we mean Aluminium Alloy unless otherwise specified. These are practically all alloy so we've differentiated the construction rather than the material. Most are shown as 'Stamped' meaning that a flat plate of metal is cut to shape then forcibly stamped and rolled into form. Extrusion forces heated metal through a die to create the shape, hot-forged too takes heated metal and forces it into shape like a smithy making a sword or horseshoe. Milled takes a solid lump of alloy and carves/mills it away to create the desired shape, like a sculpture.

STANDARDS: for CE these fall into two categories EN 567 (rope clamp Ø 8 - 11mm) for sport use and EN 12841 B (rope adjustment device Ø 10-13mm) for professional use. Unlike the handled ascenders which generically met EN567 with a few meeting EN12841-B, this Guide includes lever-cam 'ascenders' meeting a wider range so we have to be more specific than simply using 'CE' as a coverall for the applicable European standards. EN567 (ascenders) is still the most common standard in this list but is generally for ropes up to 13mm rather than the original 11mm sport limit. EN12841 for rope adjusters takes in ascenders (-B) hybrids and descenders (C) and fall arrest devices (A) which can all act as ascenders. These require a slightly larger diameter rope so the lower limit is higher - usually around 10mm rather than 8mm. The Mini PCD's may also have EN12278 for pulleys. UIAA is the mountaineering standard with some enhanced testing and EAC applies to Russia and its southern satellite states. Lever cam rope grabs have further standards listed separately.

ROPE DIAM RANGE: It is best to always use the millimetre sizes in ALL of our MARKET GUIDES because the fractional inch equivalents are less specific. 1/2" for instance can be anywhere from 12 to 13mm. Fatter ropes make progress harder but too thin a rope can be positively dangerous as it can jam between the cam and enclosure. ***It's best to ignore the lowest and highest rope diameter claims.*** Remember that a rope will often get fatter with age so if it was a tight fit with a new rope it may become too large with use and stress the cam enclosure if heavily loaded. The rope range quoted uses the lower limit for EN567 up to the sometimes higher limit for EN12841- B. More often than not EN12841-B starts at 10mm rather than 8mm.

WLL(SWL): is the weight of person actually climbing or the weight that can be pulled/hauled before either the rope begins to tear or the cam enclosure unfolds. A small button or 'crease' in the frame on most models stops the cam from flipping upwards under high load if the cam enclosure starts to unfold/bend resulting in an unstoppable downward slide- this is why both ascenders in a Texas-rig-style, two-ascender system, should have direct connection to the harness. Having just a foot ascender doesn't constitute a safe back-up, it's really a third ascender to improve climbing efficiency because if your top ascender were to fail/slip/be accidentally removed, the foot ascender is unlikely to hold you upright unless you had spookily anticipated the precise moment of top-ascender failure! Some WLL figures quoted are suspiciously high and are more likely simply to be an extrapolation of the MBS. Where we see 4kN quoted it is likely to be a re-interpretation of EN567's requirement for a 4kN load to be held at 5 different spots along a fixed rope of minimum and maximum diameters within the ascenders rope range. Most will quote a WLL based entirely on the standards they have met even though their actual capability may be much higher - 100kg for EN567 or 120/140kg for EN12841-B etc.

The **MBS** figure is largely irrelevant as it refers to the strength of the frame, or to be more exact, the ascender's connection eye(s) and even this will vary with rope size. 4kN is usually the lower limit for what may range up to and beyond 12kN for larger rope. For lever cams there is no end-to-end connection and an MBS is often not given because the rope will slip through or perhaps fail before the cam enclosure. If you were to use the framed ascenders as a carabiner or a link in a hauling system rather than as the means to exert the pull this might come into play as you try to stretch the frame end to end, otherwise, for operational use, don't worry about it because the failure mode, if you overload the ascender, will be the cam or the rope, probably the rope.

(Bottom) EYE DIAM: Not necessarily the actual size of connector/carabiner you can get into the bottom eye. Round eyes tend to be a true diameter in which case your carabiner/bar would need to be slightly smaller than this figure.

CAM-PARK: This applies to virtually all handled ascenders and is the ability to hold the cam off the rope completely, generally by clipping the safety catch onto the opposite part of the frame. This facilitates easier rope installation/removal.

■='leverage cam' extra post to release cam under load see p104

ANTI CAM-INVERT: This is now a custom-incorporated pinch in the frame material or a 'knob' to stop the cam rotating too far and releasing out of the top of the frame under high load. This was originally mitigated by clipping a carabiner through the top eye and is still used as such by many.

COLOURS: the colour of the frame or cam enclosure**.** Different model colour options are separated by a comma. A forward slash/ indicates two (or more) colours on one model which, for Rope Grabs may be a cam-colour. Unlike the handled ascenders, there are not many left AND right hand models. Left-hand model colours are shown in burnt orange.

See the lever-cam section for further, different data headings.

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SALARY

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LOCATION

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YOU

- Must possess or be able to obtain and retain SC clearance
- **Possess one or more of the following:**
- Road Traffic Collision Instructor
- Heavy Rescue Technician/ Instructor
- HMEPO/ Tactical Hazmat Advisor or equivalent
- Rope Rescue Supervisors or equivalent

To apply email: Simon.James@babcockinternational.com

images approximately to scale	MODEL	COMPANY	ORIGIN	COST Currency conversion	WEIGHT	DIMENSIONS Width x Height x Depth	STANDARDS
	Explorer Chest Retrofit	3M/ DBI SALA/ ROLLGLIS		$185 A$182	170g 6oz	104 x 65mm 4 x 2.6"	EN567 NFPA AS/NZS4488
	Olymp	ALPIDEX		£32 $40 €36	154g 5.4oz	100 x 78 x 33mm 4 x 3 x 1.3"	EN567 UIAA
	A12	ANPEN		£40 $49* €46	163g 5.8oz	121 x 76mm 4.7 x 3"	EN567
	Hold Up	BEAL		£40 $52 €54	90g 3.2oz	82 x 74 x 59mm 3.2 x 2.9 x 2.3"	EN567 EN12841B
	Solo 2	CAMP		£60 $90 €75	95g 3.4oz	95 x 57 x 24mm 3.7 x 2.2 x 0.9"	EN567 EN12841B UIAA
	TurboChest	CAMP		£85 $90 €102	110g 3.9oz	94 x 59 x 39mm 3.7 x 2.3 x 1.5"	EN567 EN12841B UIAA
	Nahuel 2019	CLIMAX		£34 $34 €31	165g 5.8oz	118 x 80 x35mm 4.6 x 3.1 x 1.4"	EN567
	Nahuel 2020	CLIMAX		£36 $36 €33	122g 4.3oz	110 x 68mm 4.3 x 2.5"	EN567 EN12841B
	Evo Chest	COURANT		£39 $48 €47	130g 4.6oz	105 x 74 x 23mm 4.1 x 2.9 x 0.9"	EN567
	Chest Ascender	CYPHER		£61 $75 $70	147g 5.2oz	105 x 74 x 23mm 4.1 x 2.9 x 0.9"	EN567 EN12841B
	Uni Cruiser	EDELRID		£60 $80 €57	126g 4.4oz	106 x 65 x 32mm 4.1 x 2.6 x 1.2"	EN567 EN12841B
	Chest Cruiser	EDELRID		£57 $75 €55	162g 5.7oz	80 x 65 x 40mm 3.2 x 2.6 x 1.6"	EN567 EN12841B

NOTES COST: Approx & inc local tax/VAT CURRENCY CONVERSION ONLY * **FOB China** WLL: Where no WLL is given by

HAND & CHEST ASCENDERS

MATERIALS ALLOY SHELL CAM	CAM	ROPE DIAM RANGE	WLL/ MBS	(Bottom) EYE DIAM	CAM-PARK	ANTI-CAM INVERT	SERIAL NO	HAND/BASIC	CHEST/offset	COLOURS LEFT	COLOURS RIGHT	NOTES	WWW.
Extruded Alu Stainless Steel		11*-13mm 7/16 -½"	300kg 661lbf 7.9kn 1776lbf	15mm 0.6"	■	-	■	-	■	■	-	Was SRTe. Still sold but this and std model discontinued by 3M. Top 'eye' is for webbing.*Prod-Info states 10.5mm but 11mm is printed on the device.	3m.com.au
Stamped Alu tainless Steel		8-13mm 5/16 -½"	4kN 900lbf	18mm 0.7"	■	■	-	-	■	■	■ ■		alpidex.com
Stamped Alu Alu		8-13mm 5/16 -½"	5kN 1124lbf	20mm 0.8"	■	■	■	-	■	■ ■ ■		Also a 12AA model but details are sketchy! *FOB China	en.anpen.net
Extruded Alu tainless Steel		8-13mm 5/16 -½"	100kg 220lb	*15mm 0.6"	■	■	■	-	■	■		*15x18mm See also *Beal Tract Up* in PCP guide	pro.beal-planet.com
Stamped Alu ardened Steel		8-13mm 5/16 -½"	140kg 308lb	14mm 0.5?"	■	-	■	■	-		■ ■		camp.it
Stamped Alu ardened Steel		8-13mm 5/16 -½"	120kg 265lb	16mm* 0.6"	■	-	■	-	■	■ ■		Equipped with two patented rollers for a smooth interface with the rope. *17x16mm	camp.it
Stamped Alu tainless Steel		8-13mm 5/16 -½"	100kg 220lb 4kN 900lbf	19mm 0.8"	■	■	-	-	■	■		Also rebadged from chinese original as Lapard, GM Climbing, Xinda, Epic Peak, Vento, NTR, Rock Empire etc.	productosclimax.com
Stamped Alu tainless Steel		8-13mm 5/16 -½"	100kg 220lb 4kN 900lbf	*15mm 0.6"	■	■	■	■	-		■	*29x15mm	productosclimax.com
Stamped Alu tainless Steel		10-13mm ⅜ -½"	100kg 220lb 6kN 1349lbf	19mm 0.75"	■	■	■	-	■	■		■=leverage cam	mycourant.com
Stamped Alu tainless Steel		8-13mm 5/16 -½"	140kg 308lb	19mm 0.75"	■	■	-	-	■	■		■=leverage cam	cypherclimbing.com
Stamped Alu tainless Steel		8-13mm 5/16 -½"	150kg 331lb	31x20mm 1.2x0.8"	■	■	-	■	■	■		Modular ascender, can be integrated into Chest Cruiser plate (becomes the Chest Cruiser)	edelrid.de
Stamped Alu tainless Steel		8-13mm 5/16 -½"	150kg 331lb	29x5mm 1.1x0.2"	■	■	-	-	■	■		Component of Uni Cruiser. Modular ascender with adapter for various harnesses. Comes with webbing.	edelrid.de

y manufacturer we show a Max Load based on approx 10:1 of MBS N/A: info Not Available/not given USE: ■=OK but not ideal

images approximately to scale		MODEL	COMPANY	ORIGIN	COST Currency conversion	WEIGHT	DIMENSIONS Width x Height x Depth	STANDARDS	
		**BS16**	**EDELWEISS**		£40 $52 €54	160g 5.6oz	82 x 74 x 59mm 3.2 x 2.9 x 2.3"	EN567 EN12841B	E St
		**InduVentral** W51630	**FIXE**		£42 $53 €48	190g 6.7oz	120 x 80 x 32mm 4.7 x 3.1 x 1.2"	EN567 EN12841B	S
		**Ninja** Ninja	**HARKEN**		£150 $190 €174	272g 9.6oz	121 x 76 x 37.5mm 4.75 x 3 x 1.5"	EN567 EN12841B	S
		**Compact** D41	**HEIGHTEC**		£51 $72 €60	160g 5.6oz	115 x 75 x 23mm 4.5 x 3 x 0.9"	EN567 EN12841B	S Ha
		**Sync** D44	**HEIGHTEC**		£56 $70 €65	140g 4.9oz	95 x 75 x 25mm 3.7 x 3 x 1"	EN567 EN12841B	S Ha
		**Twist** D42	**HEIGHTEC/ PMI**		£50 $75 €55	150g 5.3oz	105 x 70 x 35mm 4.1 x 2.75 x 1.4"	EN567 EN12841B	S Ha
		**Cam Clean**	**HONEYWELL MILLER/KOMET**		£99 $123 €114	150g 5.3oz	115 x 78 x 40mm 4.5 x 3 x 1.6"	EN567 EN12841B NFPA	S Ha
		**RP229**	**ISC**		£51 $82 €59	130g 4.6oz	116 x 75 x 24mm 4.6 x 3 x 1"	EN567	S St

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HAND & CHEST ASCENDERS

MATERIALS ALLOY SHELL CAM	CAM	ROPE DIAM RANGE	WLL/ MBS	(Bottom) EYE DIAM	CAM-PARK	ANTI-CAM INVERT	SERIAL NO	HAND/BASIC	CHEST/offset	COLOURS LEFT	COLOURS RIGHT	NOTES	WWW.
xtruded Alu tainless Steel -		8-13mm 5/16 -½"	100kg 220lb	*15mm 0.6"	■	■	■	-	■	■		*15x18mm	edelweiss-ropes.com
tamped Alu Alu		8-12mm 5/16 -<½"	100kg 220lb 4kN 900lbf	20mm 0.8"	■	■	■	-	■	■		Also *Fixe 'Dome'* model with no anti-cam invert which is the same model as Climax *Nahuel*	fixeclimbing.com
tamped Alu Cast Steel		9-13mm ⅜ -½"	140kg 308lb	>35mm >1.4"	-	-		■	■	■	■	Two cams - one either side of the rope. Use as chest and hand ascender. Has 2 release triggers to make down-climbing easier.	harken.com
tamped Alu ardened Steel		9-13mm ⅜ -½"	100kg 220lb	15mm 0.6"	■	■	■	■	-		■		heightec.com
tamped Alu ardened Steel		10.5-12mm 7/16-<½"	100kg 220lb	*<50mm <2"	■	■	■	-	■	■		*Fixes direct to chest harness webbing but can still be detached	heightec.com
tamped Alu ardened Steel		10-13mm ⅜ -½"	100kg 220lb	16mm 0.6"	■	■	■	-	■	■			heightec.com
tamped Alu ardened Steel		8-13mm 5/16 -½"	100kg 220lb 5kN 1124lbf	*17mm 0.7"	■	-	-	-	■	■ ■		*17 x 21 mm Good luck finding this-see Kong for original model!	honeywellsafety.com
tamped Alu tainless Steel		9-13mm ⅜ -½"	140kg 308lb 2.5kN 562lbf	*17mm 0.7"	■	-	■	-	■	■ ■		Also rebadged by Checkmate, Stein, WestfallPro and others. *17 x 21 mm	iscwales.com

manufacturer we show a Max Load based on approx 10:1 of MBS N/A: info Not Available/not given USE: ■=OK but not ideal

images approximately to scale		MODEL	COMPANY	ORIGIN	COST Currency conversion	WEIGHT	DIMENSIONS Width x Height x Depth	STANDARDS	
		**Chest-Up**	**KAILAS**		£101 $125 €116	106g 3.7oz	97 x 66 x 31mm 3.8 x 2.6 x 1.2"	EN567	S
		**Cam Clean** 82400	**KONG**		£55 $76 €55	150g 5.3oz	115 x 78 x 40mm 4.5 x 3 x 1.6"	EN567 EN12841B UIAA	S Ha
		**Futura Body** 94200	**KONG**		£68 $90 €69	80g 2.8oz	82 x 48 x 35mm 3.2 x 1.9 x 1.4"	NFPA-L EN567 EN12841B UIAA EAC	E Ha
		**Modular** 875	**KONG**		£42 $68 €44	170g 6oz	114 x78 x25mm 4.5 x 3 x 1"	NFPA-L EN567 UIAA	S Ha
		**Ventral** FA7001500	**KRATOS SAFETY**		£51 $64 €55	160g 5.6oz	115 x 75 x 21mm 4.5 x 3 x 0.8"	EN567	S
		**Basic** B18BAA	**PETZL**		£53 $88 €55	85g 3oz	104 x 64 x 30mm 4 x 2.5 x 1.2""	EN567 EN12841B UIAA EAC	S S
		**Croll-S** B16BAA	**PETZL**		£53 $88 €55	83g 2.9oz	97 x 58 x30mm 3.8 x 2.3 x 1.2"	NFPA EN567 EN12841B UIAA, EAC	S S
		**Croll-L** B016AA00	**PETZL**		£53 $88 €55	140g 4.9oz	110 x 70 x 30mm 4.3 x 2.75 x 1.2"	NFPA EN567 EN12841B UIAA, EAC	S S
		**UltraLight** CD201L/202L	**PROTEKT**		£31 $38 €35	135g 4.8oz	110 x75 x 30mm 4.4 x 3 x 1.1"	EN567	S
		**TREEUP** CD201/202	**PROTEKT**		£35 $43 €40	220g 7.8oz	134 x 86 x 28mm 5.3 x 3.4 x 1.1"	EN567	E

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HAND/CHEST ASCENDERS

MATERIALS ALLOY SHELL CAM	CAM	ROPE DIAM RANGE	WLL/ MBS	(Bottom) EYE DIAM	CAM-PARK	ANTI-CAM INVERT	SERIAL NO	HAND/BASIC	CHEST/offset	COLOURS LEFT	COLOURS RIGHT	NOTES	WWW.
Milled Alu tainless Steel		8-13mm 5/16 -½"	140kg 308lb	20mm 0.8"	■	■	-	-	■	■		Discontinued but some still available from Russo-Asian stockists	Kailasgear.com
tamped Alu rdened Steel		8-13mm 5/16 -½"	100kg 220lb 5kN 1124lbf	*17mm 0.7"	■	-	-	-	■	■ ■		*17 x 21 mm	kong.it
xtruded Alu rdened Steel		9-12mm ⅜ -< ½"	100kg 220lb	*15mm 0.6"	■	■	■	-	■	■		*Lower eye is twisted and angles backward and measures 18 x 15 mm	kong.it
tamped Alu rdened Steel		11-13mm 7/16 -½"	100kg 220lb	14mm 0.55"	■	■	-	■	-	■ ■	■ ■	Being Phased Out. can be retrofitted to Kong winches and with a handle etc.	kong.it
tamped Alu Alu		10-12mm ⅜-<½"	4kN 899lbf 15kN 1686lbf	13mm 0.5"	■	-	-	■	■		■		kratossafety.com
tamped Alu tainless Steel		8-11mm 5/16 -7/16"	140kg 308 lb	16mm* 0.6"	■	-	■	■	-		■	*28 x 16mm	petzl.com
tamped Alu tainless Steel		8-11mm 5/16 -7/16"	140kg 308 lb	22mm 0.9"	■	-	■	-	■	■		stainless steel wear resistant plate fitted	petzl.com
tamped Alu tainless Steel		8-13mm 5/16 -½"	140kg 308 lb	22mm 0.9"	■	-	■	-	■	■			petzl.com
tamped Alu Steel		8-12mm 5/16 -<½"	4kN 899lbf	21mm* 0.8	■	-	-	-	■	■	■	21.8x23mm Also badged as Proverti	protekt.pl
xtruded Alu Steel		8-13mm 5/16 -½"	100kg 220 lb	20mm* 0.8"	■	-	-	■	-	■	■	*27x20mm Also badged (made by?) GT	protekt.pl
													Expansion Row
													Expansion Row

manufacturer we show a Max Load based on approx 10:1 of MBS N/A: info Not Available/not given USE: ■=OK but not ideal

images approximately to scale		MODEL	COMPANY	ORIGIN	COST Currency conversion	WEIGHT	DIMENSIONS Width x Height x Depth	STANDARDS	
		Chest Up ZWB019	ROCK EMPIRE		€54 $67 €61	118g 4.2oz	99 x 62 x 30mm 3.9 x2.4 x 1.2"	EN567 EN12841B	H
		Chest	ROCK EMPIRE		£48 $59 €54	163g 5.7oz	118 x 78 x 32mm 4.6 x 2.8 x 1.2"	EN567	S S
		Chest SA-208	S.E.PEAK Shanghai Leidell Ind Co Ltd/NalHon		£36 $46 €33	150g* 5.3oz	104 x 75mm 4.1 x 2.9"	EN567(?)	S S
		Chest	S-TEC		£38 $48 €44	160g 5.6oz	118x80x30mm 4.6x3.1x1.2"	EN567	S S
		Chest Croll RA009	SAR PRODUCTS		£54 $69 €63	130g 4.6oz	105x74x23mm 4.1x2.9x0.9"	EN567 EN12841B UIAA	S S
		Cam Clean	SINGING ROCK		£47 $65 €54	125g 4.4oz	100x70x35mm 4x2.75x1.4"	EN567 EN12841B	S S
		Chest (AC30)	SKYLOTEC		£45 $60 €57	140g 4.9oz	118x79x30mm 4.6x3.1x1.2"	EN567 EN12841B UIAA	S
		CT Chest Ascender +	SKYLOTEC		£45 $70 €53	147g 5.2oz	105 x 74 x 23mm 4.1 x 1.9 x 0.9"	EN567 EN12841B UIAA	S St
		CT Chest Ascender HC	SKYLOTEC		£47 $70 €55	147g 5.2oz	105 x 74 x 23mm 4.1 x 2.9 x 0.9"	EN567 EN12841B UIAA	S St
		CT Ascender Simple +	SKYLOTEC		£42 $54 €48	150g 5.3oz	110 x 74 x 23mm 4.3 x 2.9 x 0.9"	EN567 EN12841B UIAA	S St

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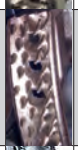
HAND & CHEST ASCENDERS

MATERIALS ALLOY SHELL CAM	CAM	ROPE DIAM RANGE	WLL/ MBS	(Bottom) EYE DIAM	CAM-PARK	ANTI-CAM INVERT	SERIAL NO	HAND/BASIC	CHEST/offset	COLOURS LEFT	COLOURS RIGHT	NOTES	WWW.
ot-ForgedAlu Alu		8-11mm 5/16 -7/16"	4kN 899lbf	16mm 0.6"	■	■	-	■	■	■ ■		Swivel eye	rockempire.cz
Stamped Alu tainless Steel		8-13mm 5/16 -1/2"	4kN 899lbf	19mm* 0.75"	■	-	-		■	■		DISCONTINUED by RE but also rebadged from Chinese original as Lapard, GM Climbing, Xinda, Epic Peak, Vento, NTR, etc. *23x19.5mm	rockempire.cz
Stamped Alu tainlessSteel		8-13mm 5/16 -1/2"	100kg 220lb 4kN 900lbf	*15mm 0.6"	■	■	■	-	■		■ ■ ■	Upgrade from S-206 *29x15mm Also listed as 130g? See SE.Peak notes on p155	sepeak.net (often difficult to access)
Stamped Alu tainless Steel		8-12mm 5/16 -<1/2"	4kN 899lbf 20kN 4496lbf	19mm 0.75"	■	-	-	-	■	■		Variation of the Rock Empire model above.	safetecbr.com.br
Stamped Alu tainlessSteel		8-13mm 5/16 -1/2"	100kg 220 lb	19mm 0.75"	■	■	■	-	■	■		■=leverage cam	sar-products.com
Stamped Alu tainlessSteel		8-13mm 5/16 -1/2"	120kg 265 lb 12kN 2697lbf	19mm 0.75"	■	-	■	-	■	■		Updated model. Safety catch has a secondary trigger to allow safer cam-release for short downclimbs	singingrock.com
Stamped Alu Alu		9-13mm 3/8-1/2"	4kN 899lbf 14kN 3147lbf	13mm 0.5"	■	-	■	-	■	■ ■		Skylotec Germany owns Anthron Slovenia. Anthron brand-name being phased out	skylotec.com (anthron.si)
Stamped Alu tainless Steel		8-13mm 5/16 -1/2"	140kg 308lb	19mm 0.75"	■	■	■	-	■	■		Also rebadged by others inc 'Bornack'. Listed as 'Evo' by some stockists ■=leverage cam	skylotec.com climbingtechnology.com
Stamped Alu ainless Steel*		8-13mm 5/16 -1/2"	140kg 308lb	19mm 0.75"	■	■	■	-	■	■		*HC= Hard-coated shell for improved abrasion resistance. ■=leverage cam	skylotec.com climbingtechnology.com
Stamped Alu tainless Steel		8-13mm 5/16 -1/2"	140kg 308lb	19mm 0.75"	■	■	■	■	-		■	■=leverage cam	skylotec.com climbingtechnology.com
													Expansion Row
													Expansion Row

nufacturer we show a Max Load based on approx 10:1 of MBS N/A: info Not Available/not given USE: = OK BUT NOT IDEAL

images approximately to scale		MODEL	COMPANY	ORIGIN	COST Currency conversion	WEIGHT	DIMENSIONS Width x Height x Depth	STANDARDS	A
		Hoist (AB20)	SKYLOTEC (ANTHRON)		£62 $70 €67	150g 5.3oz	104 x 75 x 30mm 4.1 x 3 x 1.2"	EN567 EN12841B UIAA	S
		Get Up H-210	SKYLOTEC		£101 $125 €115	123g 4.3oz	129 x 122 x 66mm 5 x 4.8 x 2.6"	EN567 EN12841B	S
		RB16AAA	SOB		£59 $74 €67	138g 4.9oz	107 x 80 x 30mm 4.2 x 3.2 x 1.2"	EN567 EN12841B	S
		RP229	STEIN		£42 $53 €49	130g 4.6oz	116 x 75 x 24mm 4.6 x 3 x 1"	EN567	S St
		Chest	US CLIMB		£61 $75 €70	159g 5.6oz	101 x 88 x 33mm 4 x 3.5 x 1.3"	EN567 UIAA	S
		Ropeman 1	WILD COUNTRY		£60 $75 €68	62g 2.2oz	55 x 36 x 31mm 2.1 x 1.4 x 1.2"	EN567 UIAA	Ho
		Ropeman 2	WILD COUNTRY		£65 $81 €75	92g 3.25oz	55 x 36 x 31mm 2.1 x 1.4 x 1.2"	EN567 UIAA	Ho St
		OCA H-XS01	XINDA (BINFEN OUTDOOR)		£22 $27* €25	112g 3.9oz	102 x 72 x 32mm 4 x 2.8 x 1.3"	EN567 UIAA	S St
		Chest HXS03	XINDA (BINFEN OUTDOOR)		£18 $22* €21	150g 5.3oz	115 x 75mm 4.5 x 3"	EN567	S St
		PCA (DeLuxe) HXS02	XINDA (BINFEN OUTDOOR)		£21 $26* €24	150g 5.3oz	115 x 95mm 4.5 x 3.7"	EN567	S

NOTES COST: Approx & inc local tax/VAT CURRENCY CONVERSION ONLY * **FOB China** WLL: Where no WLL is given by

HAND & CHEST ASCENDERS

MATERIALS ALLOY SHELL CAM	CAM	ROPE DIAM RANGE	WLL/ MBS	(Bottom) EYE DIAM	CAM-PARK	ANTI-CAM INVERT	SERIAL NO	HAND/BASIC	CHEST/offset	COLOURS LEFT	COLOURS RIGHT	NOTES	WWW.
tamped Alu Alu		9-13mm ⅜-½"	4kN 899lbf 14kN 3147lbf	13mm 0.5"	■	■	■	■	■		■	Skylotec Germany owns Anthron Slovenia. Anthron brand-name being phased out. Also rebadged by 'Skalt'	skylotec.com (anthron.si)
tamped Alu Alu		8-13mm 5/16 -½"	140kg 308 lb	13mm 0.5"	■	-	-	■	■		■	Integral shackle-eye	skylotec.com (anthron.si)
tamped Alu Alu		10-13mm ⅜ -½"	100kg 220 lb 4kN 899lbf	21mm 0.8"	■	■	-	-	■	■		Updated version still listed by SOB as 120g? Verify certification	cnsob.com
tamped Alu tainless Steel		9-13mm ⅜ -½"	140kg 308lb 2.5kN 562lbf	*17mm 0.7"	■	-	■	-	■	■		Also rebadged by Checkmate, WestfallPro and others. *17 x 21 mm	steinworldwide.com
tamped Alu Alu		8-13mm 5/16 -½"	4kN 899lbf	18mm 0.7"	■	■	-	-	■	■			usclimb.com climbclean.com.br
ot-Forged Alu Alu		10-13mm ⅜ -½"	400kg 880lbf	13mm 0.5"	■	-	-	■	-		■ ■		wildcountry.com
ot-Forged Alu tainless Steel		8-13mm 5/16 -½"	400kg 880lbf	13mm 0.5"	■	-	-	■	-		■ ■	*There was also a Ropeman mk3. narrower than the mk1/2 but was discontinued*	wildcountry.com
tamped Alu tainless Steel		8-13mm 5/16 -½"	150kg 331lb	20mm 0.8"	■	-	-	■	■	■ ■ ■ ■ ■		Fold-down safety catch keeps it out of the way. Hardened frame coating	xindaoutdoor.com
tamped Alu tainless Steel		8-13mm 5/16 -½"	150kg 331lb	20mm 0.8"	■	-	-	-	■	■ ■ ■		No hardened coat - regular anodizing	xindaoutdoor.com
tamped Alu Steel		8-13mm 5/16 -½"	150kg 331lb	20mm 0.8"	■	-	-	-	■	■ ■ ■ ■		Hardened frame coating & enhanced safety catch ■ allows release when jammed. See CT models	xindaoutdoor.com
													Expansion Row
													Expansion Row

y manufacturer we show a Max Load based on approx 10:1 of MBS N/A: info Not Available/not given USE: ■=OK but not ideal

POWER ASCENDERS – FOR PROFESSIONALS.

ActSafe Power Ascenders are an ingenious combination of a high-capacity rope winch in a compact, lightweight and user-friendly design. They simply redefine the possibilities for working in vertical environments.
skylotec.com

More Information

ActSafe PMX

- working load limit (WLL) of 250 kg
- 17 m / min at 100 kg
- suitable for 11 mm ropes

ActSafe ACX

- simplifies and accelerates work on complex or difficult to access structures
- power-saving use
- remote control up to 150m

SKYLOTEC

LEVER CAM ROPE GRABS

Very distinctive in appearance, this group of 'ascenders' is more often called 'rope grabs' these days. Despite their origin as ascenders, lever cams are not often used as ascenders for progressive ascent of a fixed rope except in caving. Instead they are mostly used in tree work for:

- **Haul-Cam** and **Progress capture** in haul systems. NB: Progress-capture only requires it to hold the weight being hauled but a haul-cam can be subjected to many times the actual load because of the input forces of the haulers and the mechanical advantage of the system which inevitably adds friction to the effort. Consider using a load cell to monitor your input forces and loads.
- **Flipline/Pole-Strap**, **Lanyard** or **rope length adjuster which** will never load the cam beyond your single bodyweight and often not even that since the arborist only leans against the strap rather than hanging on it. Unless you slip.
- **Work positioning/safety** - which might include ascending and fall arrest. This will/may take full bodyweight in a vertical system and could take a small shock load in the event of a slip or primary system failure.

The term 'Rope grabs' was originally used for industrial fall arresters like the *Komet Altochute/StickRun* (right), some of which function and look like a knobbly *Gibbs*-style ascender but are usually quite obviously different thanks to mostly being all-steel construction, often having tandem cams (rather than the single cam in this guide) and being the size and weight of a small planet. Such mobile fall-arresters often require a very specific rope brand and model and are not certified to operate on anything else. Not all are steel, the *Buck 5004T* Rope Grab (right) is alloy but **we have not included any of these industrial-specific mobile fall arresters**. If you are tempted, because your mate in the power company gave you one, it would flag up to rival companies that you don't have the most appropriate gear for the job. Over the years and particularly thanks to the arb industry, the term 'rope grab' has come to mean any cam-&- shell device which 'grabs' and holds a rope. This is despite the fact that it would be a fatal mistake to think that all devices now called a rope grab can act as a fall arrest device. It is in fact, far better to assume that NO Rope grab can be used for fall-arrest unless it specifically says so in the instructions or meets EN 353-2 for mobile fall arresters.

A lever-cam rope grab comprises a cam 'shell' or frame (which is basically a rope channel) and a pivoting cam with a connection eye that, when loaded, rotates onto the rope and squeezes it between the cam and the frame. The frame may have a 'relief' channel or scalloping which allows part of the rope to escape the cam-frame squeeze-point which might otherwise result in complete severing of the rope if overloaded. Most cams are cast or milled aluminium with a hardened coating to prevent undue wear. They have transverse ribs and ridges running across the face of the cam to increase grip on the rope without the aggression of teeth which is why they are generally more suited to high-loads and hauling.

These devices are further defined and distinguished from regular frame ascenders, by the guru of hardware Doc Storrick, as type 1 and type 2 Lever Cams because the cam is levered against the rope directly via your loading rather than indirectly via the frame as with a standard ascender. Indeed, it's Storrick that first took issue with some companies calling their devices a rope grab when it was clearly a type 1 Lever Ascender! I think he's now firmly lost that battle but it doesn't mean he wasn't right to raise the point in the early days. Within this category there are a sub-section of mini, emergency ascenders like the *Petzl Tiblock* and *Skylotec Ringo* which are technically not type 1 lever cams but they work by directly loading the cam as a single component with the body so it's close enough for us. The original mini ascenders were of course the *Wild Country Ropemen* but these and the *Kong Duck* and Skylotec/*CT Roll 'N lock* use a pivoting cam and it's the frame you initially apply load to so would be in with Basic/Hand Ascenders if they didn't have their own guide to PCPs.

Type 2 Levers are where a completely smooth 'cam' or more accurately 'bar' is loaded against the rope. The frame itself further pivots to create further contact with the rope at the top. The *Petzl Shunt* (7) is the original proponent of this design and having once ruled the rope access

ROPE GRABS

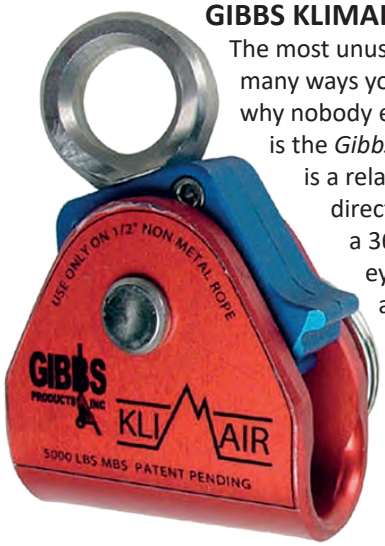
world it is now largely confined to the sports catalogue. See Emag#22 for discussion of the *Shunt*'s revised capabilities as of 2011. Despite the multi-roles it had when first introduced, the *Shunt* is now sold only as an abseil/rappel backup device. However, it can obviously still function as an ascender. Uniquely in this Guide, the *Shunt* can operate on two ropes but had slippage issues at moderate to high loads which needed to be mitigated or accounted for in your rigging or system set-up. The *Shunt*'s baton was taken up by the *Brazilian Safetec Duck* (6) and *Enforcer* models. Unlike a type 1 lever cam, the frame on a type 2 can be rotated by hand against the force of the pivot to lessen the holding force. Not something you would necessarily want to do much but it better demonstrates the difference between type 1 and type 2 lever cams.

The granddaddy of all manufactured lever-cam ascenders is the *Gibbs* (2) This was introduced in 1965 by brothers Charles and Peter Gibbs, Charles the inventor, Peter the manufacturer but both were prominent cavers. They were soon adopted by mountaineers and then by rescue for a whole range of applications that they weren't necessarily designed for. In the latter part of the last century their use in rescue tailed off in favour of other emerging devices because some high load applications caused the cam to severely damage, if not sever the rope. That's why you see all the non-sport models with a 'NOT FOR SELF BELAY' inscription. In European standards terms this can be a little confusing because EN567 for ascenders/rope clamps defines 'self-belay' as a constituent requirement for any ascender to meet, not because it is a fall-arrest device in the sense of the afore-mentioned EN353-2 standard, but because the climber may slip or accidentally release an ascender during climbing and fall back onto it - we would probably call that fall-arrest but UIAA defines it as self-belay. Despite this being more of a user-problem in terms of using the correct *Gibbs* for the correct application, the *Gibbs* was eventually swamped by competitors, most notably *Rock Exotica's Rescuecender* (5) We considered this to be the finest lever-cam ascender on the market at that time and *CMC*'s *Ascender* (4)obviously shares some ancestry. Prolific ascender-makers *CMI* introduced their renowned hardened cams to an extensive lever-cam range of *RopeWalker*s which are quite striking in appearance (1) and have sold well into the arborist industry with tough stainless steel models. *Rescuecender*s were eventually bought by *Petzl* who discontinued the original design (5) but continue to work some magic with the design producing perhaps the most complex *Rescuecender* model to date. (3) .

Back to *Gibbs* devices which never went away and having expanded their range in the 1980s and 90s to take in rescue-sized ropes from 1/2" to 3/4" they began to find new markets in treework and rope access in the early 2000s as well as continuing to service traditional caving, mountaineering and rescue. Key differences between models are shell material - alloy or stainless steel, rope capacity, whether the device is detachable via a spring pin or bolted and needs to be fed and whether it is has free running or sprung cams or both. The former relies on loading the cam to hold rope position while the sprung cam automatically pushes the cam

onto the rope so that it holds position even with no load. The heavier-duty models have thicker shells and greater clearance for increased rope diameter variations as well as high load applications. *Gibbs* are an iconic design in the rope industries little changed in over 50 years and still recognisable in many models with their webbing cam/release pin attachments. They continue to rank as by far the largest range of lever-cam rope grabs in the world with 11 models which seem to alter in some way on a frustratingly regular basis, always the way with genius inventors!

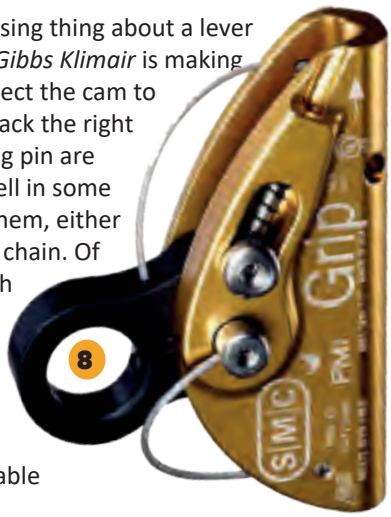
GIBBS KLIMAIR



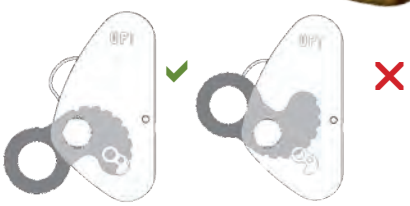
The most unusual model and in many ways you have to wonder why nobody else ran with this, is the *Gibbs Klimair*. This is a relatively small bi-directional model with a 360 degree swivel eye and removable axle-pin. Instead of mounting the cam eccentrically so that the cam will only allow rope to feed in one direction like every other lever-cam, the *Klimair* has it centrally mounted like a see-saw, able to pivot both ways with ribs along the entire quadrant to grip the rope in either direction but missing in the middle section so as to allow rope to run through. This is most often used on fliplines/lanyards/pole-straps where you might otherwise use a small prusik cord as that is also bi-directional. A double rope length with a hook on both ends enables you to create two fliplines on the same lanyard, usually called a 2-in-1 utilising a 2-way prusik. You can bypass branches while remaining attached at all times by throwing the tail around the trunk above the branch and clipping back to your harness side-D while your lower pole strap is still connected. Take your weight in on the top rope long enough to release the bottom eye and slide the prusik/*Klimair* up the rope until it can take your weight again. You are never fully disconnected and the *Klimair* is able to take load one way as the lower strap and then the opposite way on the upper strap. Despite loading both ways the cam will slide when de-weighted with the cam either centrally positioned or you thumb the cam against the direction of travel. The Klimair is the only rope grab from this guide also listed in the lanyard adjuster/rope shortener guide

Don't be fooled by the delineation of Gibbs models into Sport, Rescue and Arborist models. Arborists usage will cross into all three Gibbs Categories so, apart from the *Klimair* and bolted models intended more for flip lines/lanyards, use the data in the tables to decide which model best suits your requirements.

CAM RETENTION



For novices, the most confusing thing about a lever cam device apart from the *Gibbs Klimair* is making sure that when you disconnect the cam to insert the rope, you put it back the right way up! The cam and locking pin are always connected to the shell in some way so that you can't lose them, either by a wire, webbing or small chain. Of these, the stiffer wires which act as springs to hold the cams positions on the rope, tend also to orient the cam the right way. But not always. If there's enough wire/cord/tape you will be able to accidentally flip the cam upside down as in this *ISC* demonstration (right).

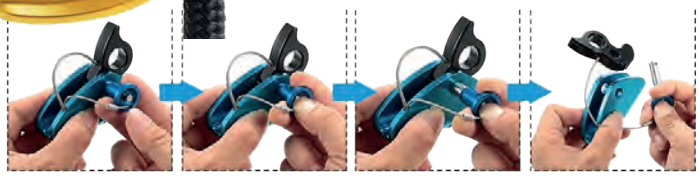


Petzl's re-imagining of the *Rescuecender* (3) uses a retractable, solid connection which only allows you to reconnect the cam the correct way up.

As just mentioned, the wire loop you see on most cams not only keeps the cam connected, it also acts as a spring to maintain enough load on the cam to hold it in position on the rope when not loaded. With no spring, the cam is effectively free-running and this means it doesn't have to be manually moved down a rope as it will slide when it is not loaded. This mode of operation is a consequence of its use as a back-up device when climbing/abseiling. The fact that a device has a free-running function implies that it is suitable for fall-arrest but this is not a wise assumption with any camming device - check suitability.

By far the commonest connection for removable cams is a pip-pin or push-pin as in the *USClimb* and *SE Peak* (rebadged as *Lixada*) models above. Earlier we mentioned the sprung and free-running options with some models allowing both options in the one device so we'll use the *Gibbs* usage description for converting a sprung cam to a free-running cam to also serve as instruction on the push

pin and before that, *Lixada*'s rebadged SE Peak model has a useful visual guide and you can see how the stiff wire on the cam helps keep it properly oriented so you don't put it back upside down although that's always possible.



GIBBS Pin-use & sprung to free-running conversion

Assembly: Depress button on pin and pull pin out until cam swings free.

Place Ascender on rope and align holes in cam and shell. Depress button and insert pin.

Convert to Free Running Mode: Remove the small screw in the black or white spring cover. The spring will rotate freely.

Do not remove the screw in the cam. Do not try to remove the spring.

Reconvert to Spring Loading: Hold cam down and re-insert screw in spring cover.

Our all-time favourite (and that's very subjective) *Rock Exotica Rescuecender* shown on page 121 used a fixed sprung pin to keep the cam pin in place similar to the *SMC/PMI Grip* (8). While there was definitely no risk of losing that and it protruded far less than a large pip or push-pin it does represent an extra action since there is still a removable pin acting as an axle. Hugh Banner's *HB* cams (which we managed to bend the eyes of in testing) are no longer with us but the *SMC/PMI Grip* is an evolution of those models with the same sprung pin retention and gentle body-curves. Aside from the many *Gibbs* models, the models we see the most in 2020 are the *CMI Ropewalkers* (1) discussed earlier and the *ISC RP Grabs* (9) adopted by a number of other manufacturers/ distributors like *Stein* and *Courant* because they're well made and there's often no point in reinventing the wheel.

CAM EYE MODIFICATIONS

We've already mentioned the *Gibbs Klimair* with its (so far) unique swiveling eye but there are some with a fixed eye that has been rotated 90 degrees to the norm. *Rock Exotica* have their *RockGrabs 90* (pic bottom), while the *BuckGrab* (inset bottom) was the first to patent the 90 degree eye. The reason for the offset is to help the device lie flat and in the same plane as the connecting carabiner. This negates the need for a twisted shackle used by some including the arborist in the image above but it does mean they may apply cross-gate loading if you try to use a standard carabiner in conventional ascending mode. Adverse t***orque on the carabiner and cam-eye is something to look out for with the relatively 'thick' profile of many lever cams.*** Something else you may notice on one or two cams is an extra horn emanating from the carabiner eye as part of the cam assembly. This has been adopted by *Petzl* on the *MicroGrab* pictured left as a much bigger feature than on one of the original innovators, Jerry Smith's now discontinued *PRG* (right) from 2008. *ProClimb*'s uniquely rubber-covered-*333* (pic inset top), the *Russian Krok* and both Chinese *Xinda/Lixada* models also have these horns as much larger features. It makes 'thumbing' the cam for downward movement or pulling through of rope a little easier thanks to increased leverage and a larger surface contact area. This is particularly useful when adjusting length on a pole-strap or lanyard, when resetting the haul ready for another pull or downclimbing if ascending.

CHINESE & RUSSIAN

As always we have to add a proviso about Chinese and Russian manufacture. The Chinese continue to increase their ranges in any given market sector of the rope access market by supplying an off-the-shelf and often extremely well made product that can be rebranded. But not always 'well-made' and not always with appropriate standards despite the markings on the product. In fact, *Lixada's AZW031* grab which is the same as *Xinda's XD-Q9666* was omitted because its picture had EN341 stamped on it which is a descender standard; that may be a typo but it doesn't inspire confidence. We've seen other ascenders with a carabiner (connector) standard printed on them. *Xinda* also annoyed us a while back with some ridiculously poor safety helmets that clearly didn't meet their labelled standards and this has again made us wary of their products but, as we see with their chest ascender they do have some unique designs. We haven't included their *Gibbs* look-a-like under their name but Spanish company *Climax* sells it as the *Otto* so it has been included because we should be able to trust their certification since they would need to meet EU standards as a member of the EU.

Russian devices are more 'off-the-wall' than 'off-the-shelf' but always interesting. When the Ukraine invasion sanctions are lifted we mostly show *KROK* which purports to meet European standards and has a good website and provides us with data but you'll need to satisfy yourself that these are appropriate to your needs.

IN THE FOLLOWING TABLES additional to the notes on page 154.....

FOR ALL ASCENDERS & GRABS, THE OPTIMUM ROPE SIZE IS IN THE MIDDLE OF THEIR QUOTED ROPE RANGE ESPECIALLY FOR HIGH LOADS

DIMENSIONS

As usual this is **HEIGHT** by **WIDTH** by **DEPTH (SPAN measured from SIDE-to-SIDE)** but not everyone quotes the depth/thickness. The terms width and depth can be a bit confusing because they are interchangeable. For our purposes, the width is measured from the back edge of the cam shell to the front of the carabiner eye. The Depth we renamed SPAN and is the side-to-side measurement as you look at the cam-face. Some manufacturers may just be quoting the cam enclosure without any bolt-heads. We have therefore given two figures in many cases - the first is just the cam enclosure/frame without any pins or bolts and the second figure in burnt orange is the length of the bolt or pin eg. 26/67mm which is always more than just the cam enclosure. Some, like the *Rock Exotica* models (pic left) don't have any bolt heads; the bolt is flush to the frame and kept in place by a locking pin through the frame. Height can also be an optical illusion because we expect this be the greater figure but some are wider than they are tall - the *ISC 203/209* for instance is 20mm wider than it is high.

STANDARDS

Once again, some of the load figures are artificially low because they simply reflect the standards requirements NOT the actual capabilities. it is the European standards that best define the capabilities of different types of ascender/cam although the US NFPA does at least narrow your options to ONLY the most applicable available to North American rescue users which is often a great indicator of tough gear for arborists.

- EN353-2 - Mobile Fall Arrest
- EN358 - Lanyard adjuster
- EN12841 typeB - Industrial ascender
- EN567 - Sport Ascender
- EN365 - Generic PPE Fall Protection

EN12841 type B - and **EN567** are ascender standards but EN567 is just for sport/climbing ascenders and does NOT include a fall test. However, this doesn't necessarily mean that EN567 ascenders are less applicable to arborists because the fall test for EN12841-B incorporates a 'dynamic lanyard' or shock absorber which is routinely used in rope access but not yet (if ever) by arborists. Despite being an 'ascender' standard some devices like the *Rock Exotica Rockgrabs* tested to EN567 are NOT intended to be used as ascenders.

EN365 is a generic standard for fall arrest PPE maintenance and marking etc. so most rope grabs would meet it and is rarely quoted other than in paperwork.

Many of these lever cams are shown as meeting only one or two of these specific standards and we often find that devices of pretty much the same design and load rating show different standards - this is almost certainly down to the market that the manufacturer sees for the device rather than the actual capabilities. There's no doubt that most EN353 and 358 models without an offset eye would function adequately as ascenders. However, in these days of litigation you may need to prove it is 'Fit-for-Purpose' if a device doesn't show your required standard. One thing to note, as with hand and chest ascenders is that the minimum and maximum rope diameters quoted should largely be avoided except for special purposes. Thinner rope may tend to slip more readily and larger ropes may be damaged more easily under high load.

FIXED & DETACHABLE

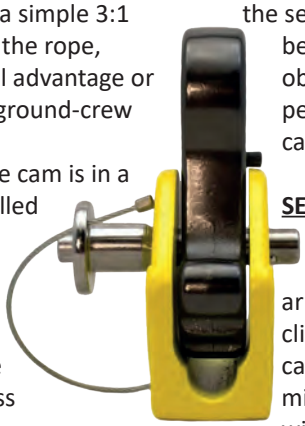
Very few, if any rope grab cams are truly fixed - they will all detach but here we use 'FIXED' to describe a bolt requiring tools to dismantle and 'DETACHABLE' to describe a spring-release pin easily removed by hand.

USES

LAD meaning LENGTH ADJUSTING DEVICE for longer lanyards or FLIP LINE/POLE STRAP. Any camming device, whether it's an ascender or a descender or both, will function as a length adjuster on a lanyard or flip line. Here we are primarily concerned with flip-lines/pole straps because the longer work positioning lanyards use length adjusters which pay-out under load AND take in. Ascenders/rope grabs only take-in unless you fully release the cam which is dangerous, so are best suited to short lengths on your pole strap around the main trunk. Many arborists use their longer lanyards as a pole strap but bespoke

fliplines often have a wire core to resist being cut in what is a high risk place to be during cutting.
Just to reiterate, every ascender or rope grab within this category will function as a polestrap/flipline adjuster but some are more compact and some simply do it better. We listed the bolted models with an orange box as MOST appropriate because they are more compact than pip-pin models. The *Fusion Puma* model below clearly shows how a sprung pin or pip-pin can virtually double the width of the device. Bolted devices fed onto the rope or flipline can't subsequently be accidentally removed from the rope or reconnected incorrectly. If you're on a budget that might be seen as a disadvantage because you can't multi-task your kit! Nevertheless the more compact rope grabs are far better in this role than, for instance, a huge-great handled ascender, they're easier to feed through more rope and they usually have a ribbed cam rather than teeth so are kinder on your rope and again rope is more easily paid out without continually 'catching' or snagging on the teeth. Those devices designed primarily as flip-line adjusters/rope shorteners, are also at the least expensive end of the spectrum. That's not to say they're not well made but if it costs less than $50 it's probably not what you want as a critical component for hauling or ascending.

HAUL: hauling includes two distinct tasks for cams -
1) **HAULING**, as with the *Rescuecender* above in a simple 3:1 pulley system. This is where the cam moves with the rope, physically grasping the rope while the mechanical advantage or pulley system pulls it in, usually with the help of ground-crew pulling the end of the rope.
2) **PROGRESS CAPTURE DEVICE (PCD)** where the cam is in a fixed position so it doesn't move while rope is pulled through during hauling but then holds the load when the haul system stops taking in for rest or it the rope were to be accidentally released. It stops you losing the rope and losing the progress made during hauling. Haul cams may be subjected to much higher forces than the progress capture cam. These days there are a number of dedicated PCD's with integrated pulleys like the Petzl Traxion and larger more complex models like the SMC Advanced Tech HX. These negate the need to use a separate cam as a PCD and are called PCPs, most being usable as a stand-alone pulley. Smaller PCDs that function as ascenders as per EN567 have been included in the PCP Guide since they load via the frame as well as the cam but they are designed specifically to be used as part of a pulley system rather than for ascending, indeed, most of them can operate just as a pulley with the cam detached. Again, hauling is a rather arbitrary category since ALL ascending devices will haul up to their given load ratings. However, some, like the *Gibbs*, have reinforced cam-shells to better cope with high CONSTANT loads. That strength does not translate to dynamic loading though. *Gibbs* are at pains to point out when one of their many devices is NOT to be used for self belay though they don't make the distinction between ascending and self-belay - see our notes below. Also on hauling, if you're creating a haul system from components it is easier to do this with a detachable rather than fixed cam where the rope needs to be fed through the device or you have to unbolt it.

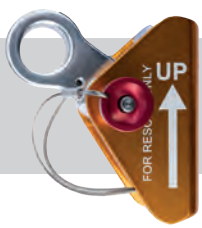


Fusion Climb's Puma shows the rope channel that stops the cam from completely severing a rope if overloaded

ASCENDER: This is a tricky one because any camming device can be used to ascend but not all are suitable. Ascending requires the device to be loaded with a single bodyweight with careful weight transfer to an anchored rope with *no shock load*. However, some, like the offset-eye models by *Rock Exotica* and *Buckingham*, specifically *preclude* ascending because their eyes are more susceptible to carabiner torqueing. Two instances when shock-load can occur are.....
1) when you sit back down or load an ascender you have just moved and do it too harshly - you may even 'fall' back onto it during reset instead of a controlled loading. This creates increased shock or impact force at the cam-rope interface and will be exacerbated when you are fatigued.
2) Failure of one of two cams being used or one fails to grip properly and slips down the rope or you accidentally remove it from the rope. In any of these cases you may 'fall' onto the second ascender applying a shock load that might be similar to SELF BELAYING described below. This obviously isn't intended and isn't the ascending perfection that ascenders/grabs prefer but virtually all can cope well enough.

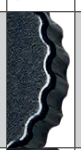
SELF BELAY differs from ASCENDING in that the device is intended to follow you up the rope (or you move it up manually) while you are climbing and it will arrest you should you fall. There is often a period of climbing when slack develops between you and the cam and if you fall, the cam will be shock loaded albeit mitigated by stretch in the rope above the device which will absorb a lot of the impact. Nevertheless, this is NOT a mode of use that many ascender manufacturers would recommend or even imply. Following self-belay accidents on *Gibbs SPORTS* ascenders, *Gibbs* placed stern warnings on their devices and added devices to their range more suited to higher loadings but still NOT self belay. Industrial climbers mitigate this with shock absorbers and some in this list mandate a shock absorber if being used for self belay/fall arrest. The *Climax Otto* is interesting; it's clearly a copy of the *Gibbs* but it comes with a short sling attachment which negates inappropriate torque on a carabiner and is intended primarily as a fall arrester. *Rescuetech1* sell the *Gibbs* with their own short sling attached but not for fall arrest. Don't say we didn't warn you about this whole fall-arrest/self-belay subject. **Double-check your devices suitability.**

Special thanks to Paul Witheridge

images approximately to scale	MODEL	COMPANY	ORIGIN	COST	WEIGHT	DIMENSIONS Width x Height x Span-Frame/Pin	STANDARDS
	Rescue Rope Grab 5000032	3M DBI-SALA		£88 $110 €101	374g 13.2oz	98x90x44/62mm 3.8x3.5x1.75/2.4"	EN567
	Rescue Grab RG10	AT HEIGHT		£80 $82 €149	375g 13.2oz	100 x 100 x 44/82mm 3.9 x 3.9 x 3/3.2"	EN567
	Hold Up	ATN		£80 $99 €92	295g 10.4oz	88 x 90 x 44mm 3.5 x 3.5 x 1.7"	-
	BuckGrab 5004b 5004BQ4	BUCKINGHAM		£117 $145 €134	172g 6oz	70 x 73 x 32/42mm 2.8 x 2.9 x 1.25/1.7"	ASTM
	Otto	CLIMAX		£62 $78 €62	281g 9.9oz exc sling	104 x 78 x 28/65mm 4 x 3.1 x 1.1/2.6"	*EN353-2
	Ascender	CMC		£83 $103 €95	252g 8.8oz	114 x 76 x 25/58mm 4.5 x 3x1/2.3"	NFPA T/G
	Ropewalker Aluminum NPWRAL	CMI		£93 $115 €106	200g 7oz	102 x 76 x19/57mm 4 x 3 x 0.75/2.25"	-
	Ropewalker Stainless RPWRSS	CMI		£102 $127 €117	312g 11oz	102 x 76x19x57mm 4x3x0.75x2.25"	-
	Arborist Ropewalker NPWRALARB	CMI		£89 $111 €102	198g 7oz	102 x 76 x19/38mm 4x3 x 0.75 x 1.5"	-
	Rescue Rope Grab	CRESTO		£120 $147 €135	374g 13.2oz	98 x 98 x 44/78mm 3.9 x 3.9 x 1.75/3.3"	EN567
	Puma Grab II 12mm	FUSION		n/a	335g 11.8oz	113x99x63mm 4.4x3.9x2.5"	EN567 ANSZI
	Puma Grab II 16mm	FUSION		n/a	300g* 10.6oz	113x99x63mm 4.4x3.9x2.5"	EN567 ANSI

NOTES COST: Approx & inc local tax/VAT * excludes duty/import taxes & shipping DEPTH/THICKNESS: /00mm, figure in

ROPE GRABS

MATERIALS SHELL CAM	CAM	ROPE DIAM RANGE	WLL/ MBS	EYE DIAM	FIXED	DETACHABLE	SERIAL NO.	LAD	HAUL	ASCENDER	FALL ARREST	OTHER COLOURS	NOTES	WWW.
Alu Alu		8-16mm 5/16 -5/8" <30mm web	600kg 1320lb	18mm 0.7"	-	■	-	○	■	■	-			3m.beratertool.de
Alu Alu		8-16mm* 5/16-5/8"	140kg 309lb	22mm 0.9"	■	■	■	○	■	■	-		*or 20-30mm webbing or 4-5mm wire cable	atheightuk.com
Stainless Steel Stainless Steel		9-16mm 3/8-5/8"	n/a	17mm* 0.7"	-	■	-	-	-	■	-		A CMI made sailors' device for mast climbing in a marine environment. #Original version in aluminium *shackle - may vary	atninc.com
Alu Alu		12.7mm 1/2"	n/a	16mm 0.6"	■	-	-	■	-	○	-		5004BQ4= Bolt has a split ring option. 90° offset eliminates the need for a locking twisted clevis	buckinghammfg.com
Alu Alu		8-12mm 5/16 -<1/2"	15kN 3372lbf	18mm 0.7"	-	■	-	-	-	■	■		*This is the Chinese 'GM Climbing' model and clearly a Gibbs copy but sold in Europe. by Climax with the extension sling for fall-arrest	productosclimax.com
Alu Alu		11-13mm 7/16-1/2"	*5kN 1124lbf	25mm 1"	-	■	■	■	■	■	-		*MBS for 11mm MBS=11kN for 13mm	cmcpro.com
Alu Hardened Steel		11-16mm 7/16-5/8"	33kN 7500lbf	25mm 1"	-	■	-	■	■	■	-		Wired Pip-pin	cmigearusa.com
Stainless Steel Hardened Steel		9-16mm 3/8-5/8"	33kN 7500lbf	25mm 1"	-	■	-	■	■	■	-		Hard-coated cam with lifetime warranty	cmigearusa.com
Alu Hardened Steel		11-16mm 7/16-5/8"	33kN 7500lbf	25mm 1"	■	-	-	■	■	■	-		Stainless Bolt secures cam closed for lanyard use	cmigearusa.com
Alu Alu		8-16mm* 5/16-5/8"	600kg 1320lb	22mm 0.9"	-	■	■	■	■	■	■		NB: intended primarily for use in rescue hauling hence the arrow opposite to ascending direction. Also fits webbing 21-32mm wide	cresto.com
Alu Alu		7-12mm 9/32 -<1/2"	23kN 5170lbf	24mm 1"	-	■	-	-	■	■	-		DISCONTINUED	fusionclimb.com
Alu Alu		12-16mm 1/2-5/8"	23kN 5170lbf	24mm 1"	-	■	-	-	■	■		■	DISCONTINUED *Larger rope version is lighter because more shell has been removed to fit 16mm rope	fusionclimb.com

burnt orange is the length of the bolt/pin N/A: info Not Available/not given USE: ●=OK but not ideal ■=Best Suited to this use

images approximately to scale	MODEL	COMPANY	ORIGIN	COST	WEIGHT	DIMENSIONS Width x Height x Span-Frame/Pin	STANDARD
	Sport #1	GIBBS PRODUCTS		£50 $62 €57	195g 6.9oz	104 x 76 x 63mm 4 x 3 x 2.5"	-
	Sport #2	GIBBS PRODUCTS		£50 $62 €57	200g 7oz	104 x 76 x 63mm 4 x 3 x 2.5"	-
	Rescue #3	GIBBS PRODUCTS		£65 $80 €74	236g 8.5oz	104 x 76 x 28/63mm 4 x 3 x 1.1/2.5"	ANSI
	Rescue/ Arborist #3B	GIBBS PRODUCTS		£61 $75 €67	230g 11.6oz	104 x 76 x 28/56mm 4 x 3 x 1.1/2.1"	ANSI
	Rescue #3S	GIBBS PRODUCTS		£61 $75 €67	331g 11.7oz	104 x 76 x 28/63mm 4 x 3 x 1.1/2.5"	ANSI
	Rescue #3SF	GIBBS PRODUCTS		£61 $75 €67	331g 11.7oz	104 x 76 x 28/63mm 4 x 3 x 1.1/2.5"	ANSI
	Arborist #3SB	GIBBS PRODUCTS		£61 $75 €67	320g 11.3oz	104 x 76 x 28/56mm 4 x 3 x 1.1/2.1"	ANSI
	Rescue/ Arborist #4	GIBBS PRODUCTS		£66 $81 €75	310g 10.9oz	104 x 90 x 30/63mm 4 x 3 x 1.2/2.5"	ANSI
	Rescue/ Arborist #4S	GIBBS PRODUCTS		£66 $81 €75	425g 15oz	104 x 92 x 30/63mm 4 x 3.6 x 1.2/2.5"	ANSI
	Arborist #4SB	GIBBS PRODUCTS		£66 $81 €75	414g 14.6oz	104 x 92 x 30/56mm 4 x 3.6 x 1.2/2.1"	ANSI
	Arborist Klimair B	GIBBS PRODUCTS		£105 $110 €103	156g 5.5oz	75 x 50 x 23/32mm 3 x 2 x 1/1.2"	ANSI
	Mini Ropegrab RP203	ISC		£62 $85 €71	176g 6.2oz	65 x 85 x 32/40mm 2.6 x 3.4 x 1.3/1.6"	EN353-2

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ROPE GRABS

MATERIALS SHELL CAM	CAM	ROPE DIAM RANGE	WLL/ MBS	EYE DIAM	FIXED	DETACHABLE	SERIAL NO.	LAD	HAUL	ASCENDER	FALL ARREST	OTHER COLOURS	NOTES	WWW.
Alu Alu		11-13mm 7/16-1/2"	11.3kN 2550lb	17mm 0.67"	-	■	-	○	○	■	-		single-person load only. Free-running only, no spring option	gibbsproducts.com
Alu Alu		11-13mm 7/16-1/2"	11.3kN 2550lb	17mm 0.67"	-	■	-	○	○	■	-		spring can be removed	gibbsproducts.com
Alu Alu		11-13mm 7/16-1/2"	22.24kN 5000lb	17mm 0.67"	-	■	-	○	■	■	-		spring can be removed	gibbsproducts.com
Alu Alu		11-13mm 7/16-1/2"	24.02kN 5400lb	17mm 0.67"	■	-	-	■	■	○	-		spring can be removed	gibbsproducts.com
Alu Alu		11-13mm 7/16-1/2"	24.02kN 5400lb	17mm 0.67"	-	■	-	○	■	■	-		also called ~3SS and previously called #2SS! spring can be removed	gibbsproducts.com
Alu Alu		11-13mm 7/16-1/2"	24.02kN 5400lb	17mm 0.67"	-	■	-	○	■	■	-		Free-running only - no spring option	gibbsproducts.com
Stainless Steel Alu		11-13mm 7/16-1/2"	24.02kN 5400lb	17mm 0.67"	■	-	-	■	○	○	-		spring can be removed	gibbsproducts.com
Alu Alu		14-19mm 5/8-3/4"	25kN 5650lb	17mm 0.67"	-	■	-	○	■	■	-		#4B (bolted) appears to be discontinued but is an easy retrofit. spring can be removed	gibbsproducts.com
Stainless Steel Alu		14-19mm 9/16-3/4"	25kN 5650lb	17mm 0.67"	-	■	-	○	■	■	-		spring can be removed	gibbsproducts.com
Stainless Steel Alu		14-19mm 9/16-3/4"	25kN 5650lb	17mm 0.67"	■	-	-	■	○	○	-		Alloy case version still available from stockists. spring can be removed	gibbsproducts.com
Alu Alu		11-13mm 7/16-1/2"	22.24kN 5000lb	17mm 0.67"	■	□	-	■	■	■	-		Two-way device with swivel. Can run in either direction- locks when loaded. Also available as removable pin model	gibbsproducts.com
Alu Alu		10-13mm 3/8-1/2"	140kg 308lb 2.5kN 562lbf	19mm 0.75"	■	-	■	■	○	□	-		Also rebadged by Yates	iscwales.com

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images approximately to scale	MODEL	COMPANY	ORIGIN	COST	WEIGHT	DIMENSIONS Width x Height x Span-Frame/Pin	STANDARD
	**Mini Ropegrab** RP209	**ISC**		£65 $94 €82	180g 6.4oz	65 x 85 x 32/62mm 2.6 x 3.4 x 1.3/2.4"	EN353-2
	**Ropegrab** RP205	**ISC**		£67 $93 €85	302g 10.6oz	99 x 98 x 40/67mm 3.9 x 3.9 x 1.6/2.6"	EN567
	**Ropegrab** RP204	**ISC**		£62 $79 €72	299g 10.6oz	99 x 98 x 40/46mm 3.9 x 3.9 x 1.6/1.8"	EN567
	FA2010300B	**KRATOS SAFETY**		£67* $85* €77*	176g 6.2oz	62 x 85 x 28/60mm 2.5 x 3.4 x 1.1/2.4"	EN353-2 EN358
	**Tibloc 2**	**PETZL**		£32 $48 €37	35g 1.2oz	55 x 39 x 22mm 2.2 x 1.5 x 0.9"	EN567 UIAA EAC
	**MicroGrab**	**PETZL**		£84 $80 €85	150g 5.3oz	76 x 84 x 36mm 3 x 3.4 x 1.4"	EN567 NFPA-T EAC
	**Rescuecender**	**PETZL**		£96 $110 €97	260g 9oz	110 x 82 x 36mm 4.3 x 3.2 x 1.4"	EN567 EN12841B NFPA-T EAC
	**Shunt**	**PETZL**		£63 $85 €66	188g 6.6oz	110 x 80 x 55mm 4.3 x 3.2 x 2.2"	UIAA
	**Grip**	**PMI**		£70 $86 €79	190g 6.7oz	98 x 74 x 35/47mm 3.9 x 2.9 x 1.4/1.85"	NFPA Berry-Complian
	**Better-Grab2** USR-MRG-333	**PRO CLIMB (US RIGGING)**		£48 $60 €55	249g 8.7oz	71 x 90 x 40mm 2.8 x 2.5 x 1.6"	ANSI
	**Alu Mini RopeGrab** USR-MRG-200	**PRO CLIMB (US RIGGING)**		£33 $40 €37	312g 11oz	74x65x30/40mm 2.9x2.6x1.2/1.6"	ANSI

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ROPE GRABS

MATERIALS SHELL CAM	CAM	ROPE DIAM RANGE	WLL/ MBS	EYE DIAM	FIXED	DETACHABLE	SERIAL NO.	LAD	HAUL	ASCENDER	FALL ARREST	OTHER COLOURS	NOTES	WWW.
Alu Alu		10.5-13mm ⅜-½"	140kg 308lb 2.5kN 562lbf	19mm 0.75"	-	■	■	■	■	■	■		RP201 R-Clip version discontinued. After Nov2017 cord used to retain the pin instead of wire	iscwales.com
Alu Alu		14-16mm ⅝-⅝"	140kg 308lb 2.5kN 562lbf	24mm 0.9"	-	■	■	■	■	■	-		RP206 R-Clip version discontinued. After Nov2017 cord is used to retain the pin instead of wire	iscwales.com
Alu Alu		14-16mm ⅝-⅝"	140kg 308lb 2.5kN 562lbf	24mm 0.9"	■	-	■	■	○	○	-			iscwales.com
Alu Alu		11mm 7⁄16"	15kN 3372lbf	17mm 0.6"	-	■	-	■	■	-	■	■	*Price includes captive-eye steel carabiner	kratossafety.com
Stainless Steel		8-11mm 5⁄16 -7⁄16"	140kg 308lb 4kN 899lbf	10-12mm* 0.4-0.5"	-	■	■	○	○	○	-		Emergency ascender/hauling device *minimum and maximum carabiner bar size to use, not eye diam.	petzl.com
Alu Alu		8-13mm 5⁄16 -½"	140kg 308lb 5kN 1124lbf	16mm 0.6"	■	-	■	■	○	○	■			petzl.com
Alu Alu		9-13mm ⅜-½"	140kg 308lb 5kN 1124lbf	20mm 0.8"	-	■	■	■	■	■	-		Red 'unlocked' warning indicator shows when cam is not properly secured	petzl.com
Alu Alu		8*/10-11mm 5⁄16*⅜-7⁄16"	#1-8kN 225-1800lbf 20kN 4496lbf	16mm 0.6"	-	■	■	○	-	○	■		*double ropes >8mm Single ropes > 10mm # rope dependent	petzl.com
Alu Alu		10-13mm ⅜-½"	5kN 1124lbf (3Sigma)	18mm 0.7"	-	■	■	■	■	■	-		Co-Produced with SMC	pmirope.com
StainlessSteel /Rubber Alu		*11-16mm *7⁄16-⅝"	24.02kN 5400lbf	16mm 0.6"	□	■	-	■	■	-	-		Rubber coated frame. *min wire core flip-line=13mm,1/2" 300 model discontinued	usrigging.com
Alu Alu		*11-16mm *7⁄16-⅝"	24.02kN 5400lbf	16mm 0.6"	■	-	-	■	○	-	-		*min wire core flip-line=13mm,1/2"	usrigging.com

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images approximately to scale	MODEL	COMPANY	ORIGIN	COST	WEIGHT	DIMENSIONS Width x Height x Span-Frame/Pin	STANDARD
	**RG4-90**	**ROCK EXOTICA**		£90 $108 €103	227g 8oz	60 x 73 x 32mm 2.4 x 2.9 x 1.3"	EN567
	RG2-90	**ROCK EXOTICA**		£84 $98 €112	142g 5oz	60 x 73 x 32mm 2.4 x 2.9 x 1.3"	EN567 ANSI
	**RG2**	**ROCK EXOTICA**		£78 $88 €112	142g 5oz	66 x 98 x 35mm 2.6 x 3.9 x 1.4"	EN567
	**S-008/009**	**S.E.PEAK** Shanghai Leidell Ind Co Ltd/NalHon		£77 $50 €88	180g 6.4oz	85 x 77 x 28/62mm 3.4 x 3 x 1.1/2.4"	EN353-2 EN358
	**S-010/011**	**S.E.PEAK** Shanghai Leidell Ind Co Ltd/NalHon		£77 $50 €88	172g 6oz	85 x 77 x 28/41mm 3.4 x 3 x 1.1/1.6"	ANSI
	**Duck R** T02 *T02L	**SAFETEC**		£126 $178 €144	258g 9.1oz *325g 11.5oz	97 x 73 x 41mm 3.9 x 3 x 1.6"	EN12841A
	**Enforcer** T03L TO3H*	**SAFETEC**		£138 $198 €167	305g 10.7oz *390g 13.7oz	86 x 76 x 42mm 3.9 x 3 x 1.6"	EN12841A ANSI NBR CA
	**Ringo**	**SKYLOTEC**		£54 $87 €63	52g 1.8oz	70 x 40 x 18mm 2.7 x 1.6 x 0.7mm	-
	**Rope Adjuster** 1540RB-Bolt	**SL TECH**		£27 $33 €31	181g 6.4oz	62 x 85 x 28/40mm 2.5 x 3.4 x 1.1/1.6"	EN353-2 EN358
	**Grip**	**SMC**		£73 $90 €83	190g 6.7oz	98x74x35/47mm 3.9x2.9x1.4/1.85"	NFPA

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ROPE GRABS

MATERIALS SHELL CAM	CAM	ROPE DIAM RANGE	WLL/ MBS	EYE DIAM	FIXED	DETACHABLE	SERIAL NO.	LAD	HAUL	ASCENDER	FALL ARREST	OTHER COLOURS	NOTES	WWW.
Alu Alu		13.5-16mm ½-⅝ "	140kg 308lb 4kN 899lbf	15.8mm 0.625"	■	-	■	■	■	-	-		90° offset eye. Despite being EN567 this is NOT intended for ascending because of carabiner torque	rockexotica.com
Alu Alu		9-13mm ⅜-½"	140kg 308lb 4kN 899lbf	15.8mm 0.625"	■	-	■	■	■	-	-		90° offset eye. Despite being EN567 this is NOT intended for ascending because of carabiner torque	rockexotica.com
Alu Alu		9-13mm ⅜-½"	140kg 308lb 4kN 899lbf	15.8mm 0.625"	■	-	■	■	■	-	-		Despite being EN567 this is NOT intended for ascending because of carabiner torque	rockexotica.com
Alu Alu		11-13mm 7/16-½"	15kN 3372lbf	16mm 0.6"	-	■	-	■	-	-	■	■	same or similar models 'badged' as Lixada, Side-Up, NTR-Jiangsu, Yundxi etc. S-009=Bolted version	en.sepeak.net
Alu Alu		11-13mm 7/16-½"	15kN 3372lbf	16mm 0.6"	■	-	-	■	-	○	-		90° Offset eye. S-011 = Sprung pin version -	en.sepeak.net
Alu Alu or *Stainless Steel		10.5-11mm 7/16"	100kg 220lb	19mm 0.75"	-	■	■	■	-	○	■		Tested to 200kg for rescue at FF.0 or less * Stainless Steel cam is silver, (alu is red)	safetecbr.com.br
Stainless Steel Alu or *Stainless Steel		10.5-12mm 7/16-<½"	200kg# 440lb	19mm 0.75"	■		■	-	■	■	■		* Stainless Steel cam is silver, (alu is red). #Heavy duty - specifically designed for rescue loads. =cam-rope interface in profile	safetecbr.com.br
Stainless Steel Stainless Steel		8-13mm 5/16 -½"	-	10mm 0.4"	-	■	-	-	■	○	-		Emergency Ascender/hauling device. Note Skylotec also has 'Ergograbs' only sold as part of fliplines	skylotec.com
Alu Alu		11mm 7/16"	15kN 3372lbf	17mm 0.6"	■	-	■	■	■	-	■		Also a second model with offset lever-cam eye but not enough details as yet 	securitelandry.com
Alu Alu		10-12.5mm ⅜-½"	5kN 1124lbf (3Sigma)	18mm 0.7"	-	■	■	■	■	■	-		Co-Produced with PMI	smcgear.com
														Expansion Row
														Expansion Row

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images approximately to scale		MODEL	COMPANY	ORIGIN	COST	WEIGHT	DIMENSIONS Width x Height x Span-Frame/Pin	STANDARD
		Climb Right Fixed Pin Rope Grab 85528	SPYDER MANUFACTURING		£65 $80 €74	195g 6.85oz	76x70x32/45mm 3x2.75x1.25/1.75"	ANSI
		Climb Right Fixed Pin Rope Grab Mini 85568	SPYDER MANUFACTURING		£62 $76 €70	166g 5.85oz	64x69x32/45mm 2.5x2.7x1.25/1.75"	ANSI
		Climb Right Rope Grab 85538	SPYDER MANUFACTURING		£73 $90 €83	207g 7.3oz	76x70x32/65mm 3x2.75x1.25/2.5"	ANSI
		Climb Right Rope Grab Mini 85578	SPYDER MANUFACTURING		£68 $84 €77	179g 6.3oz	64x69x32/65mm 2.5x2.7x1.25/2.5"	ANSI
		Rope Grab	STEIN		£54 $83 €60	176g 6.2oz	65x85x26/40mm 2.6x3.4x1/1.6"	EN353-2 EN567
		MiniRope Grab	STEIN		£48 $75 €55	166g 5.85oz	64x69x32/45mm 2.5x2.7x1.25/1.75"	EN353 UKCA
		THRG1	TREEHOG/ ARBORTEC		£45 $60 €49	180g 6.4oz	85 x 45 x 22/40mm 3.4 x 1.8 x 1/1.6"	EN 567
		THRG2	TREEHOG/ ARBORTEC		£58 $71 €64	175g 6.2oz	85 x 45 x 22/60mm 3.4 x 1.8 x 1/2.4"	EN 567
		Block	US CLIMB		£66 $82 €75	176g 6.2oz	85 x 45 x 26/62mm 3.4 x 1.8 x 1/2.4"	EN 567
		Block2 UC1219	US CLIMB		£83 $103 €94	374g 13.2oz	98 x 90 x 44/62mm 3.8 x 3.5 x 1.75/2.4"	EN567
		XD-Q9666	XINDA (BINGFEN OUTDOOR)		£44 $55 €49	239g 8.4oz	105 x 85mm 4.1 x 3.3"	n/a

NOTES COST: Approx & inc local tax/VAT * **excludes duty/import taxes & shipping** DEPTH/THICKNESS: /00mm, figure in b

ROPE GRABS

MATERIALS SHELL CAM	CAM	ROPE DIAM RANGE	WLL/ MBS	EYE DIAM	FIXED	DETACHABLE	SERIAL NO.	LAD	HAUL	ASCENDER	FALL ARREST	OTHER COLOURS	NOTES	WWW.
Alu Alu		12.7-16mm ½-⅝"	178kg 350lb	19mm 0.75"	■	-	■	■	■	-	-			spyderman.com
Alu Alu		10-12.7mm ⅜-½"	178kg 350lb	19mm 0.75"	■	-	■	■	■	-	-			spyderman.com
Alu Alu		12.7-16mm ½-⅝"	178kg 350lb	19mm 0.75"	-	■	■	■	■	-	-			spyderman.com
Alu Alu		10-12.7mm ⅜-½"	178kg 350lb	19mm 0.75"	-	■	■	■	■	-	-			spyderman.com
Alu Alu		10-13mm ⅜-½"	140kg 308lb 2.5kN 562lbf	19mm 0.75"	■	-	■	■	○	○	■			steinworldwide.com
Alu Alu		11-13mm 7/16-½"	100kg 220lb	19mm 0.75"	■	-	-	■	○	○	-			steinworldwide.com
Alu Alu		9-13mm ⅜-½"	15kN 3372lbf	18mm 0.7"	■	-	■	■	○	■	-			treehog.co.uk
Alu Alu		9-13mm ⅜-½"	15kN 3372lbf	18mm 0.7"	-	■	■	○	■	■	-		DISCONTINUED	treehog.co.uk
Alu Alu		9-13mm ⅜-½"	15kN 3372lbf	18mm 0.7"	-	■	-	○	■	■	■			usclimb.com climbclean.com.br
Alu Alu		8-16mm 5/16 -⅝" <30mm web	600kg 1320lb	18mm 0.7"	-	■	-	○	■	■	-		Larger device which runs on 30mm webbing as well as rope	usclimb.com climbclean.com.br
Alu Alu		8-12mm 5/16 -<½"	15kN 3372lbf	16mm 0.6"	■		-	■	○	-	■		* excludes duty/import taxes & shipping	xindaoutdoor.com
														Expansion Row

burnt orange is the length of the bolt/pin N/A: info Not Available/not given USE: ●=OK but not ideal ■=Best Suited to this use

DPS

only

PROGRESS CAPTURE PULLEYS

Progress capture is a term uniquely related to hauling and refers to devices that effectively function as one-way-valves for ropes - allowing them to be pulled in one direction around a pulley wheel via a cam that then traps the rope when it is released by the hauler so that little or no drop-back occurs once hauling is complete or during a reset. You quite literally capture the upwards progress you made during hauling and also ensure that the load cannot accidentally be released in an uncontrolled fall. Pulley systems that require a PCP are not a standard part of the arborist arsenal although mini haul systems have seen some favour to assist in directional loading of a cut branch or trunk. Consequently, for arb work such systems are nearly always rigged horizontally as they are in wilderness rescue but in structural rescue they are most often in vertical orientation. The PCP or PCD (Device) can be used as part of a pulley system or by itself for material handling to hold load as you take in on the rope Pull on the rope and raise or pull in on your load, release and it is arrested by the cam. In more complex systems the PCP is incorporated into a mechanical advantage (MA) system offering upwards of 3:1 and most often 4 or 5:1 depending on how it is rigged with the PCP best incorporated at or near the first entry or last exit strand from the hauler. Functionally these would equally operate as belay devices keeping rope tight to the load during raising were it not for the fact that most use toothed cams and ARE NOT DESIGNED TO BE SHOCK LOADED as might occur during belay and definitely does occur when dropping a branch or section of timber. Nevertheless, one or two will function in both PCP and Belay modes because the camming action is more passive than the usual toothed cam and is mitigated by the gripping action of the sheave. The *CMC MPD* and *Petzl Maestro* are examples of what are effective descenders incorporating a pulley sheave/wheel hence their inclusion in this guide. The majority of devices however, are designed to be used in one-direction for hauling such that release of the cam would require you to mitigate the efficiency of the pulley in lowering by incorporating a descender, again this isn't the case with the *MPD* and *Maestro* with their one-way pulley wheel and it's also not the case with one or two other, more conventional designs like the ISC one-way versions of its PCPs.

One type of device we *haven't* included is the integrated load arresters typified by the *Rollgliss 350* (right), *Cresto* and *ISC RALF* (far-right). These are very much 'Devices' rather than 'pulleys' and are either part of a pre-rigged system or in *Cresto* and *Rollgliss*'s case, are a self-contained unit that effectively functions as a PCD crossed with a capstan winch. The *RALF* and some *Rollgliss* models can be activated and released remotely while the complex capstan style models can deal with very heavy loads extremely well including multiple fall-arrests but are the size and cost of a small car. It's a fine line, but while we haven't included the *Ralf* we have included *3M's Rigger's Mate* and *CMC's CSR2* because they are anatomically similar to a pulley even though you could argue they function in a similar way to *Ralf* and the *350* with remote release/lock option.

Since we first wrote this guide our three groups of product has expanded to 4 groups with the inclusion of the heaviest and most expensive options- double sheave PCPs:

1. WALLHAULERS

The first type we shall call **WALLHAULERS** after the original *Rock Exotica* model, later purchased by *Petzl* and subsequently discontinued when they developed their *PROTRAXION*. The apparent reintroduction of the Wallhauler may be of uncertified/unlicensed copies. In their simplest form these are a pulley bolted onto a basic hand ascender as seen in the *Kong Block Roll* and *Xindi/Reico* model. These later evolved into a one piece housing typified by *RSI, ISC (pic right)* and *SRTe* (then DB-Sala/Rollgliss under3M and unfortunately largely swallowed up and discarded. If they do still exist, 3M is the largest company in our sector with by far the worse website and marketing!). The ascender is part of the same single body of metal as the pulley and most offer double as well as single sheave options. Consequently these are by far the largest and heaviest models but there are some diminutive options like the *CMI Micro.* Most, in fact all in this list, incorporate a double becket enabling them to be used as part of a larger MA system and some are only available as part of a full rope kit. Many come with cord (or you can add cord) for remote removal of the cam from the rope where the pulley system is rigged out of reach - this is common in rescue but not the norm in arb work.

2. INTEGRATED COMPACT PCD

2) The second group we're calling ***integrated compact*** models which came after the *Wallhauler* style. At the smallest end of things are the *Petzl Micro-Traxion, CT RollN'lock Beal/Edelweiss, Edelrid , Kong Duck* (top) and the newest model *CAMP's Turbolock* (pic overleaf) where the 'pulley' and cam are effectively together in the same side cheeks or side plates as distinct from *Wallhaulers* which are two separate components even if they are con-joined. At the larger end is the *SMC HX* and the *Petzl Pro Traxion* (below) over three times heavier than it's smaller brother the *Micro-Traxion (right)* now that the *Mini-Traxion* is no more. While it's not three times stronger it is more geared to heavy duty and long-hauling and in fact has now been overtaken in the 'humongous' category by its cousin the *Petzl Twin Release* which we'll discuss shortly. As pioneers of

PROGRESS CAPTURE PULLEYS

this genre the term '*Traxion*' is is often used to describe all such devices ala '*Hoover*'. *SMC's Advance Tech HX* is a slick, purpose designed progress capture pulley with double sheave and a single cam. It has a double becket meaning it too can be incorporated into an MA system but it is reasonably compact at 129mm/5" tall and is fully rescue-capable. Although they've now been out a few years both the *Traxions* and *HX* (right) deserve praise as designs that weren't simply variations on a theme as most of the '*Wall-Hauler*' style are.

New since the original guide are a couple of 'plumpers', *Petzl*'s unimaginatively named *Twin-Release* and *Anpens*' even less imaginatively named "*Aluminum Universal Brake Double Pulley for rescue and high work", no really that is the product name - needless to say we've shortened it.*

3. DESCENDER PCDs

We originally listed these as ***oddities*** but with *CMC/Harken*'s *Clutch (left) and ASAT's RD2 (right) joining CMC's original MPD and Petzl's Maestro (shown right in the hauling mode they can all perform)* they have coalesced into this separate grouping as heavy-duty descenders / lowering devices with an integral rotating or partially rotating pulley sheave.

None can be described as compact by any stretch of the imagination but they all function as heavy-duty progress capture pulleys as well as belay and lowering devices. Until the *Twin-Release (pic right)* , these were unique in being truly two-way in operation but the price you pay is that they are the heaviest and most expensive devices but pulley efficiency, while very good for a hybrid, is definitely lower than *Petzl*'s new true pulley derivative the *Twin-Release* (pic right).

4. ODDITIES. The final group of oddities starts with that *Twin Release* which we're starting a petition to rename to the *Walrus*. We call it that because it's big, flabby and unwieldy in the hand but in its true environment, is as sleek as a sea-lion....ish. Despite looking like the car that Homer Simpson designed, the function of this is a thing of wonderment - it's a swivelling, double sheave pulley with locking swing cheeks that not only has a camming action to hold a rope, it even has a fold-out handle to enable you to lower a heavy load and is especially efficient within a 4-5:1 system with a second pulley below. Close but with no lowering handle is *Anpen's Aluminum Universal Brake Double Pulley for rescue and high work* (where's that petition when you need it). This uses a swivel and a fixed becket with a toothed cam on one of the two sheaves. Next are the system components like *CMC*'s *CSR²* which are intended to be the progress capture element of a two-pulleys system (as indeed is the *Twin-Release* if it didn't have a lowering handle) . *Rock Exotica's Aztek* (right) is also normally part of a two-pulley system but we've included it because it is equipped with an anchor point specifically for a custom built prusik acting as the integrated progress capture via a customised prusik. There may well be other system components not sold separately. Incidentally, the DMM RPM (right) that we originally mentioned as being similar in function to the *Aztek* has been discontinued. This was a slick piece of kit, probably too slick for the size of market.

Also in this final grouping of 'oddities' were the Russian models which seem to have evolved in splendid isolation with some truly unique designs and names. These are primarily domestic to Russia and with their international pariah status requring they not be included, that won't change any time soon but they're certainly interesting. the Traction-Shackle (right) for instance, uses a bollard for the top attachment that allows direct attachment to a rigging plate or to a rope/ sling stitched eye, bypassing the need for a carabiner something that the latest SMC APEX also does (albeit without being a PCD) . These are all interesting ideas. There are a number of models in this list that can only be used for non-live loads so make sure you check the HUMAN-CAPABLE column if you are using your PCD for anything other than load-handling.

Our go-to kit man Paul Witheridge of access specialists Lyon Equipment and several Mountain, Cave and Mines Rescue organisations has some useful pointers for selecting a PCP:

As you say [in your Tables key], users must never confuse the WLL of the pulley with the WLL when used as a progress capture device. The WLL when used with the cam actuated is always lower, sometimes much lower, because the applied load is attempting to drag the rope through the cam. There have been some nasty outcomes when this has been overlooked or misinterpreted.

- *Contrary to popular belief, positioning the cam contact face at the apex of the pulley is not automatically a bad thing. People think that this is the area of highest stress on the rope because it is 'loaded on both sides'. In fact, the 'load' is actually shared rather than being on one strand (think of the pulley effect and mechanical advantage). Further, the rope at this point is under compression and the downward forces increase the frictional contact on the pulley face. Rope is more resilient under compression than in tension.*
- *Good designs of swing cheek pulley or progress capture device use the forces applied to the attachment eye to create a mechanical lock, preventing the plate from moving when in*

use. This may be by the side plate moving and the central axle being locked in a groove within that plate
For the highest efficiency, go for the largest diameter pulley wheel and a bearing with the lowest coefficient of friction. Pulleys are like spanners, the longer the distance from the centre (bolt) to the outside edge (hand) the better – it's a torque thing.

- *In general basic solid bushes although coping well with slow rotation speeds and high loads are nowhere near as efficient as ball raced bearings. Single race bearings are good for medium speeds and loads, twin raced bearings cope with higher loads but can overheat at higher speeds (less space for lubricant and cooling air = quicker heat generation)*
- *Physically small progress capture pulleys may not be as efficient, but they can be very versatile; the Swiss army knife of access equipment. They can be a pulley, a hand ascender, a chest ascender, prevent load roll back on an inclined rope, used for simple kit bag hauling or contained in a mechanical advantage 'jigger' pulley system. Technicians have developed techniques for breaking into a tight line that rely on such devices (see Spanish balancer technique)*
- *NEVER use a progress capture pulley for life lining / self-lining / belaying unless the manufacturer specifically approves the use. Although very commonly taught because of the ease of use, the risk of slack in the system and a subsequent dynamic fall onto the toothed cam can be sufficient to catastrophically damage the rope.*
- *Some models of progress capture pulley require the side plate to be secured by fitting of a connector into the becket eye. Failure to do this can cause the side plate to swing open, releasing the rope. IF THE PRODUCT INSTRUCTIONS SAYS FIT A CONNECTOR, THEN FIT ONE!*
- *Some products allow the fitting of cam release cords. None of these will release the cam when loaded. All they allow is an unloaded cam to be remotely lifted clear of the rope. Cords are useful when operating out of reach of the device itself but still able to pull on the tail rope.*
- *Top quality designs seem to have unnecessarily fiddly locking mechanisms. They usually require the operator to lift the cam and then press a button to lock the cam in the open position. The reason for this is that if the cam automatically locked open at the top of its arc an oblique pull on the rope could cause the cam to lift and lock; deadly if the user does not realise and lets go of the rope. Check what a product does before deciding to buy.*

IN THE FOLLOWING TABLES:.....

COST: as always is rough guide only - it can vary due to exchange rates, taxes etc. Simple Currency conversions are shown in orange but do not include import duty, shipping and local taxes so are a very rough guide only.
PULLEY SHEAVE/TREAD Ø DIAMETER is the maximum to the outer edge of the wheel or TREAD is the true, inner dimension to the bottom of the curve.
MBL as a pulley: is shown in burnt orange This figure is the minimum combined load that the pulley can withstand before failure. This figure should be halved for the actual load that can be lifted.
MAX WL od PC Cam means the Maximum Working Load at the pulley cam interface, ie. when the rope is in arrest or hold mode. In PC mode, this breaking load is frequently defined as the limit of what the rope may withstand before the progress capture component damages the rope. Why use the word 'MAX'? Because the manufacturer guarantees this figure as the minimum that will be achieved with the rope types described, but cannot confirm the device will reliably perform at loads above this figure. For this guide we're more interested in their progress capture capabilities. This figure is generally defined as the limit before the applied load overcomes the gripping force of the device and the rope slides through; or the limit before control of the load becomes unmanageable due to forces at the control handle or limits in braking efficiency. For NFPA models that don't technically have an MBS for capture cams the cam interface requirement becomes relevant and must be at least 280kg for 'G' or 136kg for the lighter 'T' models, in practice this becomes the **WLL (normally quoted in kN as a unit of force rather than kg as a weight for SWL)**. On some products where a descender/belay function is incorporated, the **MBL as PC** may also define the maximum load that can be held in a limited dynamic event (FF0.3) where the true applied force is significant. MBL's are a complex area and it as always best to read the manufacturers product instructions thoroughly to make sure that you really understand what your device is capable of
SAFE ROPE LOADING There is no danger of dropping the device because it can remain attached while the rope is inserted normally via a swing cheek and or hinged gate like the CAMP model above.
HUMAN HAULING: The manufacturer states that this device can be used for hauling a live load to the stated limits, not just material handling.
SWIVEL EYE/BECKET for MA system use: An attachment eye at one end to incorparet another pulley and create a Mechanical Advantage (MA) system
ALSO USE AS:
PULLEY-only: The device can be used as a stand-alone pulley by disengaging the cam. Some function well while others will prove cumbersome but can still function as a pulley.
ASCENDER-only: The device can be used as a stand-alone ascender - usually just the smaller models like the *Duck* and *RollNLock* shown as a solid black square ■. Those with an outline CIRCLE meaning OK but not ideal, ○ ○ ○ may require creative use (and in some cases only as a last resort) but still possible. The multi-role descenders for instance can all function as a pull-through ascender but it's cumbersome.
STANDARDS: **NFPA** is the US Fire-Rescue standard while **ASTM** covers industrial use (including arboriculture and forestry). In Europe there are at least two different functional requirements here - a standard for the **Pulley** (**EN 12278**) and one for the cam or **Ascender** element (**EN 567**) . In addition the multi-function devices will be certified as a **Descender** (**EN341** mountaineering descenders or **EN12841** (Rope Adjustment Systems). Those for non-human load adhere to the cover-all **Machinary** directive **2006/42/EC** .
All CE devices are required to use EN1891 ropes.

	Images NOT to Scale							
	MANUFACTURER	ANPEN	ANPEN	ASAT/AT HEIGHT	BEAL	CAMP	CMC	
	MODEL VARIANT	Universal PSB U31	Universal PDB U32	RD2 -	Tract Up -	Turbo Lock 3185	MPD Sml -	
SPECIFICATIONS	ORIGIN							
	COST	£106 $130* €122	£118 $145* €136	£386 $474 €443	£44 $53 €46	£110 $185 €120	£950 $890 €1083	£950
	WEIGHT	270g 9.5oz	462g 1lb	790g 1.75lb	78g 2.75oz	198g 7oz	1200g 2.6lb	
	WLL MBS of pulley	5 28kN 1124 6295lbf	5 28kN 1124 6295lbf	- 21kN - 4720lbf	2 4kN* 450 900lbf	5 23kN 1124 5171lbf	- 44kN - 9892lbf	
	MAX WL MBS of PC Cam	186kg 409lb	186kg 409lb	140/200kg* 308/440lb	204kg 450lb	255kg 562lb	240kg 5.28lb	
	MAX ROPE Ø	8-13mm 5/16-1/2"	8-13mm 5/16-1/2"	10.5-11mm 14/32-7/16"	8-11mm 5/16-7/16"	8-13mm 5/16-1/2"	11mm 7/16"	
	SHEAVE/TREAD Ø	35/26mm 1.4/1"	2x 35/26mm 1.4/1"	53mm 2.1"	23mm 1"	41mm 1.6"	50mm 2"	
	DIMENSIONS height/length x width x depth	115 x 51 x 39mm 4.5 x 2 x 1.5"	148 x 51 x 66mm 5.8 x 2 x 2.6"	160 x 140 x 60mm 6.3 x5.5 x 2.4"	65x35mm 2.6x1.4"	106 x 58 x 27mm 4.2 x 2.3 x 1.1"	190 x 140 x 84mm 7.4 x 5.5 x 3.3"	190 7.4
	BODY MATERIAL SHEAVE MATERIAL AXLE MATERIAL CAM MATERIAL	Alu Alu Stainless Steel Steel	Alu Alu Stainless Steel Steel	Alu Alu Stainless Steel Faceted Cam	Alu Alu Stainless Steel Stainless Steel	Alu Alu Stainless Steel Stainless Steel	Alu Alu Stainless Steel Faceted Sheave	Sta Face
	PULLEY EFFICIENCY	n/a	n/a	88%	n/a	95%	n/a	
	MAIN EYE Ø	22mm 0.86"	22mm 0.86"	12mm ½"	19mm 0.75"	19mm 0.75"	20mm 0.8"	
	SECONDARY EYE Ø	-	22mm 0.86"	13mm ½"	-	21mm 0.8"	18mm 0.8"	
USES & FEATURES	BEARING/BUSHING	■	■	■	■	■	■	
	SWING CHEEK	■	■	■	■	■	■	
	SAFE ROPE-LOADING	-	-	■	-	■	■	
	HUMAN-HAULING	■	■	■	■	■	■	
	SWIVEL EYE BECKET	■-	■ ■	■		■*	■	
	ALSO USE as PULLEY ASCENDER DESCENDER	■ ● -	■ - -	● ● ■	■ ■ -	■ ■ -	● ● ■	
	STANDARDS: CE: PULLEY CE: ASCENDER ADJUST/ DESCENDER MACHINARY	CE	CE	CE	CE	UIAA CE	NFPA* CE CE CE**	
	OTHER COLOURS	-	-	■		■		
	NOTES	*FOB China -Excludes shipping/import duty	*FOB China -Excludes shipping/import duty	*200kg under last resort rescue conditions only	*will also take flat webbing * Load figures are with the cam engaged	*	*11mm Certified as 'G' in p 'T' in lowering/Belay **CE version not i	
	WEBSITE	en.anpen.com	en.anpen.com	asatsafe.com	beal-planet.com	camp.it	cmcpro.com	cr

NOTES: COSTS: £$€ shown in burnt orange are currency conversions only N/A = info Not Available/not given COST: Approx & inc local tax/VAT WT: Device Only STANDAR

PROGRESS CAPTURE PULLEYS

							
CMC	CMC/HARKEN	CMC/HARKEN	CMC	CMC	CMC	CMI	CMI
MPD Lg -	Clutch 11mm 335011	Clutch 13mm 335013	CSR² 300343	Capto 11 336011	Capto 13 336013	Uplift NFPA 2940	Lock Pulley 2940
0 $890 €1083	£720 $750 €825	£720 $750 €825	£561 $689 €643	£296 $359 €341	£296 $359 €341	£342 $420 €392	£161 $200 €185
1200g 2.6lb	836g 1.84lb	816g 1.8lb	1100g 2.5lb	513g 1.13lb	508g 1.12lb	1200g 2.6lb	155g 2.6lb
- 44kN - 9892lbf	- 40kN - 8992lbf	- 40kN - 8992lbf	- 40kN - 8992lbf	- 36kN - 8093lbf	- 36kN - 8093lbf	5.4 53kN 1200 12000lbf	- 8kN - 1800lbf
280kg 617lb	272kg 600lb	272kg 600lb	- -	*	*	199kg 440lb	163kg 360lb
13mm ½"	10.5-11mm 7/16"	12.5-13mm ½"	11-13mm 7/16-½"	10.5-11mm 7/16"	12.5-13mm ½"	10-13mm ⅜-½"	≤13mm ≤½"
50mm 2"	50mm 2"	50mm 2"	2x 57mm* 2x 2.25"	50/45mm 2/1.77"	50/45mm 2/1.77"	2x 75/56mm 2x 3/2.2"	38/25mm 1.5/1"
x 140 x 84mm x 5.5 x 3.3"	208 x 112 x 47mm 8.2 x 4.4 x 1.9"	208 x 112 x 47mm 8.2 x 4.4 x 1.9"	156 x 114 x 84mm 6.1 x 4.5 x 3.3"	150 x 70 x 31mm 5.9 x 2.75 x 1.2"	150 x 70 x 31mm 5.9 x 2.75 x 1.2"	254 x 102 x 62mm 10 x 4 2.4"	127 x 76 x 57mm 5 x 3 x 2.25"
Alu Alu inless Steel eted Sheave	Alu Stainless Steel Stainless Steel Faceted Sheave	Alu Stainless Steel Stainless Steel Faceted Sheave	Alu Alu Stainless Steel Faceted Sheave*	Alu Alu Stainless Steel Faceted Sheave	Alu Alu Stainless Steel Faceted Sheave	Alu Alu Stainless Steel Steel	Alu Alu Stainless Steel Steel
n/a	n/a	n/a	n/a	91%	91%	184%	n/a
20mm 0.8"	12mm ½"	12mm ½"	22mm 0.86"	3.9mm (for cord) 0.15"	3.9mm (for cord) 0.15"	25mm 1"	22mm 0.66"
18mm 0.8"	13mm ½"	13mm ½"	-	18.4mm 0.7"	18.4mm 0.7"	25mm 1"	-
■	■	■	■	■	■	■	■
■	-	-	-	■	■	-	-
■	■	■	-	■	■	-	■
■	■	■	■	■	■	■	■
■	■	■	■	■	■	■	-
● ● ■	● ● ■	● ● ■	■ - -	■ ■ ●	■ ■ ●	■ - -	■ ■ -
NFPA CE CE CE	ANSI NFPA CE CE CE	ANSI NFPA	NFPA CE CE CE**	NFPA CE CE CE	NFPA	NFPA*	
ulley mode but y mode. in US.			*2nd sheave is a deep V-groove locking sheave **CE version not in US.	NOT intended to be a 1:1 PCP *load applied to cam automatically limited but forced tested to 11.1kn/2500lbf	NOT intended to be a 1:1 PCP. *load applied to cam automatically limited but forced tested to 11.1kn/2500lbf	* exceeds NFPA requirements but not certified	*NOT a true PCP* - Designed as a quick means of reversal during decent but could be incorporated into a haul system
mcpro.com	cmcpro.com	cmcpro.com	cmcpro.com	cmcpro.com	cmcpro.com	cmigearusa.com	cmigearusa.com

RDS: CE = EN 567, CE=Machinery Directive Only PC = Progress Capture. USES: ○●● = OK BUT NOT IDEAL

	Images NOT to Scale							
	MANUFACTURER	CMI	CMI	EDELRID	EDELWEISS	HEIGHTEC	HEIGHTEC	
	MODEL VARIANT	Micro Hauler Micro S	Micro Hauler Dbl Micro D	Spoc 737430001380	Micro B	Cyclone P201	Hurricane D431	H
SPECIFICATIONS	ORIGIN							
	COST	£172 $211 €197	£203 $249 €233	£65 $75 €70	£44 $53 €46	£151 $186 €174	£155 $191 €178	£1
	WEIGHT	204g 7.2oz	250g 8.8oz	60g 2.1oz	78g 2.75oz	340g 12oz	330g 11.6oz	
	WLL MBS of pulley	6.2 31.1kN 1400 7000lbf	6.2 31.1kN 1400 7000lbf	- 15kN - 3372lbf	2 4kN* 450 900lbf	1 -kN* 225 -lbf	1 -kN* 225 -lbf	
	MAX WL MBS of PC Cam	318kg 700lb	318kg 700lb	4kN* 900lb	204kg 450lb	100kg 200lb	204kg 450lb	
	ROPE Ø	≤13mm ≤½"	≤13mm ≤½"	7-11mm 9/32-7/16"	8-11mm* 5/16-7/16"	10.5-11mm 7/16"	10.5-11mm 7/16"	
	SHEAVE/TREAD Ø	32mm 1.25"	2x 32mm 2x 1.25"	24/20mm 0.9/0.8"	23mm 1"	50mm 2"	50mm 2"	
	DIMENSIONS heightt x width	157 x 55 x 40mm 6.25 x 2.2 x 1.6"	157 x 55 x 60mm 6.25 x 2.2 x 2.4"	62 x 46 x 24mm 2.4 x 1.8 x 0.9"	65x35mm 2.6x1.4"	210 x 80 x 30mm 8.3 x 3.2 x 1.2"	200 x 80 x 30mm 7.9 x 3.2 x 1.2"	20 7.
	BODY MATERIAL SHEAVE MATERIAL AXLE MATERIAL CAM MATERIAL	Alu Alu Stainless Steel Steel	Alu Alu Stainless Steel Steel	Alu Alu Stainless Steel Stainless Steel	Alu Alu Stainless Steel Stainless Steel	Alu Nylon Stainless Steel Steel	Alu Nylon Stainless Steel Steel	St St
	PULLEY EFFICIENCY	84.1%	84.1%	92%	n/a	n/a	n/a	
	TOP EYE Ø	22mm 0.9"	22mm 0.9"	20mm 0.8"	19mm 0.75"	0mm 0"	14mm 0.55"	
	LOWER EYE Ø	16mm 0.6"	16mm 0.6"	-	-	14mm 0.55"	8mm 0.3"	
USES & FEATURES	BEARING/BUSHING	■	■	■	■	■	■	
	SWING CHEEK	-	-	-	■	■	■	
	SAFE ROPE LOADING	-	-	-	-	-	-	
	HUMAN-HAULING	■	■	■	■	NO	NO	
	SWIVEL EYE BECKET	■	■	- -		●	■	
	USE as PULLEY ASCENDER DESCENDER	■ - -	■ - -	■ ■ -	■ ■ -			
	STANDARDS CE: PULLEY ASCENDER DESCENDER MACHINARY	ANSI CE	ANSI CE	CE CE	CE	UKCA CE	UKCA CE	
	OTHER COLOURS							
	NOTES			* WLL with cam engaged	*will also take flat webbing * Load figures are with the cam engaged	* Material Handling Only, ***not for human-hauling***. Stainless version discontinued	* Material Handling Only, not for human-hauling.	
	WEBSITE	cmigearusa.com	cmigearusa.com	edelrid.com	edelweiss-ropes.com	heightec.com	heightec.com	

NOTES: COSTS: £$€ shown in burnt orange are currency conversions only N/A = info Not Available/not given **COST:** Approx & inc local tax/VAT WT: Device Only STAND

PROGRESS CAPTURE PULLEYS

							
HEIGHTEC	HEIGHTEC	HEIGHTEC	ISC	ISC	ISC	ISC	KONG
urricane Pro D43	Tornado D701	Twister D71	PCP Single RP702	PCP Double RP703	PCP Single 1-Way RP704	PCP Double 1-Way RP705	Duck 3109
55 $191 €178	£245 $302 €282	£45 $56 €52	£158 $194 €180	£198 $246 €200	£176 $220 €205	£192 $240 €220	£50 $75 €58
330g 11.6oz	400g 14.1oz	300g 10.6oz	663g 1.5lb	905g 2lb	672g 1.5lb	905g 2lb	70g 2.5oz
1 -kN* 225 -lbf	0.5 -kN 112 -lbf	0.1 5.9kN 22 1323lbf	- 40kN - 8992lbf	- 40kN - 8992lbf	- 30kN - 6744lbf	- 30kN - 6744lbf	2.5 4kN* 562 880lbf
204kg 450lb	50kg 110lb	10kg 22lb	800kg 17631lb	800kg 17631lb	600kg 1322lb	600kg 1322lb	400kg 880lb
10.5-11mm 7/16"	10.5-12mm 7/16-15/32"	10.5-12mm 7/16-15/32"	10-13mm 3/8-1/2"	10-13mm 3/8-1/2"	10-13mm 3/8-1/2"	10-13mm 3/8-1/2"	8-13mm* 5/16-1/2"
50mm 2"	54mm 2.1"	40mm 1.6"	67mm 2.6"	2x 67mm 2x 2.6"	67/55mm 2.6/2.16"	2x 67/55mm 2x 2.6/2.16"	25mm 1"
0 x 80 x 30mm 9 x 3.2 x 1.2"	130 x 145mm 5.1 x 5.7"	110 x 80mm 4.3 x 3.2"	235 x 82 x 37mm 9.25 x 3.25 x 1.4"	235 x 82 x 63mm 9.25 x 3.25 x 2.5"	235 x 82 x 37mm 9.25 x 3.25 x 1.4"	235 x 82 x 63mm 9.25 x 3.25 x 2.5"	63x31mm 2.5x1.2
tainless Steel Nylon tainless Steel Steel	Alu Nylon Stainless Steel No Toothed Cam	Alu Alu Alloy Stainless Steel No Toothed Cam	Alu Alu Stainless Steel Stainless Steel	Alu Stainless Steel Stainless Steel Stainless Steel	Alu Alu Stainless Steel Stainless Steel	Alu Stainless Steel Stainless Steel Stainless Steel	Alu Alu Stainless Steel Steel
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
14mm 0.55"	12mm 0.5"	15mm 0.6"	30mm 1.2"	30mm 1.2"	30mm 1.2"	30mm 1.2"	18mm 0.7"
8mm 0.3"	-	-	20mm 08"	20mm 08"	20mm 08"	20mm 08"	-
■	■	■	■	■	■	■	■
■	■	■	■	■	■	■	■
-	-	-	-	-	-	-	-
■	NO	NO	■	■	■	■	■
■	- -	- -	■	■	■	■	-
		- - -	■ - -	■ - -	■ - ●	■ - ●	■ ■ -
UKCA CE	UKCA CE	UKCA CE	UKCA NFPA ANSI CE CE	UKCA NFPA ANSI CE CE	UKCA NFPA ANSI CE CE	UKCA NFPA ANSI CE CE	CE
							■ ■ ■
an be used For human hauling	One way sheave for lowering ***light loads only***. Stainless version discontinued	No toothed cam, fixed wheel load controller instead of sheave for lowering of ***very light loads only***			one-way pulley sheave for increased friction on lowering hence the marginal use for descending	one-way pulley sheave for increased friction on lowering hence the marginal use for descending	* Load figures are with the cam engaged * will also take webbing **10-15mm** **3/8-3/4"**
heightec.com	heightec.com	heightec.com	iscwales.com	iscwales.com	iscwales.com	iscwales.com	kong.it

ARDS: CE = EN 567, CE=Machinery Directive Only PC = Progress Capture. USES: ○●● = OK BUT NOT IDEAL

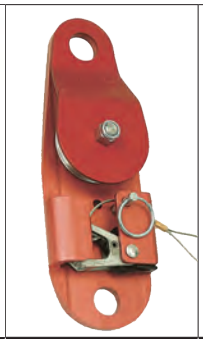
	Images NOT to Scale							
	MANUFACTURER	KONG	KONG	KONG	PETZL	PETZL	PETZL	
	MODEL VARIANT	Block Roll 81800NO	Block Roll Dbl 81801NO	Futura MiniBlock 944	Maestro Lg IR0415	Maestro Sml -	Jag Traxion P51	M
SPECIFICATIONS	ORIGIN							
	COST	£108 $160 €124	£145 $210 €166	£130 $170 €110	£504 $600 €475	£504 $600 €475	£106 $121 €95	£
	WEIGHT	550g 1.2lb	740g 1.6lb	165g 0.36lb	1100g 2.4lb	1100g 2.4lb	145g 5.1oz	
	WLL MBS of pulley	- 30kN - 6744lbf	- 30kN - 6744lbf	- 24kN - 5395lbf	9 36kN 2023 8093lbf	9 36kN 2023 8093lbf	6 16kN 1349 3372lbf	5 11
	MAX WL MBS of PC Cam	500kg 1100lb	500kg 1100lb	400kg 880lb	280kg 617lb	250kg 551lb	255kg 562lb	
	ROPE Ø	8-13mm 5/16-1/2"	8-13mm 5/16-1/2"	8-12mm 5/16-15/32"	11.5-13mm 7/16-1/2"	10.5-11.5mm 3/8-7/16"	8-13mm 5/16-1/2"	
	SHEAVE/TREAD Ø	60/50.2mm 2.36/2"	2x 60/50.2mm 2x 2.36/2"	35mm 1.38"	75mm 3"	75mm 3"	2x 33/27mm 2x 1.3/ 1"	
	DIMENSIONS heightt x width	280 x 78 x 42mm 11 x 3 x 1.6"	280 x 60 x 54mm 11 x 3 x 2.1"	130 x 48 x 32mm 5.1 x 1.9 x 1.3"	220 x150 x 85mm 8.7 x 5.9 x 3.3"	220 x150 x 85mm 8.7 x 5.9 x 3.3"	92 x 54 x 44mm 3.6 x 2.1 x 1.7"	67 2
	BODY MATERIAL SHEAVE MATERIAL AXLE MATERIAL CAM MATERIAL	Alu Alu Stainless Steel Steel	Alu Alu Stainless Steel Steel	Alu Alu Stainless Steel Stainless Steel	Alu Stainless Steel Stainless Steel No Toothed Cam	Alu Stainless Steel Stainless Steel No Toothed Cam	Alu Alu Stainless Steel Steel	St
	PULLEY EFFICIENCY	n/a	n/a	n/a	95%	95%	91%	
	TOP EYE Ø	13.5mm 0.5"	13.5mm 0.5"	15mm 0.6"	30mm 1.2"	30mm 1.2"	20mm 0.75"	
	LOWER EYE Ø	13.5mm 0.5"	13.5mm 0.5"	15mm 0.6"	24mm 0.9"	24mm 0.9"	20mm 0.75"	
USES & FEATURES	BEARING/BUSHING	■	■	■	■	■	■	
	SWING CHEEK	■	■	■	■	■	■	
	SAFE ROPE-LOADING	■	■	-	-	-	-	
	HUMAN-HAULING	■	■	■	■	■	■	
	SWIVEL EYE BECKET	●	●	■	■	■	■	
	USE as PULLEY ASCENDER DESCENDER	■ - -	■ - -	■ - -	● ● ■	● ● ■	■ ● -	
	STANDARDS CE: PULLEY ASCENDER DESCENDER MACHINARY	UIAA CE CE	UIAA CE CE	UIAA CE CE	NFPA-G EAC CE	NFPA-T EAC CE	UKCA NFPA CE	
	OTHER COLOURS							
	NOTES							
	WEBSITE	kong.it	kong.it	kong.it	petzl.com	petzl.com	petzl.com	

NOTES: COSTS: £$€ shown in burnt orange are currency conversions only N/A = info Not Available/not given COST: Approx & inc local tax/VAT WT: Device Only STAND

PROGRESS CAPTURE PULLEYS

							
PETZL	PETZL	PETZL	PETZL	PETZL	RESCUE TECHNOLOGY	RESCUE TECHNOLOGY	ROCK EMPIRE
licro Traxion P53	**Mini Traxion** P054	**Old Pro Traxion** P51	**2023 Pro Traxion** PO55	**Twin Release** 3109	**Extractor** RP702	**Extractor Dbl** RP703	**Self Blocking Pulley** ZWP022
£75 $95 €85	£146 $120 €110	£130 $164 €110	£156 $210 €159	£362 $440 €410	£158 $220 €170	£198 $260 €200	£68 $84 €77
85g 3oz	150g 5.3oz	265g 9.4oz	295g 1.76lb	800g 1.76lb	663g 1.5lb	905g 2lb	391g 13.8oz
510kg 15kN 1125lb 3372lbf	5 20kN 1125lb 4945lbf	5 22kN 1125lb 4945lbf	5 23kN 1125 5171lbf	9 36kN 2023 8093lbf	- 40kN - 8992lbf	- 40kN - 8992lbf	- 25kN - 5620lbf
255kg 562lb	255 400kg 562 880lb	255 400kg 562 880lb	280kg 617lb	280kg 617lb	800kg 17631lb	800kg 17631lb	255 407kg 562 899lb
8-11mm 5/16-7/16"	7-11mm 9/32-7/16"	8-13mm 5/16-1/2"	8-13mm 5/16-1/2"	8-13mm 5/16-1/2"	10-13mm 3/8-1/2"	10-13mm 3/8-1/2"	8-13mm 5/16-1/2 "
33/27mm 1.3/1"	32mm 1.3"	46/38mm 1.8/1.5"	46/38mm 1.8/1.5"	2x 56 &46/40 & 38*mm 2x 2.2 &1.8/1.6 & 1.5"	67mm 2.6"	2x 67mm 2x 2.6"	56mm 2.2"
' x 53 x 24mm .6 x 2.1 x 1"	90 x 63 x 30mm 3.5 x 3.5 x 1.2"	118 x 70 x 35mm 4.6 x 2.75 x 1.4"	155 x 78 x 37mm 6.1 x 3.1 x 1.5"	180 x 105 x 77mm 7 x 4.1 x 3"	225 x 75 x 37mm 8.9 x 3 x 1.4"	235 x 75 x 63mm 8.9 x 3 x 2.5"	190 x 75 x 40mm 7.5 x 3 x 1.6"
Alu Alu ainless Steel Steel	Alu Stainless Steel Stainless Steel Steel	Alu Stainless Steel Stainless Steel Steel	Alu Stainless Steel Stainless Steel Steel	Alu Stainless Steel Stainless Steel Steel	Alu Alu Stainless Steel Stainless Steel	Alu Stainless Steel Stainless Steel Stainless Steel	Alu Alu Stainless Steel Steel
91%	93%	95%	95%	95%	n/a	n/a	n/a
20mm 0.75"	18mm 0.7"	18mm 0.7"	26mm 1"	26mm 1"	30mm 1.2"	30mm 1.2"	22mm 0.9"
-	14mm 0.55"	14mm 0.55"	16mm 0.6"	16mm 0.6"	20mm 08"	20mm 08"	-
■	■	■	■	■	■	■	■
■	■	■	■	■	■	■	■
-	■	-	■	■	-	-	-
■	■	■	■	■	■	■	NO
-	■	■	■ ■	■ ■	■	■	-
■ ■ -	■ ● -	■ ● -	■ ● -	■ - ●	■ - -	■ - -	■ ● -
UKCA UIAA CE	UKCA NFPA-T EAC UIAA CE CE CE	UKCA NFPA-T EAC CE CE CE	UKCA NFPA-T EAC CE CE CE	NFPA-G CE CE CE	UKCA NFPA ANSI CE CE	UKCA NFPA ANSI CE CE	CE*
■	■	■	■	■			
Nano Traxion discontinued		DISCONTINUED replaced by new swivel version P055	Replaces P51		Also available with one-way sheave - see ISC RP704	Also available with one-way sheaves - see ISC RP705	
petzl.com	petzl.com	petzl.com	petzl.com	petzl.com	rescuetech1.com	rescuetech1.com	rockempire.com

ARDS: CE = EN 567, CE=Machinery Directive Only PC = Progress Capture. USES: ○●● = OK BUT NOT IDEAL

	Images NOT to Scale						
	MANUFACTURER	ROCK EXOTICA	ROCK N RESCUE	RSI/YATES	RSI/YATES	SKEDCO	SKEDCO
	MODEL VARIANT	Aztek P41	Dbl Camming Pulley RPU001	Haul Safe D43	Haul Safe Dbl D701	MicroHauler Dbl SK-710-M	Rescue Hauler SK710
SPECIFICATIONS	ORIGIN						
	COST	£105 $127 €121	£250 $312 €287	£182 $227 €210	£209 $260 €240	£190 $237 €220	£320 $399 €367
	WEIGHT	210g 7.4oz	1200g 2.6lb	680g 1.5lb	725g 1.6lb	250g 8.8oz	1200g 2.6lb
	WLL MBS of pulley	9* 36kN 2023 8093lbf	5.4 53kN 1200 12000lbf	- 44.5kN - 10000lbf	- 44.5kN - 10000lbf	6.2 31.1kN 1400 7000lbf	5.4 53kN 1200 12000lbf
	MAX WL MBS of PC Cam	306kg** 674lb**	199kg 440lb	455kg 1000lb	455kg 1000lb	318kg 700lb	199kg 440lb
	MAX ROPE Ø	8mm 5/16"	≤13mm ≤1/2"	11-13mm 7/16-1/2"	11-13mm 7/16-1/2"	≤13mm ≤1/2"	≤13mm ≤1/2"
	SHEAVE/TREAD Ø	2x 36/28mm 2x 1.4/1.1"	2x 75/56mm 2x 3/2.2"	55/45mm 2.1/1.8"	2x 55/45mm 2x 2.1/1.8"	2x 32mm 2x 1.25"	2x 75/56mm 2x 3/2.2"
	DIMENSIONS height x width	104 x 50mm 4.1 x 2"	267 x 108 x 64mm 10.5 x4.25 x 2.5"	227x 78 x 36mm 8.9 x 3.5 x 1.4"	227 x 78 x 78mm 8.9 x 3.1 3.1"	157 x 55 x 60mm 6.25 x 2.2 x 2.4"	267 x 108 x 64mm 10.5 x4.25 x 2.5"
	BODY MATERIAL SHEAVE MATERIAL AXLE MATERIAL CAM MATERIAL	Alu Alu Stainless Steel prusik cord	Alu Alu Stainless Steel Steel	Alu Alu Stainless Steel Steel	Alu Alu Stainless Steel Steel	Alu Alu Stainless Steel Steel	Alu Alu Stainless Steel Steel
	PULLEY EFFICIENCY	>90%	184%	n/a	n/a	84.1%	184%
	TOP EYE Ø	24-30mm 1-1.2"	25mm 1"	22mm 0.9"	22mm 0.9"	22mm 0.9"	25mm 1"
	LOWER EYE Ø	-	25mm 1"	20mm 0.8"	20mm 0.8"	16mm 0.6"	25mm 1"
USES & FEATURES	BEARING/BUSHING	■	■	■	■	■	■
	SWING CHEEK	-	-	■	■	-	-
	SAFE ROPE-LOADING	-	-	-	-	-	-
	HUMAN-HAULING	■	■	■	■	■	■
	SWIVEL EYE BECKET	■	■			■	■
	USE as PULLEY ASCENDER DESCENDER	■ - -	■ - -	■ - -	■ - -	■ - -	■ - -
	STANDARDS CE: PULLEY ASCENDER DESCENDER MACHINARY	CE	NFPA*	CSA NFPA ANSI	CSA NFPA ANSI	ANSI CE	CE ANSI BERRY
	OTHER COLOURS						
	NOTES	*with top prusik. **WLL for material handling is 510kg1125lb	* exceeds NFPA requirements but not certified				
	WEBSITE	rockexotica.com	rocknrescue.com	rescuesystems.com	rescuesystems.com	skedco.com	skedco.com

NOTES: COSTS: £$€ shown in burnt orange are currency conversions only N/A = info Not Available/not given COST: Approx & inc local tax/VAT STANDARDS: CE = EN 56

			
SKYLOTEC	SKYLOTEC	SKYLOTEC	SMC
CT RollNlock H225	CT Cric H280	CT Up Lock H267	Advance Tech HX Compact
95 $120 €94	£120 $150 €100	£105 $130 €114	£145 $178 €164
85g 3oz	150g 5.9oz	175g 6.2lb	270g 9.5oz
4 20kN 900 4496lbf	5 20kN 1124 4496lbf	6 30kN 1349 6744lbf	0 34kN 0 7644lbf
100kg 220lb	100kg 220lb	408kg 900lb	347kg 765lb
8-13mm 5/16-1/2"	8-12mm* 5/16-1/2"	8-11mm 5/16-7/16"	7-12.5mm 1/4-1/2"
25mm 1"	25mm 1"	25mm 1"	35mm 1.37"
68 x 35mm 2.7x1.4"	93 x 68 x 29mm 3.7 x 2.7 x 1.1"	81 x 61 x 44mm 3.2 x 2.4 x 1.7"	129 x 70 x50mm 5.08 x2.74 x 2"
Alu Alu ainless Steel ainless Steel	Alu Alu Stainless Steel Stainless Steel	Alu Alu Stainless Steel Stainless Steel	Alu Alu Stainless Steel Steel
85%	85%	90%	n/a
19mm 0.75"	18.5mm 0.7"	15mm 0.6"	20mm 0.8"
-	-	15mm 0.6"	18mm 0.7"
■	■	■	■
■	■	■	■
-	-	-	-
■	■	■	■
■ ■ -	■ ■ -	■ ■ -	■ - -
UIAA CE CE CE	UIAA CE CE CE	CE CE	CE
■			
	* 11mm as a pulley	Designed for use with the UP pulleys system	
skylotec.com	skylotec.com	skylotec.com	smcgear.com

7, CE=Machinery Directive Only PC = Progress Capture. = OK BUT NOT IDEAL

MINI HAULING KITS <2.5kg/5lb

Casualty Pulley System or *CPS* is a term we've used since the early 1980's but we don't lay claim to it or to the concept - that was primarily down to Dave Allport, then of *Troll Safety Equipment* in the UK. He came up with a combination of tiny yachting pulleys, a hand ascender and small diameter cord that gave you a mini package you could stow on your harness and upon reaching a rope-stranded casualty you could clip on and raise or de-weight their system sufficient to perform a pick-off rescue. Dave may have been more ornery than Yosemite Sam but back then he was often ahead of the game and we bought the first CPS model and swore by it for years. Testament to its longevity is that the *Troll* offspring, *SAR Products* sells a virtually unchanged product (pic far right) as did *Troll*'s latter day owners *Miller/Dalloz* (now *Honeywell Miller*) whih we haven't included because none of the components are theirs and their website is even harder to get any sense from than *3M*'s!

We messed about with the *CPS* through the 80s and 90s - made it smaller by replacing the *Kong Cam Clean* ascender with a *Wild Country Ropeman* - one of those tiny cam-only ascenders, we made it longer using miles of cord or whatever we could squeeze in and still attach to our harness, and eventually swapped out the nylon sheave yachting pulleys for the smallest triple and double alloy pulleys available at that time - I think it was *SRTe* (became*3M/DB Sala* but discontinued along with most of *SRTe*'s excellent range). The reason we swapped them was of course because we'd started using it for more and more tasks and eventually overloaded the nylon sheaves, warping them. Heavier duty pulleys were no bad thing but until recently they lacked the integral progress capture of those original yachting pulleys with their simple 'V' notch into which you jam the cord. *CAMP*'s *Oyssa* represents the latest in yacht pulleys in stark contrast to their reinventing of the traditional ratchet-strap with the GRAVITY (right) . They've taken the bold step of having a self-contained kit using a steel ratchet to provide up to 73cm of lift on a 3to4:1 ratchet cam- simple, strong and cheap. Meanwhile, Harken have arrived on the scene as reputed producers of high quality yacht pulleys and winches with their access-specific *Wingman* (above) with alloy sheaves and swivels. *SRTe*'s original *MiniHaul* miniaturized a '*WallHauler*' style integral cam but it was still pretty bulky. *ISC* and *Mammut* went one better with custom-designed mini integral cams while the *Bluewater/SMC* model and the iconic *Aztek* (ad opposite) took a simpler approach and use a prusik cord for progress capture but this can increase drag during hauling. For a while *DMM* had the very slick *RPM* which featured modular sheaves that you can swap from single to doubles but they were too slick for the market which wasn't prepared to pay for it. This Guide considers only the smaller pulley systems less than 5lb/2.5kg and generally a 2m/6'7" deployed length. There will therefore be a fine line between some full size rescue pulley systems with short rope lengths like the *SMC HX* and larger 'mini' systems with extra rope like the *Stein* kit. *Protekt* has 2 kits but neither can be described as 'mini'. We will add larger 'team' kits in a later guide but on the whole, these 'mini' kits should be easily hung off your harness. You should **always have some form of redundant safety when hauling**.

The smallest cord/rope diameter will invariably be the smallest and lightest kits but *Edelrid's KAA* (left) is so far unique in using 25mm/1" webbing instead of cord enabling use of a broad cam as a PCD and an innovative lowering handle. those with an add-on cam, like the *Sar-Products* (right), rather than an integrated-cam, can reduce the package weight by fitting a smaller cam or prusik. Even with 4mm cord, a mini pulley system has far more uses than just the originally envisaged rescue pick-off aid. It can be used for self-rescue, tension zip lines, take temporary load for repositioning of anchors, shift heavy weights, provide adjustable guys for shelters or aerials etc. and in storm work can help stabilise or counter the lean of a branch or tree although this will cross over into full size pulley systems so you would need to know your limits. *Skylotec/Climbing Technology* quote the efficiency of their *Lifty 6* as 79% while *Petzl* and *Edelrid* quote 91% for the *Jag and KAA*. That has a lot to do with the quality of the bushings or bearing and of the sheaves. Generally speaking, alloy sheaves on stainless bearings will be the most efficient but they will also be the heaviest and most expensive relative to size. If you want the smallest lightest system you'll need something like the *SAR Products CPS* with cord and nylon marine pulleys (the original diminutive *Mammut Rescyou* has been discontinued following a recall). If you want ultra-heavy duty you'll want something like the *CT Lifty* (if Skylotec keep it in their range), the *Aztek* system in any of its various guises or perhaps CAMPS webbing & ratchet cam GRAVITY. If you want compact, special purpose systems it will probably be the *Edelrid KAA or ISC Haulerbiner* and for perhaps the best compact all-rounder, the *Petzl Jag* with full strength alloy sheaves.

With the exception of *Lyon Eqpt* and *SAR Products* which is included in this Guide because Dave Allport effectively re-invented mini-hoists for rescue, everyone else is here because they manufacture at least one or more components. In the case of *PMI* and *Bluewater,* they make the rope but not the hardware so you could presumably put these together yourselves from components. Nevertheless, these are all top-end manufacturers who you can trust to produce a kit with all the necessary individual certification and quality as a package. This means you don't need to write your own risk assessments or list components that are 'fit-for-purpose' because they will underwrite the whole kit. No specific standards for these but where CE is listed it will be because EN358 covers PPE as a work positioning/restraint device or there's the European Machinery Directive for non-human lifting. NB: The retracted length often includes the carabiners/maillons. The 2m *Petzl Jag* for instance is 34cm but without carabiners is only 20cm.

rock exotica®
GEAR FOR THE Z AXIS

AZTEK | SYSTEM

- Switches from a simple 4:1 (with a change of direction) to a simple 5:1.
- Color-coded asymmetrical prusiks are rope friendly and can be released under light tension.
- Use AZTEK for pick off, load release hitch, high-directional guyline, litter attendant tether, litter scoop, edge restraint and much more.
- AZTEK System length ranges from just 9" to over 13'.
- Features high-efficiency ball bearings and machined aluminum parts.

AZTEK Kit includes:
AZTEK PULLEYS
6mm PRUSIKS (2)
50' 8mm STATIC CORD
44" 6mm PURCELL PRUSIK CORD
PRO OR STANDARD BAG

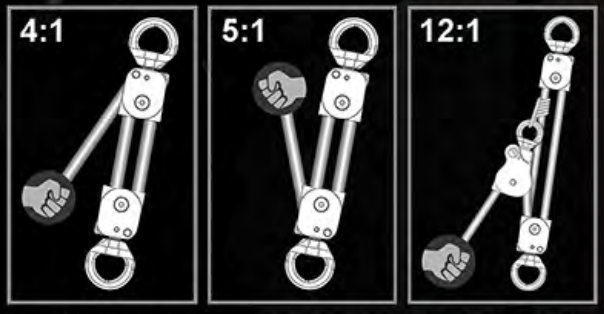
COLOR CODED

EDGE RESTRAINT

LOW TENSION RELEASE

50' CORD LENGTH

SWIVEL CONNECTION



The AZTEK kit can be configured as a 4:1, 5:1 or 12:1 with the use of an additional pulley.

EDGE RESTRAINT

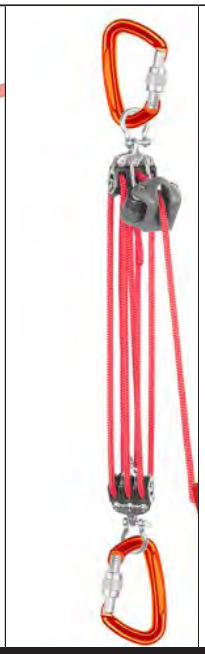
MIN LENGTH 9" (22.8cm) — < WIDE RANGE OF OPERATION > — MAX LENGTH 13' (4m)

Images NOT to Scale							
MANUFACTURER	3M/DB SALA	BLUEWATER	CAMP	CAMP	CMC	EDELRID	H
MODEL VARIANT	Rollglis Micro-Haul 8701...	Mini Haul ?	Oyssa ?	Gravity Rescue Ratchet 3122	Aztek Pro Series 500104	KAA 881320800170	4:1 Pu
ORIGIN							
COST (inc Tax/VAT)	£720 $900 €823	£200 $247 €227	£184 $230 €210	£54 $70 €55	£390 $489 €447	£200 $250 €220	
WEIGHT (for min size option)	2.2kg 4.8lb	1.1kg 2.35lb	370g 13.1oz	720g 1lb 9oz	2.3kg 5lb	500g 5lb	
MAX LOAD- SWL MBS	300kg 8kN 661lb 1798lbf	-kg 13.3kN -lb 2990lbf	120kg 7kN 264lb 1574lbf	120kg 22kN 264lb 1574lbf	800kg 36kN 1760lb 8093lbf	600kg 22kN 1323lb 4947lbf	2(44
DEPLOYED LENGTH options	2m 6'7"	8m 27"	1m 3.28'	1.1m 3'7"	3.5m 12'	0.8/1.5/4m 3'3"/4'9"/15'9"	
POUCH/RETRACTED SIZE	36 x 16cm 14 x 7"	23 x 13 x 13cm 9 x 5 x 5"	14 x 10 x 7cm 5.5 x 4 x 2.75"	37cm 14.6"	24 x 15 x 10cm 9.5 x 6 x 4"	20 x 7.6 x 7.5cm 8 x 3 x 3"	
ROPE/CORD LENGTH/ Ø	14m/46' 8mm 5/16"	35m/115' 8mm 5/16"	7.6m/25' 4mm <3/16"	1.1m/ 3'7" 33mm Plystr Web 1.3"	15m/50' 8mm 5/16"	4m/13' 25mm webbing 1"webbing	
SHEAVE (WHEEL) Ø	Alu 3x 0mm 3x 0"	Alu 2x 30mm 2x 1.2"	Nylon 3x 20mm 3x 0.8"	none (Steel ratchet)	Alu 2x 28mm 2x 1.1"	Nylon 2x 26mm 2x 1.1"	2x 2x
STORAGE/ DEPLOYMENT BAG				none			
FIXED SWIVEL CHEEKS	■	■	■	none	■		
PC CAM PRUSIK	■	■	■	none	■		
BUSHING BEARING PIN	■	■		none	■		
MA EFFICIENCY	6:1	4:1	6:1	>3:1<5:1	4:1 5:1 80%	4:1 5:1 91%	
STANDARDS	CE NFPA			CE EAC		CE	
INCLUDED ITEMS	DISCONTINUED Various rope connection hardware options	1x 6mm Maillon, 2x double pulleys 2x auto carabiners 1x sewn prusik Pouch	2x triple pulleys with integrated cleat, 2x 4mm Maillons, 7.6m cord, pouch	73cm of lift using a ratchet cam giving between 3:1 and 5:1 of advantage - greater with less web wound on.	2x swivel pulleys, 2x sewn prusiks, 15m/50ft CMC Aztek cord, pouch	*webbing, Mesh, Pouch, Top assembly with handle, Bottom assembly*	443 D
NOTES							
WEBSITE	capitalsafety.com	bluewaterropes.com	camp.it	camp.it	cmcrescue.com	edelrid.com	harke

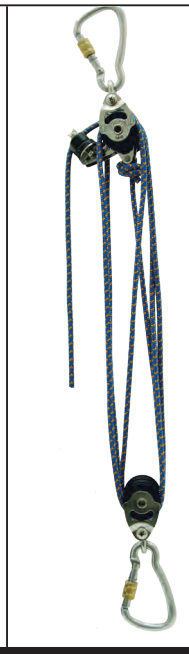
KEY: COST: INCLUDES local taxes/VAT . £$€ shown in burnt orange are currency conversions only & do not inc shipping, import duty or tax KIT: CE = Captive Eye, PC = Progre
'minimum' due to multiple components INTENDED MA= most pulley systems can be flipped to pull upwards so a 3:1 can become a 4:1 etc. but integrated cam locati

MINI HAULING KITS



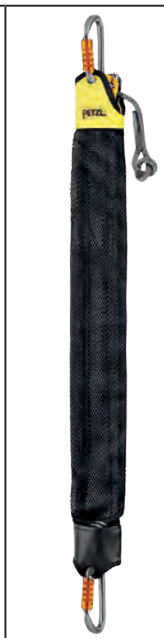






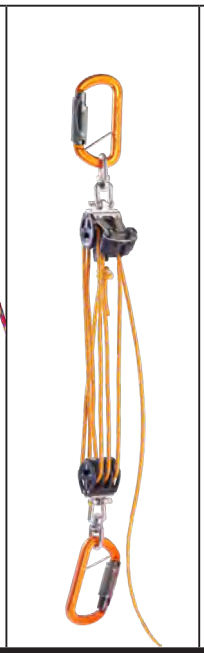
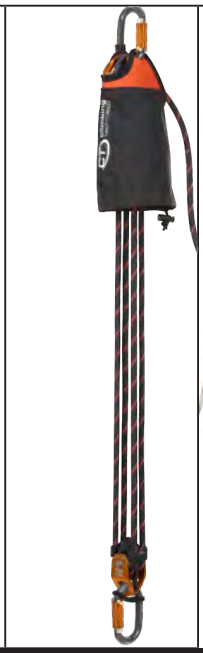

HARKEN	HARKEN	HEIGHTEC	HEIGHTEC	ISC	KONG	KONG	KONG
urchase System IN2624/.6M	Wingman IN404	Hexan UP15	Vantage P10	HaulerBiner HB165.2	Maxi-Hoist#4 20800	Mini-Hoist#7 208001	Hop (Hoist#5) 20820
- $410 -*	£570 $525 €580	£232 $291 €267	£214 $268 €245	£204 $320 €0	£312 $494 €272	£288 $328 €243	£342 $430 €392
2.3kg 5lb	2kg 4.4lb	700g 1lb 9oz	750g 1lb 11oz	650g 1lb 7oz	1820g 4lb	680g 1.5lb	1.22kg 2lb 11oz
00kg 10kN 5lb 2248lbf	300kg 45kN 675lb 10115lbf	150kg 25kN 337lb 5620lbf	140kg 14kN 308 3147lbf	140kg 16kN 308 3500lbf	140kg -kN 310lb -lbf	300kg 5.9kN 661lb 1322lbf	140kg 4kN 310lb 899lbf
2m 6'7"	3.5m 12'	2m 6'7"	1/1.5/2/5m 3'3"/4'9"/6'7"/16'3"	1.05/1.65/3m 3'5"/5'4"/9'10"	4m 13'	1.15m 3.9'	1/2m 3.28'/6'7"
35cm 13.75"	20.3" 38x33cm 8" 15x13"	n/a	n/a	32cm 11.8"	55cm 21.6"	30cm 11.8"	32/34cm 11.8/13.4"
15m/50' 8mm 5/16"	15m/50' 8mm 5/16"	15m/50' 5mm 3/16"	4m/13' 8mm 5/16"	15m/50' 6mm 1/4"	15m/50' 10mm 25/64"	6.5m/21' 5mm 3/16"	15m/50' 10mm 25/64"
Delrin 57/35mm 2.25/1.4"	Alu 2x 46/33mm 2x 1.8/1.3"	Nylon 2x 20mm 2x 0.8"	Alu 2x n/a 2x n/a	Nylon 3x 20mm 3x 0.8"	Alu 2x 35mm 2x 1.38"	Nylon 2x 34mm 2x 1.34"	Alu 40.5 & 35mm 1.6 & 1.38"
none			none		none	none	
■	■	■	■	■	■	■	■
■	■	■	■	■	■	■	■
■	■	■	■		■	■	■
4:1 5:1	4:1 5:1	6:1	4:1 5:1	6:1 7:1	4:1 5:1	6:1 7:1	4:1 5:1
CE	NFPA CE UKCA	CE	CE UKCA	CE	CE	-	CE
*USA-ONLY RPS Discontinued		2x Alloy S/g carabiners 1x Triple nylon pulley 1x Triple sheave/ cleat Pouch	Cut resistant sheath. cord,	Also rebadged by STERLING ROPE as Mini-Hauler and Raise&Rescue Elite kit. Cord, 2x Triple pulley-carabiners, mesh, pouch	*Rope* *2x Twin Evo dbl Pulleys,* *1x Cam, 2 carabiners,* *1x maillon*	*Cord* *1 dbl pulley,* *1xtriple pulley with cam,* *2x carabiners*	Rope 1x Turbo Roll pulley 1x Futura Miniblock 1x Mini Twin Evo dbl pulley 2x Maillons
nindustrial.com	harkenindustrial.com	heightec.com	heightec.com	iscwales.com	kong.it	kong.it	kong.it

ess Capture WWL Working Load Limit. Safety ratios vary from 5:1 to 15:1 so MBS not quoted so much, instead....BREAK LOAD is an approximate failure load NOT a ons can make this impractical.

Images NOT to Scale							
MANUFACTURER	**LYON EQUIPMENT**	**PETZL**	**PMI/SMC**	**PMI/SMC**	**ROCK EXOTICA**	**SAR PRODUCTS**	**PR**
MODEL VARIANT	**Cas. Pick-Off Hoist** LCH	**Jag** ?	Adv-Tech Haul System ?	Jr Haul System KT36128	**Aztek Pro** P41	**Casualty Pulley System** P0001	**Res Sy**
ORIGIN							
COST (for min size option)	£319 $401 €366	£232 $370 €230	£439 $550 €502	£213 $267 €244	£496 $430 €571	£250 $314 €287	
WEIGHT (for min size option)	450g 1lb	610g 1lb 5.5oz	1.43kg 3lb 2.4oz	840g 1lb 14oz	2.3kg 5lb	866g 1lb 15oz	
MAX LOAD- SWL MBS	150kg 9kN 330lb 2023lbf	600kg 16kN 1323lb 3597lbf	0 34kN 0 7643lbf	0 34kN 0 7643lbf	800kg 36kN 1760lb 8093lbf	150kg 9kN 330lb 2023lbf	**1 33**
DEPLOYED LENGTH options	1.3m 4.2'	1/2/5m 3'3"/6'7"/16'3"	2m 6'7"	2m 6'7"	4m 13'	2m 6'7"	
POUCH/RETRACTED SIZE	21cm 8.25"	34 cm 12.5"	36 x 16cm 14 x 7"	30 x 16cm 12 x 7"	24cm 9.52"	20 x 16 x 7cm 8 x 6.25 x 7.25"	**4 15**
ROPE/CORD LENGTH/ Ø	9m/30' 4mm <3/16"	7.5m/25' 8mm 5/16"	10m/33' 9mm 3/8"	10m/33' 7mm 9/32"	15m/50' 8mm 5/16"	15m/50' 6mm 1/4"	**3**
SHEAVE (WHEEL) Ø	Nylon 2x 20mm 2x 0.8"	Alu 2x 25mm 2x 1"	Alu 2x 35mm 2x 1.37"	Alu 2x 35mm 2x 1.37"	Alu 2x 28mm 2x 1.1"	Nylon 2x 20mm 2x 0.8"	**2**
STORAGE/ DEPLOYMENT BAG							
FIXED SWIVEL CHEEKS	■	■	■	■	■	■	
PC CAM PRUSIK	■	■	■	■	■	■	
BUSHING BEARING PIN	■	■	■	■	■	■	
MA EFFICIENCY	6:1	4:1 5:1	4:1 5:1	4:1 5:1	4:1 5:1 80%	6:1	
STANDARDS	CE	CE UKCA EAC			CE		
INCLUDED ITEMS	*Ascender, cord, 2x snap carbine hooks, 2x triple pulleys, integrated pouch*	**91% Efficiency** *Jag Traxion PC pulley, dbl pulley, 2 x Auto Carabiners mesh cover Integrated pouch* **Also full size rescue kits**	*HX PC pulley, Dbl pulley, 5mm Maillon 2x carabiners, 3m release cord, pouch.* Can use 7-12mm rope	*2 SMC JRB dbl pulleys, 2x carabiners, Prusik hitch Maillon, 2m 5mm cord Pouch*	*2x Omni pulleys, 2x prusiks, AZTEK cord, 6mm travel restraint, Bag,*	*Ascender, cord, 2x maillons, 2x triple pulleys pouch, carabiner*	**1x t 1x 2x**
NOTES							
WEBSITE	lyon.co.uk	petzl.com	pmirope.com	pmirope.com	rockexotica.com	sarproducts.com	sarp

KEY: COST: INCLUDES local taxes/VAT . £$€ shown in burnt orange are currency conversions only & do not inc shipping, import duty or tax KIT: CE = Captive Eye, PC = Progre
'minimum' due to multiple components INTENDED MA= most pulley systems can be flipped to pull upwards so a 3:1 can become a 4:1 etc. but integrated cam locatio

MINI HAULING KITS




SAR ODUCTS	SKYLOTEC	SKYLOTEC	SKYLOTEC	SKYLOTEC	STEIN	STERLING ROPE	STERLING ROPE
cue Pulley stem P0002	Mini Haul System SET-337-23	CT Up-You-Go H251 & 2K117	CT Lifty 2K114	CT Lifty 6 ?	5:1 Hauler Kit SS-8160110020	Pocket Hauler Kit KTPHAULERB	Aztek Elite Arbor KTAZTEKA
n/a	£503 $600 €549	£237 $296 €249	£335 $366 €325	£365 $386 €355	£270 $440 €310	£296 $370 €339	£430 $530 €500
2kg 4lb 6oz	950g 2lb 1oz	850g 1lb 15oz	1.72kg 3lb 12oz	2.3kg 5lb	3kg 6lb 10oz	1.54kg 3lb 6oz	1.72kg 3lb13oz
50kg 9kN 0lb 2023lbf	400kg 18kN 880lb 4046lbf	400kg 18kN 880lb 4046lbf	160kg 16.3kN 352lb 3664lbf	240kg 24.5kN 528lb 5507lbf	240kg 22.5kN 528lb 5507lbf	0 22kN 0 5058lbf	800kg 36kN 1760lb 8093lbf
10m 33'	4m 13'	1/2 /5m 3'3"/6'7"/16'3"	2/5m 6'7"/16'3"	2m 6'7"	2m 6'7"	2m 6'7"	2m 6'7"
0 x 20cm 5.75 x 8"	35cm 13.7"	34cm 12.5"	24 x 26 x 12cm 9.5 x 10 x 4.7"	24 x 26 x 12cm 9.5 x 10 x 4.7"	38cm 15"	14 x 23 x 2.7cm 5.5 x 9x5"	24cm 9.52"
0m/100' 8mm 5/16"	23m/75' 8mm 5/16"	10m/33' 8mm 5/16"	10m/33' 9.5mm 3/8"	15m/50' 9.5mm 3/8"	25m/82' 12mm <1/2"	15m/50' 8mm 5/16"	15m/50' 8mm 5/16"
Nylon 2x 51mm 2x 2"	Nylon 2x 22mm 2x 0.9"	Alu 2x 25mm 2x 1"	Alu 2x 39mm 2x 1.5"	Alu 3x 39mm 3x 1.5"	Alu 2x 50mm 3x 2"	Alu 2x 28mm 2x 1.1"	Alu 2x 28mm 2x 1.1"
							
■	■	■	■	■	■	■	■
■	■	■	■	■	■	■	■
■		■	■	■	■	■	■
3:1 4:1	6:1	4:1 5:1 80%	4:1 86%	6:1	4:1 5:1	4:1 5:1	4:1 5:1 80%
	CE	CE	CE	CE	CE		
Cord,pouch, tandem pulley single pulley, CE carabiners	Cord,pouch, 1x triple pulley 1x triple with cam, 2x CE carabiners Bag	Dbl & PC cam pulley, 2x Oval CE Carabiners Pouch. climbingtechnology.com	Being Phased out? Cord, PC cam, Maillon, 2x Double pulleys, 2x CE Carabiners Pouch. climbingtechnology.com	Being Phased out? Rope, Separate PC Cam, Maillon, 2xTriple pulleys, 2xCE carabiners, pouch. climbingtechnology.com	Rope 2x ISC RP064 pulleys 1x Stein sewn hitch Bag	2x Dryad double pulleys 50ft rope with sewn eye, 2xAutolock Carabiners, 1x sewn prusik, 1x6mmMaillon Aztek t pouch	2x Omni pulleys, 2x prusiks, AZTEK cord, (Arbor version lacks the 6mm travel restraint), Waist pouch, 3xCarabiners (2=CE)
roducts.com	skylotec.com	skylotec.com	skylotec.com	skylotec.com	steininternational.com	sterlingrope.com	sterlingrope.com

ss Capture WWL Working Load Limit. Safety ratios vary from 5:1 to 15:1 so MBS not quoted so much, instead.... BREAK LOAD is an approximate failure load NOT a ons can make this impractical.

UPDATED March '24

Powered ASCENDERS

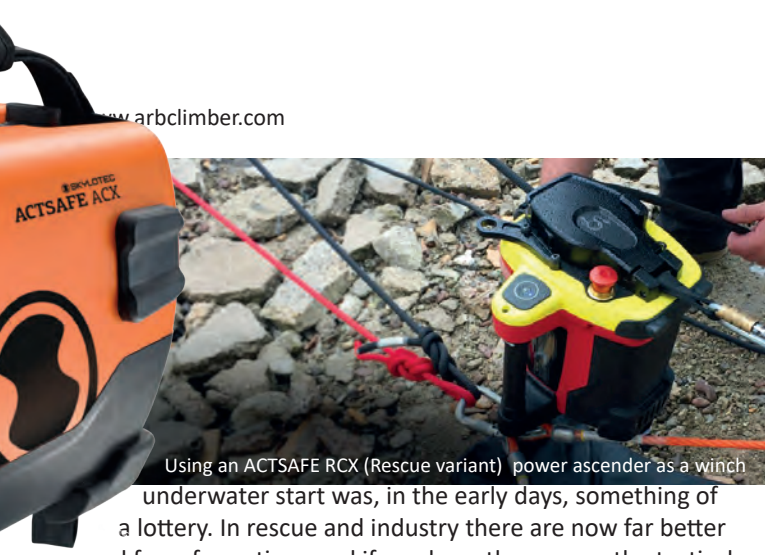
Petrol winches have been around since the early combustion engine and it's no surprise that at some point some bright spark would decide to attach a human guinea pig to the winch and run it up the rope instead of anchoring it at one end. Some models like *Skylotec's Actsafe PME, Harken's Power Seat and Eder's Power Climber* are petrol-driven options and often more powerful than their battery equivalents (Harken and Eder offer battery versions of their petrol models) . It's fair to say that virtually all of the powered winches listed in the **ARBORIST EQPT BUYERSGUIDE** could be attached to an anchored rope instead of being anchored themselves, and run up the rope with the human load attached. But with different weight distribution, bulk and position of controls, it would be mightily cumbersome and probably illegal, nevertheless, some are certified for human-lifting albeit as anchored devices rather than travelling with a human controller as all of the devices in this guide are. The future will be tractor beams and person-carrying drones that negate ropes altogether but while we still have ropes we'll start with a shout out to genius inventor Ken Pink who was ahead of his time with development of a US Navy Seal requested battery ascender in the late nineties. That one was a lot more difficult an engineering proposition than the average 11mm rope versions that followed because his brief required it to run on a 6mm Kevlar/composite cord that could be attached to a grappling hook and fired up and over a sketchy anchor on a rig or ship.....and it had to run under water and the face of the ascender had to be bullet-proof! You can see why its costs put it out of reach of anyone outside of the government. Back in the real world, there were a few 'heath-Robertson' devices that kinda worked OK like the *PowerQuick* (still made in India but not included here as it we are unsure of manufacturing standards on that) but it was *Actsafe* in Sweden that produced the first commercially viable devices utilising 11mm kernmantle and production qualities that inspired confidence for rescue agencies.


Eder (petrol) Power Climber

Applying the same technology we originally used on 6mm rope, to a fatter, 11mm kernmantle rope was much more straightforward and with the happy necessity of a safety-rope/belay the risks that us 'test-pilots' for that original device were exposed to are entirely negated such that a properly functioning powered ascender is a thing of beauty especially if your alternative is a pair of hand ascenders. We'll discuss the various uses including winching and remote activation later, first we need to look at the various designs, some are ubiquitous across all models and some are unique to one or two.

One of the things we learnt the hard way in the early days of development was that the device needed to have a stop mechanism on the top to negate the likelihood of powering into a ledge, rail or obstruction and doing a lot of damage to the device and/or our heads! For tactical purposes we couldn't afford to have the device stop unnecessarily and leave the operator exposed so the obvious safety options had to be omitted and the operator just had to be more wary and take 'acceptable' risks. A stop-button on the top of the casing was all we had in the end and because it was supposed to be used mostly in the dark, we learnt to 'ride' lower on the device so that it acted as a shield. If inadvertent contact activated the stop button, the ascender had to be put into reverse/ descent mode for a few inches before we could get free of the obstruction and carry on. Doing that from an

Atlas APA2



Using an ACTSAFE RCX (Rescue variant) power ascender as a winch

underwater start was, in the early days, something of a lottery. In rescue and industry there are now far better and far safer options and if you have the money, the tactical models from *Atlas, Actsafe* and *Ronin* will run fully underwater to 10m/30' (or more if factory modified) and is therefore a possible consideration for dive rescue. As far as hitting an overhead obstacle (or anchor knot) is concerned, the Chinese *Pesco Spider* for instance has a sensor on the top that stops the ascent 10-20cm away from an obstruction to allow you to reset.

TRIGGER/BUTTON/THROTTLE?

There is no consensus on the way the devices are activated other than 'STOP' being to take your hand off the 'Go' control. The original SEAL model used a trigger on a handle and despite being what we would have considered to be the most obvious method, a conventional chainsaw-style trigger with a deadman secondary is actually only present on the *Harken Power Seat/hauler,* probably as a consequence of having a chainsaw style petrol/gas engine. *Ronin* is the next closest with a thumb button-dial while the Chinese *Pesco* has a see-saw up and down button for your thumb. *Acstafe* and the *Korean K1PARS* chose a motorcycle -style throttle where you twist the hand-grip, the Chinese *ASAT* has a rotating dial on some of its devices and a plunger-style trigger on others. This and indeed most designs mount the trigger mechanism next to a handle enabling the thumb or trigger finger to activate - it seems more natural that way. *Atlas devices* like the *APA2* pictured opposite are mostly tactically oriented and have what they call a 'paddle' which is a flattened lever for control in a nice obvious red colour. These are all release-to-stop mechanisms, in *ASAT*'s case with a dial it still requires an initial deadman button to be depressed for activation.

BATTERY or LIQUID FUEL?

The original powered ascenders were modified petrol winches and they've been around for over 100 years even if their original use as a moving device was accidental. Petrol/gas engine devices remain the most powerful devices with greater longevity but for all the same reasons that they are being replaced in industrial tools, battery is the way of the present and the immediate future - low noise during operation and no-noise on 'idle', no fumes at face level, no dubious petrol products around your climbing rope and much greater informational and control interface with electronics than old school. *Harken* have adopted both with their *Powerseat* and

Ronin Lift. REMEMBER that for all power ascenders you should control the tail of the rope in the same way you do with any descender unless hands-free is vital.

Skylotec iCX

Harken Powerseat

non-seated *Compact*, now available as battery and petrol. *Eder* and *Skylotec* have brought out **game-changing battery models because they use the Stihl and Husqvarna battery platforms used in Stihl and Husqvarna power tools making them available off-the-shelf.** It's surprising we haven't seen this before but as battery power increases, so do the capabilities - expect to see more systems using the higher-end batteries. In the meantime, for petrol devices like the forestry/arb oriented *Eder Power Climber,* Skylotec's *Actsafe PMX* and *Harken's Powerseat (pic above)* the generally greater power and more robust nature of a mechanical rather than electronic device means they'll be around for a while yet - less to go wrong and easier to fix in the field. Battery life can look much better in the specifications table than it is in real life - cold temperatures can halve duration and of course, battery output declines with age and the number of charging cycles they've been through. New batteries are not cheap - none have yet embraced off-the-shelf batteries as many other industrial tools have - but in the case of powered ascenders, something much more powerful is currently required. All of these devices, whether battery or liquid fuel powered can be rope specific, nearly always requiring a standard tight weave 32/48 carrier kernmantle and definitely NOT a traditional arborist rope or

laid/multiplait. Some specify a Technora, or similar ,extremely robust Kevlar/Aramid fibre because it is much harder to cut through and can withstand high temperatures which can easily be generating by a rotating drum working hard. If money was no object , all users would probably have these wear/hat enhanced ropes. But for regular tasking at low speeds and well within load limits - regular nylon or polyester kernmantles are fine as long as they have been cleared by the manufacturer as suitable. Like all rope hardware you need to ensure that your particular rope works in the device before committing your life to it. For devices like *Ronin* that require end-rope feed ensure that the termination end is clean with no frayed ends and that it has a bulky knot or sewn termination on the tail so that you cannot accidentally power off an unexpectedly short length.

INCREASING THE LOAD CAPACITY

All powered ascenders have a main attachment point that the climber clips into or the device is anchored in winch mode. Many have a top eye which enables you to run the ascent rope from that eye - up to a to anchor with a pulley and back down through the device. This gives you a 2:1 and roughly double your original load capacity. On the Ronin the left hand eye on the battery is NOT an anchor point, it's a leash attachment to ensure you don't drop the battery if you hot-swap it. If you overheat or overload your device beyond its stated capacity you could strip the rope as has occurred in the past with a petrol device using a lees than ideal rope. However, all battery models have a thermal and overload cut-out that stops the motor before it gets damaged or causes damage. You can make a non-motorised descent or wait for the motor to cool down or in the case of overloading you will need to reduce the load or you may again be able to descend without using power.

SAFETY REDUNDANCY

From a safety standpoint industry will vary from rescue protocols but for most operators a powered ascender is viewed in exactly the same was as any other primary ascender or descender and you MUST have a belay or standard back-up device on a second rope - only tactical operators and some emergency response situations use them as a stand-alone device. In the title picture showing the police dog handler using the Atlas APA2, you can see a backup device in gold indicating that this is almost certainly a training or staged shot. Time and noise-sensitive operations generally can't risk a hang up on a secondary safety constituting more of a risk to life than a single rope or device failure.

IN THE FOLLOWING TABLES:.....

COST: Including at least one battery unless stated otherwise. Prices are approximate, include VAT@20% &/or US State Sales Tax. We generally round up the cost to the nearest Pound£, US Dollar$ or Euro€. **£$€ in orange is a currency conversion only.**
ORIGIN: Is the parent company - an inset flat may indicate the manufacturer's country if different but we don't always know.
WEIGHT: Includes battery unless otherwise indicated but **does not include fuel** for petrol/gas models.
DIMENSIONS: including the battery with a separate figure for the battery alone because you may need to be carrying spares if the battery is detachable (some are integral and charge through the ascender housing..
ROPE DIAMETER: Given by the manufacturer as range where the optimum size is always somewhere in the middle. Some machines require a specific type and/or brand of rope. As we are now seeing with descenders this is the only way to be specific about the performance specifications quoted.
RANGE: In an ideal world, with a new battery, a perfectly compatible rope, a moderately warm air temperature with low humidity and moving in free space - you get the idea - it varies - expect less than is quoted.
ASCENT (Haul) & DESCENT (Lowering) SPEED: This is for a single rope in direct contact with the load with the speed shown with maximum load. Both figures will be affected by using a 2:1 or travelling pulley rig, speeds will effectively be halved and loads will be doubled but only in a perfect, frictionless world. Performance will be affected by the degree of interference that might increase load and severely reduce the speed and load figures quoted. Hauling a moving load along the ground or up a building obviously imparts a lot more friction than a live person ascending a fixed roped in free space. Battery powered devices generally have quite finite control from zero to top speed and everywhere in between so that you can make smooth starts/restarts.
NO-POWER DESCEND: refers to the ability for you to descend if the battery runs - this will be at fixed speed as distinct from powering down at higher speeds using the drive mechanism. You may experience some acceleration towards the bottom as rope weight decreases. Use a control hand on the rope tail
RECHARGE TIME ON DESCENT: Time to recharge a battery to 100% from empty. ON DESCENT indicates that the device can harvest energy when the capstans are in descent mode
REMOTEAPPCONTROL RANGE: This can be a very useful function of battery powered device - the ability to send it up and down a rope without a human handle. Mostly this is wirelessly over an average distance of 10m/300ft but on or two like the military ATLAS can be hard-wired. Incidentally these overtly tactical models also have an encrypted remote that can't be hacked so your control can't be taken away from you.

ANCHOR TOP BOTTOM: This doe NOT include the main rope attachment. These anchors are for attaching the 'pilot' on the bottom (or anchoring in the case of using as a winch). The top eye can be used to increase load capacity by incorporating mechanical advantage - usually just 2:1 in what arborists call DdRT mode with the main anchor rope running up to and through a pulley at the top anchor and back down to the top anchor eye on the device.
NOISE LEVEL:in Decibells**.** Liquid-fuel engines have similar sound levels to chainsaws and the levels quoted may not be the maximum depending on the work the engine is subjected to and its age and efficiency. Figured quoted are for new engines. However, battery power is different because there is literally NO NOISE when it's not working (ie. it does not idle like a petrol engine) and even when it does work the maximum noise is considerably less than an engine. So low in fact that most manufacturers don't even give a noise level in their stats but they do have noise when operating.
EMERGENCIMPACTSTOP: Most of these devices have an emergency stop button in red that will cut the motor and hold you in position on the rope. Some have a top-mounted IMPACT stop that activates if you come up under an obstruction or hit a knot so that the device stops rather than trying to power

Do you ever get used to the urgency? To get to the site. To get to the injured. To get them stable and up and out NOW. Getting the compact grunt you need, to right where you need it, is why we build the Harken Lokhead winch. With two speeds of 14:1 and 40:1 mechanical advantage, and appropriate for 10mm-12.7mm rope, you won't find a more powerful, safer-to-use tool. One turn of the handle and it's clear. This is a revolution in portable mechanical advantage for rescue.

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LOKHEAD WINCH KITS

Fire Winch Kit: NFPA-Certified

Standard Kit : CE-Certified

Tellumount weighs just 3.2KGs

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	Images NOT to Scale					
	MANUFACTURER	ASAT	ASAT	ASAT	ATLAS	
	MODEL VARIANT	ACE24 -	ACE12 -	ACE22 -	APA2 -	
	ORIGIN					
	COST	£10200 $13000 €11940	£0 $0 €0	£8640 $11070 €10100	£$€ n/a	£
	POWER BATTERYPETROL/GAS					
	WEIGHT inc battery BATTERY ONLY	18 3.4kg 39.6 7.5lb	20 3.4kg 44.1 7.5lb	10.5 2kg 32 4.4lb	8.1 1.9/3.3/5.7kg 17.9 4.2/7.28/12.5lb	10.3 1 22.8 4.
	MATERIALRESCUEWINCH					
	STOP/GO CONTROL	Dial	Dial	Dial	Paddle	
	WLL (Overload cut-out)	260kg 572lb	200kg 441lb	180kg 396lb	158kg 348lb	
	DIMENSIONS BATTERY-ONLY	30x23x35cm 11.8 x 9.1 x 13.8" n/a	31x24x30cm 12.2 x9.45 x 11.8" n/a	26x16x24cm 10 x 6.3 x 9.4" n/a"	28.6x14x 20.32cm 11.25 x 5.5 x 8" LP= 26 x 12.1 x 6.3cm LP=10.25 x 4.8 x 2.5"	33.4x 13.2 Std=27.2 Std= 1
	Specfic/Any Rope Ø	11mm EN1891A 7⁄16" EN1891A	11mm 7⁄16"	11-12mm 7⁄16"	6.5-11mm Technora ¼ -7⁄16" Technora	6.5-11mm T ¼ -7⁄16" T
	RANGE on 1 charge/tank	300m 984ft*	175m 574ft	400m 1312ft*	427m 1400ft*	427
	ASCENT SPEED Metres/feet/minute	0-30min 0-98.4ft/m	0-80min 0-262ft/min	0-30min 0-98.4ft/m	0-39.6m/min 0-130ft/min	0- 0-2
	DESCENT SPEED Metres/feet/minute	0-40m 0-98.4ft/m	0-100min 0-328ft/min	0-40min 0-131ft/m	0-39.6m/min 0-130ft/min	0- 0-2
	ENGINE/BATTERY POWER	48v Lithium 7.5Ah	48v Lithium ?Ah	44v Lithium 5Ah	Lithium LowProfile,Std,HiCap	L LowPro
BATTERY	RECHARGE TIME ON DESCENT	60min	<60min	<60min	60min	
	REMOTEAPP CONTROL RANGE	☐150m 492ft -	☐150m 492ft -	☐150m 492ft -	☐100m 328ft -	☐ 10
	ON-BOARD CHARGE STATUS					
FEATURES	ANCHOR TOP BOTTOM	1 1	1 1	1 1	2 1	
	NOISE/SOUND LEVELS	70dB	?	70dB	N/A	
	EMERGENCY IMPACT STOP	-	-	-		
	NO-POWER DESCEND					
	TEMP RANGE °C/°F	-30to60°C -10to120°F	-20to60°C -4to120°F	-20to60°C -4to120°F	-23to49°C -10to120°F	-23to49
	IP RATING U/W OPS	56 -	68	54 -	68	
	MID/ END ROPE FEED					
	WARRANTY GOVT ONLY	6-12months	6-12months	6-12months	12months	1
	CARRY CASE c/w ROPE					
	STANDARDS					Mil-Std,
	NOTES	*@150kg NB: Combination of ascent and descentt increases duration to 700m/2296ft	Underwater use. Adapted to muddy/icy ropes	*@120kg NB: Combination of ascent and descent increases duration to 400m/1312ft	Hot-swap batteries in 3 sizes. 10m/33ft underwater *@115kg with high cap battery Paddle shifter-style user interface and hand grips.	Hot-swap b 10m/33 *@115kg w Paddle s interface
	WEBSITE	asatsafe.com	asatsafe.com	asatsafe.com	atlasdevices.com	atlasc

COSTS: Approx & inc local tax/VAT £$€ shown in burnt orange are currency conversions only & do not inc shipping, import duty or tax N/A = info Not Available/not giv

POWERED ASCENDERS

		COMING SOON			
ATLAS	ATLAS	AWAH	EDER	EDER	EDER
APA4 -	APA5 -	Z2 -	PowerClimber 240-11B	PowerClimber EPC130	PowerClimber EPC240
£$€ n/a	£$€ n/a		£4500 $5750 €5205	£3560 $4325 €4100	£3960 $4850 €4570
.9/3.3/5.7kg 2/7.28/12.5lb	12.4 1.9/3.3/5.7kg 27.3 4.2/7.28/12.5lb		10.5 1.77kg 23.1 3.9lb	11.2kg 24.6lb	10.3kg 22.7lb
				-	
Paddle	Pistol Grip		Throttle	Throttle	Throttle
158kg 348lb	272kg 600lb		240kg 528lb	130kg 286lb	240kg 528lb
12.8x29.6cm x5.1x11.7" x 12.7 x 12.7cm 10.7 x 5 x 5"	27.2x 12.7x36.8cm 10.7 x 5 x 14.5" Hi=28.9 x 16.5 x12.7cm Hi=11.4 x 6.5 x 5"		30 x 40 x 30cm 11.8 x 15.75 x 11.8" -	36 x 30 x 27cm 14.1 x 11.8 x 10.6" -	39 x 30 x 28cm 15.4 x 11.8 x 11" -
Technora or 9-13mm Technora or ⅜-½"	6.5-11mm Technora or 9-13mm ¼ -7/16" Technora or ⅜-½		11-mm ½"	11-12.9mm 7/16-½"	11-12.9mm 7/16-½"
m 1400ft*	427m 1400ft*		TBA	240m	240m
64m/min 210ft/min	45m/min 150ft/min		0--36*m/min 0-118ft/min	0-30*m/min 0-98ft/min	0-24-36*m/min 0-78-118ft/min
64m/min 210ft/min	45m/min 150ft/min		18m/min 59ft/min	18m/min 59ft/min	18m/min 59ft/min
Lithium file, Std,HiCap	Lithium LowProfile, Std,HiCap		36v Stihl AP300S 7.2Ah or AP500 8.8Ah	Honda GX50 2stroke 47.9cc / 2Hp	Kawasaki TJ53 2stroke 53.2cc / 2.68Hp
60min	60min		75-150mins	-	-
00m 328ft -	☐100m 328ft -		-	-	-
				-	-
1 1	1 1		1 1	1 1	1 1
N/A	N/A		TBA	97dB	>97dB
			TBA	- -	- -
°C -10to120°F	-23to49°C -10to120°F		-10to50°C -10to120°F	-20to40°C -4to104°F	-20to40°C -4to104°F
68	68		>X4	55	55
2months	12months		24months (batteries)	12months	12months
			-	-	-
NAVSEA ANSI	Mil-Std, NAVSEA ANSI				
batteries in 3 sizes. 3ft underwater ith higher capacity battery hifter-style user and hand grips.	Hot-swap batteries in 3 sizes. *@115kg with higher capacity battery. Remote is security encrypted		RESCUE-capable version *36m/min@240kg Supplied with 100m Beal 11 or 12.9mm rope +£300 for 12.9mm	*36m/min@130kg Supplied with 100m Beal 11 or 12.9mm rope +£300 for 12.9mm	RESCUE-capable version *36m/min@130kg Supplied with 100m Beal 11 or 12.9mm rope +£300 for 12.9mm
levices.com	atlasdevices.com		edertools.com grube.de	edertools.com grube.de	edertools.com grube.de

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	Images NOT to Scale					
	MANUFACTURER	HARKEN	HARKEN	HARKEN	HARKEN	K
	MODEL VARIANT	Power Seat PWRS	Power Seat PWRS-B	Lokhead Power Hauler PWRS-G.COMPACT	Lokhead Power Hauler PWRS-B.COMPACT	KEA-
	ORIGIN					
	COST	£5680 $7275 €5100	£7510 $9600 €6260	£4550 $5750 €5250	£5690 $7175 €6560	£
	POWER BATTERY PETROL/GAS	■	■	■	■	
	WEIGHT inc battery BATTERY ONLY	15.1kg 33.3lb	22.6 3.6kg 49.9 7.9lb	13.5kg 29.8lb	21.6 3.6kg 47.5 7.9lb	13 29.
	MATERIAL RESCUE WINCH	■ ■ ●	■ ■ ●	■ ■ ■	■ ■ ■	■
	STOP/GO CONTROL	Trigger	long-Trigger & lever*	Trigger	long-Trigger & lever*	T
	WLL (Overload cut-out)	273kg of seat=150kg 600lb of seat=330kg	300kg of seat=150kg 661lb of seat=330kg	273kg 600lb	300kg 661lb	25 55
	DIMENSIONS BATTERY-ONLY	81.5 x 55.8 x 36.4cm 32 x 23 x 14.3" -	81.5 x 53.8 x 36.4cm 32 x 21.2 x 14.3" 24 x 13.4 x 9.3cm 9.5 x 5.3 x 3.7"	55.8 x 41.7 x 36.4cm 23 x 16.4 x 14.3" -	41.7 x 53.8 x 36.4cm 16.4 x 21.2 x 14.3" 24 x 13.4 x 9.3cm 9.5 x 5.3 x 3.7"	45 x 17.7
	Specfic/Any Rope Ø	10-12.7mm 5/16-½"	10-12.7mm 5/16-½"	10-12.7mm 5/16-½"	10-12.7mm 5/16-½"	10
	RANGE on 1 charge/tank	600m 1804ft*	550m 1804ft*	600m 1968ft*	550m 1804ft*	600/550
	ASCENT SPEED Metres/feet/minute	0-11-15m/min 0-36-49ft/min	0-13.5m/min 0-44.3ft/min	0-11-15m/min 0-36-49ft/min	0-13.5m/min 0-44.3ft/min	0-1 0-4
	DESCENT SPEED Metres/feet/minute	0-14m/min 0-46ft/min	0-14m/min 0-46ft/min	0-14m/min 0-46ft/min	0-14m/min 0-46ft/min	0- 0-2
	ENGINE/BATTERY POWER	Honda GX35 4stroke 35.8cc	50.4v Lithium ion 9Ah	Honda GX35 4stroke 35.8cc	50.4v Lithium ion 9Ah	Honda
BATTERY	RECHARGE TIME ON DESCENT	-	270min	-	270min	
BATTERY	REMOTE APP CONTROL RANGE	-	- -	-	- -	☐100
BATTERY	ON-BOARD CHARGE STATUS	-	■	-	■	
FEATURES	ANCHOR TOP BOTTOM	1 1	1 1	1 1	1 1	
FEATURES	NOISE/SOUND LEVELS	81.3/96.2dB	80/90dB	81.3/96.2dB	80/90dB	81.
FEATURES	EMERGENCY IMPACT STOP	■	■	■ -	■ -	
FEATURES	NO-POWER DESCEND	■	■	■	■	
FEATURES	TEMP RANGE °C/°F	-5to40°C 23to104°F	-10to50°C -10to120°F	-5to40°C 23to104°F	-10to50°C -10to120°F	-5to40
FEATURES	IP RATING U/W OPS	55	54	55	54	
FEATURES	MID/ END ROPE FEED	■	■	■	■	
FEATURES	WARRANTY GOVT ONLY	24months	24months	24months	24months	
FEATURES	CARRY CASE c/w ROPE	■ ☐	■ ☐	■ ☐	■ ☐	
FEATURES	STANDARDS					
	NOTES	*@125kg/276lb Handle folds down for storage	*@125kg/276lb *Descent control lever as per regular descender. Handle folds down for storage	Also Powerseat version with a seat and extension post for human-riding	Also Powerseat version with a seat and extension post for human-riding	S1=sp *@1 *Hybri electronic optional
	WEBSITE	harkenindustrial.com	harkenindustrial.com	harkenindustrial.com	harkenindustrial.com	k1p

COSTS: Approx & inc local tax/VAT £$€ shown in burnt orange are currency conversions only & do not inc shipping, import duty or tax N/A = info Not Available/not giv

POWERED ASCENDERS

					expansion column
OPARS	KOPARS	K1PARS	K1PARS	MODE	
HB-W1/S1	KMA-ML-W1/S1	KMA-ND-W1/S1	KMA-RS-W1/S1	Spider Pro	
0 $0 €0	£0 $0 €0	£0 $16,800 €0	£0 $20,400 €0	£5995 $7300 €6950	
3.5/13kg .7/28.6lb	15.5/14.5 00kg 34.2/32 00lb	15.5/14.5 00kg 34.2/32 00lb	15.5/14.5 00kg 34.2/32 00lb	14.3 00kg 31.5 00lb	
Throttle	Throttle	Throttle	Throttle	Throttle	
0/120kg 1/264lb	250/120kg 551/264lb	250/120kg 551/264lb	250/120kg 551/264lb	200kg 440lb	
24 x 30cm x 9.5 x 12" -	34 x 24/21 x 26cm 13.4x9.45/8.2x10.2" 00 x 00 x 00cm 00 x 00 x 00"	34 x 24 x 26cm 13.4x9.45x10.2" 00 x 00 x 00cm 00 x 00 x 00"	34 x 24 x 26cm 13.4x9.45x10.2" 00 x 00 x 00cm 00 x 00 x 00"	33x 26.5x 26.7cm 13x10.4x10.5" 00cm 00"	
-12.7mm 5/16-½"	11mm 7/16"	11mm 7/16"	11mm 7/16"	10.5-13mm typeA 5/16-½"	
n 1968/1804ft*	600m 1968ft*	600m 1968ft*	600m 1968ft*	330m 1082ft*	
3.5m/min 4.3ft/min	0-21/42min 0-27/137min	0-27/54min 0-88/177min	0-27/54min 0-88/177min	≤22m/min 72ft/min	
72m/min 236ft/min	0m/m 0ft/m	0m/m 0ft/m	0m/m 0ft/m	37m/min 121ft/min	
GX35 4stroke 35.8cc	36v Lithium ion Ah	36v Lithium ion Ah	36v Lithium ion Ah	36v Lithium-ion 5Ah	
-	120min	120min	120min	150min	
m/328ft* -	☐100m/328ft -	☐100m/328ft -	☐100m/328ft -	100m/328ft	
-					
1 1	1 1	1 1	1 1	1 1	
3/96.2dB	?	?	?	>97dB	
?	?			-	
°C 23to104°F	-23to49°C -10to120°F	-20to40°C -4to104°F	-23to49°C -10to120°F	-20to50°C -4to122°F	
55	68	65	67	54	
?	12months	12months	12months	n/a	
?					
peed version 100kg/328lb id device with c interface so has remote control	S1=speed version *@100kg/328lb	S1=speed version	S1=speed version *@100kg/328lb	*@90kg/198lb	
pars.co.kr	k1pars.co.kr	k1pars.co.kr	k1pars.co.kr	modepowerascender.com	

en. O= OK but not ideal ☐ ☐ ☐ = Option

	Images NOT to Scale				
	MANUFACTURER	PETRO STEEL	PETRO STEEL	PETRO STEEL	ROPETEK
	MODEL VARIANT	Pesco Smart Spider PSJ120-14	Pesco Smart Spider PSJ120-11	Pesco Smart Spider PSJ120-8	Wraptor HD -
	ORIGIN				
	COST	£5680 $1100 €00	£865 $1050 €1000	£825 $1000 €950	£3032 $3200 €3500
	POWER BATTERYPETROL/GAS				
	WEIGHT inc battery/fuel BATTERY ONLY	12.5kg integral 27.5lb integral	12.5kg integral 27.5lb integral	11.5kg integral 27.5lb integral	10.9kg - 24lb -
	MATERIALRESCUEWINCH	-		-	-
	STOP/GO CONTROL	Rocker Button	Rocker Button	Rocker Button	Throttle
	WLL (Overload cut-out)	150kg 330lb	≤ 140kg 309lb	≤ 120kg 265lb	141kg 310lb
	DIMENSIONS BATTERY-ONLY	37x25.5 x 27.5cm 14.6x10x10.8" -	37x25.5 x 27.5cm 14.6x10x10.8" integral	37 x 25.5 x 27.5cm 14.6 x 10 x 10.8" integral	41 x 26 x 22cm 16.1 x 10.2 x 9" -
	Specfic/Any Rope Ø	12-14mm ½-9⁄16"	12-14mm ½-9⁄16"	12-14mm ½-9⁄16"	11-16mm 7⁄16-⅝"
	RANGE on 1 charge/tank	700m 2296ft*	600m 787ft*	500m 787ft*	approx 227m 500ft
	ASCENT SPEED Metres/feet/minute	≤14m/min ≤45ft/min	≤11m/min ≤36ft/min	≤8/min ≤26ft/min	0-30m/min 0-100ft/min
	DESCENT SPEED Metres/feet/minute	14m/min 45ft/min	11m/min 36ft/min	8/min 26ft/min	18m/min 59ft/min
	ENGINE/BATTERY POWER	36v Lithium-ion 20Ah	36v Lithium-ion 20Ah	36v Lithium-ion 15Ah	Honda GX35 4stroke 35.8cc
BATTERY	RECHARGE TIME ON DESCENT	240-360min	240-360min	N/A	-
BATTERY	REMOTEAPP CONTROL RANGE	-	-	-	-
BATTERY	ON-BOARD CHARGE STATUS				-
FEATURES	ANCHOR TOP BOTTOM	- 1	- 1	- 1	1 1
FEATURES	NOISE/SOUND LEVELS	?	n/a	n/a	89dB
FEATURES	EMERGENCY IMPACT STOP				- -
FEATURES	NO-POWER DESCEND				
FEATURES	TEMP RANGE °C/°F	-25to40°C -13to104°F	-20to50°C -4to122°F	-20to50°C -4to122°F	-20to40°C -4to104°F
FEATURES	IP RATING U/W OPS	?	N/A	N/A	56 -
FEATURES	MID/ END ROPE FEED				
FEATURES	WARRANTY GOVT ONLY	?	n/a	n/a	n/a
FEATURES	CARRY CASE c/w ROPE	-	-	-	- *
FEATURES	STANDARDS				-
	NOTES	*@90kg/198lb Inc. 20m x 14mm rope(order longer lengths), remote control,	*@90kg/198lb Inc. 20m x14mm rope(order longer lengths), remote control,	*@90kg/198lb Inc. 20m x14mm rope(order longer lengths), remote control, NB: may also be a #7 version?	HD=Steel instead of alloy on high wear components plus rollers and bushings on fairlead. *Comes with 59m/150ft of rope for US orders only. Price inc CMI Ropewalker
	WEBSITE	smart-spider.com	smart-spider.com	smart-spider.com	ropetek.com

COSTS: Approx & inc local tax/VAT N/A = info Not Available/not given. = OK but not ideal = Option

Full page or two half page ads

	Images NOT to Scale					expar
BATTERY FEATURES	MANUFACTURER	RONIN	RONIN	RONIN	RONIN	
	MODEL VARIANT	Lift PN2805-11	Titan Lift (TL)	Shinobi Tactical Lift (STL)	Non-HC Lift	
	ORIGIN					
	COST	£3960 $3830 €4565	£3050 $4735 €3512	N/A	£3960 $3830 €4565	
	POWER BATTERYPETROL/GAS	■	■	■	■	
	WEIGHT inc battery/exc fuel BATTERY ONLY	11 2.7kg 24 6lb	8.6 2.3kg 19 5lb	8.6 2.3kg 19 5lb	11 3kg 24 6.6lb	
	MATERIALRESCUEWINCH	■ ■ ■	■ ■ ■	■ ■ ■	■ - ■	
	STOP/GO CONTROL	Thumbwheel	Thumbwheel	Thumbwheel	Thumbwheel	
	WLL (Overload cut-out)	182kg(272kg-2-person) 400lb (600lb-rescue-only)	182kg(272kg-2-person) 400lb (600lb-rescue-only)	159kg 350lb	182kg(272kg-2-person) 400lb (600lb-rescue-only)	
	DIMENSIONS BATTERY-ONLY	39 x 34 x 28.8 cm 15.4 x 13.4 x 11.4" 24.4 x 11.4 x 9.9cm 9.6 x 4.5 x 3.9"	29.8 x 34.3 x 28.6cm 11.75 x 13.5 x 11.25" 24.4 x 11.4 x 9.9cm 9.6 x 4.5 x 3.9"	29.8 x 34.3 x 28.6cm 11.75 x 13.5 x 11.25" 24.4 x 11.4 x 9.9cm 9.6 x 4.5 x 3.9"	39 x 34 x 28.8 cm 15.4 x 13.4 x 11.4" 24.4 x 11.4 x 9.9cm 9.6 x 4.5 x 3.9"	
	Specfic/Any Rope Ø	11.5-13mm 7/16-½"	11.5-13mm 7/16-½"	8.5-10 & 11.5-13mm ⅜ & 7/16-½"	11.5-13mm 7/16-½"	
	RANGE on 1 charge/tank	244m 800ft* or 15mins	244m 800ft*	227m 500ft*	244m 800ft*	
	ASCENT SPEED Metres/feet/minute	0-27.4m/min 0-90ft/min	0-27.4m/min 0-90ft/min	0-45.7m/min 0-150ft/min	0-27.4m/min 0-90ft/min	
	DESCENT SPEED Metres/feet/minute	0-45.7m/min 0-150ft/min	0-68m/min 0-150ft/min	0-64m/min 0-210ft/min	0-68m/min 0-150ft/min	
	ENGINE/BATTERY POWER	28v Lithium-ion 3.5Ah	48v Lithium-ion 3Ah	48v Lithium-ion 3Ah	28v Lithium-ion 3.5Ah	
	RECHARGE TIME ON DESCENT	90min	120min	60min	120min	
	REMOTEAPP CONTROL RANGE	91m/300ft -	91m/300ft* -	91m/300ft* -	91m/300ft -	
	ON-BOARD CHARGE STATUS	■	■	■	■	
	ANCHOR TOP BOTTOM	1 1	1 1	1 1	1 1	
	NOISE/SOUND LEVELS	N/A	N/A	N/A	N/A	
	EMERGENCY IMPACT STOP	- -	■ -	■ -	- -	
	NO-POWER DESCEND	■	■	■	■	
	TEMP RANGE °C/°F	-20to49°C -4to120°F	-20to49°C -4to120°F	-20to49°C -4to120°F	-20to49°C -4to120°F	
	IP RATING U/W OPS	54 -	54 -	54 -	54 -	
	MID/ END ROPE FEED	■	■	■	■	
	WARRANTY GOVT ONLY	12months	12months	12months ■	12months	
	CARRY CASE c/w ROPE	■ □	■ □	■ ■	■ □	
	STANDARDS	CE ANSI	CE ANSI	CE ANSI	CE	
	NOTES	*+800ft descent @91kg/200lb Hot-swap batteries $380 ea. Price includes wireless remote control, battery, charger, hard case w/foam. MBS >2272kg/5000lb	*+800ft descent @91kg/200lb Hot-swap batteries $470 ea. Hands-free braking. MBS >2272kg/5000lb *EMI: Electronic shielding	*+500ft descent @91kg/200lb Hot-swap batteries $470 ea. Price includes wireless remote control, battery, charger, hard case w/foam. MBS >2272kg/5000lb *EMI: Electronic shielding	Material handling only - Can perform human-lifting but certified and marked as material only. Inc 2x batteries MBS >2272kg/5000lb	
	WEBSITE	roninpowerascender.com	roninpowerascender.com	roninpowerascender.com	roninpowerascender.com	

COSTS: Approx & inc local tax/VAT £$€ shown in burnt orange are currency conversions only & do not inc shipping, import duty or tax N/A = info Not Available/not giv

POWERED ASCENDERS

nsion column





	SKYLOTEC	SKYLOTEC	SKYLOTEC	SKYLOTEC	SKYLOTEC
	Actsafe ICX POA-030	**Actsafe ACX** POA-001	**Actsafe RCX** POA-017	**Actsafe TCX TCXII** POA-016 POA-011	**Actsafe PMX** POA-006
	TBA	£15600 $23000 €15000	£26500 $32500 €30625	n/a	£9500 $11500 €9050
	■	■	■	■	■
	7.4 1.31kg 16.3 2.9lb	13kg 2.5kg 28.9lb 5.5lb	13.5kg 2.5kg 29.2lb 5.5lb	1413.3kg 2.5kg 3129.3lb 5.5lb	21kg - 28.7lb -
	■ * ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ●
	Thumbwheel	Throttle	Throttle	Throttle	Throttle
	185kg 407lb	200kg 440lb	250kg 550lb	150250kg 330550lb	250kg 551lb
	25.5 x 24.9 x 21.7cm 10 x 9.8 x 8.5" 11.6 x 13.2 x 9.8cm 4.6 x 5.2 x 3.8"	33 x 28 x 27cm 13 x 11 x 11" 30 x 12 x 11cm 12 x 4.7 x 4.3"	33 x 28 x 27cm 13 x 11 x 11" 30 x 12 x 11cm 12 x 4.7 x 4.3"	33 x 28 x 27cm 13 x 11 x 11" 30 x 12 x 11cm 12 x 4.7 x 4.3	49 x29 x 28cm 19.3 x 11.4 x 11.1" -
	11mm 7/16"	+/- 11mm 7/16"	+/- 11mm 7/16"	6-13mm ¼-½"	11-12.9mm 7/16-½"
	230m 754ft*	200m 656ft*	200m 656ft*	150m 492ft	750m 2460ft
	0-24m/min 0-78ft/min	0-24m/min 0-78ft/min	0-24m/min 0-78ft/min	0-6024m/min* 0-19778ft/min*	1-17m/min 3.3-56ft/min
	1-24m/min 3.3-78ft/min	0-25m/min 0-82ft/min	0-25m/min 0-82ft/min	1-145m/min* 1-475ft/min*	1-18m/min 3.3-59ft/min
	Husqvarna 36v Lithium 5.2Ah	56.1v Lithium n/a Ah	56.1v Lithium n/a Ah	56.1v Lithium n/a Ah	Honda GX35 4stroke 35.8cc
	80/90min -	90min ■	90min ■	90min ■	-
	■	□150m 492ft ■	□150m 492ft ■	■ □150m 492ft ■	-
	■	■	■	■	-
	- 1	1 1	1 1	1 1	1 1
	n/a	76dB	76dB	76dB	89dB
	■ -	■ -	■ -	■ -	- -
	■	■	■	■	■
	-10to40°C 14to104°F	-20to40°C -4to104°F	-20to40°C -4to104°F	-10to40°C 14to104°F	-20to40°C -4to104°F
	55	55	67	67 68 ■	56
	■	■	■	■	■
	12months -	12months -	12months -	Life ■	12months
	□ □	■ □	■ □	■ ■	□ □
	CE	CE ANSI	CE	CE MilSpec	CE
	Uses 'off-the-shelf' Husqvarna BLi200 batteries * @100kg *not-load-rated for a rescue load but can use remote control to carry out single person rescue.	* @100kg ACX= Work variant Cost inc 2 batteries. Battery= £3212/$3900/€2100 optional rechargeable driver as power source	* @100kg RCX= Rescue variant Cost inc 2 batteries. Battery= £3212/$3900/€2100 optional rechargeable driver as power source	TCX= Tactical variant TCXII=Seal Assault submersible to 10m/33ft for 4hrs. *@120kg150kg watertight Schrader valve for pressure testing	*@100kg/220lb
	skylotec.com	skylotec.com	skylotec.com	skylotec.com	skylotec.com

en. ○= OK but not ideal ■ ■ ■ = Option

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- suitable for 11 mm ropes

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- simplifies and accelerates work on complex or difficult to access structures
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- remote control up to 150m

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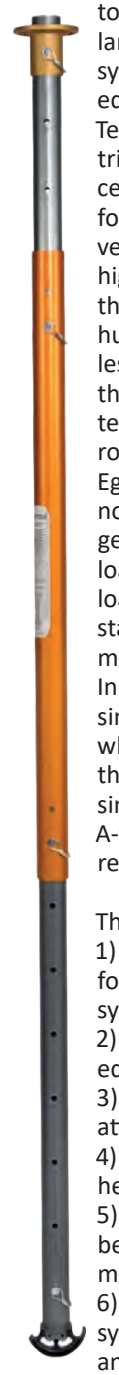
UPDATED March '24

TRIPOD, QUADPOD & MULTIPOD HIGH-DIRECTIONAL FRAMES



AHD or Artificial High Directional became a thing earlier this century largely because Reed likes to name things and see if it catches on. It refers to a manufactured addition to the landscape that can hold your rope systems clear of the ground and edge that needs to be negotiated. Technically, a self-supporting tripod or quadpod holding loads centrally without the need for lateral guying or opposing vector forces isn't acting as a high directional but more often than not all of these frames are AHDs. The humble one-piece industrial tripod with three legs more or less equally sized, was the norm for rescue throughout most of the 20th century, in the case of many US/Canadian wilderness teams these were often jerry-rigged on-site from timber and rope lashings. Bi-pedal A-frames too have been AHD's since Egyptian/Greco/Roman time and perhaps before. So they're nothing new but in the context of this article, and rescue in general, we are determining an AHD to be a purpose built, load-bearing frame capable of lowering and lifting a rescue load (2 persons and associated paraphernalia). They are really static versions of a maritime or dock-side davit arm but highly mobile and adaptable to different edge negotiation situations. In wilderness rescue terms they are something of an anomaly since we are generally concerned with low weight and low bulk whereas these things are likely to be second only in mass to the vehicles you arrived on scene in! However, an AHD can be a single pole (monopod) if properly guyed/stayed or a two-legged A-frame both of which are lighter than a tripod or mulitipod but require more expertise to rig and operate.

There are 7 distinct types of stand-alone AHDs:
1) **MONOPOD** - single leg with anchor points on the head for back-stays as well as a main attachment for the lowering system. *TerrAdaptor* version shown left.
2) **BIPOD/A-FRAME** - two legs which can luff out beyond an edge if properly guyed.
3) Traditional **TRIPOD** with a fixed head and attached legs
4) Traditional **QUADPOD** with a fixed head and attached legs
5) **BEAM** where a gantry is created between two sets of legs to span much wider gaps or trenches.
6) **MULTIPOD** which is a modular system of detachable legs, head(s) and components capable of creating a tripod, and bipod and often a monopod depending on head-anchor configurations.
7) **TETRAPOD/TETRAHEDRAL FRAME**; which used to be just the Australian Larkin Frame but there is now some competition. This is effectively a pyramidal shape (or two pyramids joined) with a rigid frame connecting the three feet together and tipped over so that it pivots on the edge created between two legs - simple genius. This is a true luffing frame in that the load-head can be safely moved in-board of the edge for safe rigging by pulling down on the rear 'tail' of the frame. When ready that same tail is then lifted (under strict control) so that the head and load are luffed out beyond the edge so that all ropes clear the edge and edge negotiation is safe and simple.

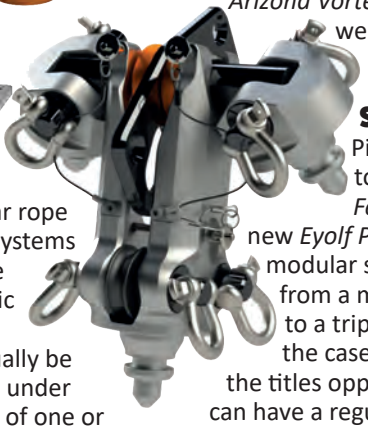
HEAVY-DUTY SHORING STRUT SYSTEMS

We could also have a 7th class for modular crossovers from USAR, but while these are radically different, the end product is still one of the previous 6 classes, just a lot, lot, lot stronger! These are structural shoring struts that can be combined with specialist heads and feet to create a gin-pole, bipod or tripod. The AHD guide in our **USAR/EXTRICATION BUYERS GUIDE** gives greater detail on their uses outside of rope rescue. *Airshore* pioneered the tripod adjunct and in fact the largest tripod we ever had was an enormous and very unwieldy beast made of *Airshore*'s two or three largest struts plus their largest extensions connecting to a solid machined head (and machined plates for feet) that were strong enough to support collapsed structures. These were in fact, seen inside the Pentagon as columns supporting the ceilings following the 9.11 attacks. These also made great large animal rescue tripods able to support weights far in excess of regular tripods so we used it for cows and horses and In the image below from 2013, Cornwall Fire&Rescue service in the UK were still using the *Airshore* tripod to good effect. *Paratech* then took up the challenge with their version and latterly we have had perhaps the slickest offering from *Holmatro* with

HIGH-DIRECTIONALS FRAMES

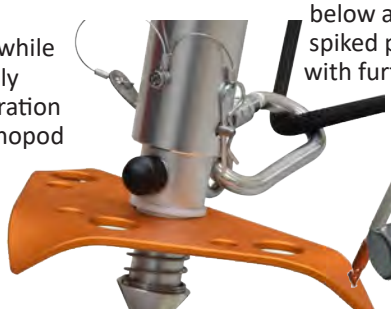
Grand Canyon National Park Rangers using the ArizonaVortex. Pic by GCNPS/A Fitzgerald

their *OmniShore* system (pic opp) . Unlike regular rope access and rescue tripods the modular shoring systems have two unique tricks up their sleeve 1) they are often pneumatic, hydraulic and electric extension as well as the more usual manual so they can actually be manipulated under load or at least under tension - you can adjust the length of one or more legs over short distances - we thought it worth a mention as we once found it very useful in freeing a piece of jammed hardware that was operating way outside of normal margins. 2) Load cell monitors are available (Holmatro has a bespoke system and *Paratech* uses the '*Guardian Angel*' system -pic above right) that can tell you exactly what loads are being applied. These kinds of tripod systems really are the shire-horses of the industry enabling you to attempt tasks that would otherwise be impossible or risky at best. They are of course, not light. The machined head alone on our old *Airshore* weighed as much as an entire mountain rescue tripod. Even today, slick though these things are, you can tell that they are geared more towards an Urban Search & Rescue environment than they are a remote gorge. Above-right is *Holmatro*'s sophisticated 8.7kg tripod head with an integral, rotating rigging plate for the main load lines, an integral pulley sheave and no less than 8 stainless steel shackles for tensioning, restraint or guy lines. Notice that two of the strut attachments are mounted bilaterally while the third is extended and rotates freely to be connected in a 'lazy-leg' configuration if required. More on this shortly. In monopod or gin pole configuration you can really see the difference in bulk - top-left is Holmatro's 3.2kg/7.1lb monopod head while SMC's rather more mountain orientated *Space Station* below it is around half the weight at 1.8kg/4lb and the *Arizona Vortex* head below that is almost half the weight again at 1kg/2.2lb.



LIGHT ALLOY MODULAR SYSTEMS

Pic-Top is the *Arizona Vortex* which, together with the *SMC TerrAdaptor, Ferno Arachnipod* and perhaps the new *Eyolf Pythagorus* are the most adaptable of modular systems capable of being transformed from a mono-pod to an A-frame to a tripod and a quadpod. In the case of the *Arachnipod* in the titles opposite, the quadpod can have a regular head or a beam gantry that enables you to span the width of a hole or edge from side to side up to 4m. These are the much lighter, more manoeuvrable and transportable versions of the modular shoring strut systems. The legs, heads, feet and accessories are all detachable and interchangeable. Kong for instance has a footplate with anchor points that is anchored by your vehicle (wheel). Above-right is *SMC*'s bag of heads with a tripod and Monopod head packed in a bag separate from the legs and feet and right is the complete *Arizona Vortex* system in 4 to 6 bags. This makes transport in wilderness areas a lot easier as the weight and bulk is spread across six team members safe in the knowledge that when they arrive at the incident, their AHD will cover every eventuality. The two black bags offer two types of foot - a flat plate that can rotate 360 degrees with a ball and socket joint and a spiked foot. *Kong*'s modular foot (below) has a sprung spike below a broad, spiked plate with further



Modular systems often come as complete kits. In fact, the Arizona Vortex above is normally only offered as the one kit to which you then add extra and different components.

ground spike holes. It also has a load bearing eye not present on the basic leg.

FIXED HEAD TRIPODS

On the left is *Kong's Cevedale Rescue 2Winch* version which is a fixed head tripod where the legs and head are semi-permanently connected and you simply fold everything inwards for storage and transportation in one bag. As with all lightweight AHDs the legs telescope and pin in place to give shorter or greater working height. This particular model is has two integrally mounted hand winches for twin line raising/lowering. The majority of tripods and certainly all square/rectangular section AHDs, will accept some kind of mount for a winch and this is most common in industrial 'con-space' tripods. There was a time when virtually all tripods used for industrial access and rescue were one-piece, fixed head tripods and these are still the cheapest option but they do have quite specific and limited applications - they are great for over-hole entries but can still help with edge negotiations for vertical rescues providing they are back-stayed correctly because **any pull outside of the triangular or rectangular footprint will result in the frame collapsing.** Assuming that the tripod is anchored in some way, this should only result in those over the edge experiencing an alarming drop of several feet rather than having a few hundred pounds of metal hurtling towards them. This can be mitigated by running the belay directly over the edge (via soft edge protection) rather than having the main rope and the belay running through the head of the AHD. This 'grounded belay' option is not often used by experienced teams using more sophisticated AHD's that can be properly configured and stayed for the edge negotiation situation because the whole point of the AHD may be to stop rope running on unstable ground and knocking down debris.

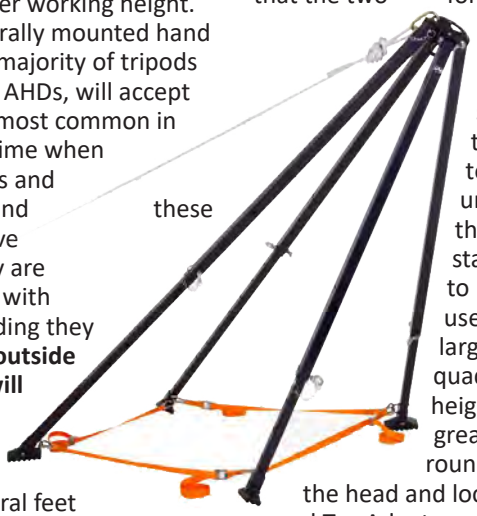
FOOT RESTRAINTS

A number of AHDs have locking pins on the

head to stop the legs spreading beyond a set limit - *ISC*'s tripod for instance, so these can dispense with leg restraints which some see as a trip hazard. But the norm remains a foot restraint strap/rope/chain to ensure the legs can't spreading and the AHD collapsing under load. Most have eyes or larger attachment rings on the foot or at the base of the legs - these can have a rope threaded or simply clip in a carabiner and adjust the rope, webbing or chain to allow the required spread. Note that these are not always load bearing beyond leg restraining but some are also fully load bearing deviations for your operational rope systems.

LAZY-LEG

In the image above of *Eyolf's Pythagorus* system you can see that the two forward legs are hard up against the edge, in this case at around 90 degrees to the vertical rather than angled forward like the *SAR Products Quadpod* below. The single leg at the rear is a lazy-leg in that it takes very little of the load that is applied to the A-frame legs, in fact virtually none until or unless the load moves in-board of the edge. Instead, its function here is to offer stability and security to the two A-frame legs to restrict rearward movement. It can also be used to increase the footprint for spanning larger holes or gaps than an equilateral tripod/quadpod might offer and to bridge uneven height. Most lazy leg head attachments allow greater rotation and in the case of some round-tube models, can be adjusted through the head and locked to alter the length. All legs on the AZV and TerrAdaptor can extend through and beyond the head to be locked into place with pins.



STANDARDS: As usual, European CE are the most comprehensive and applicable across the work and rescue spectrum but there are several that apply from anchors and PPE fall restraint to Machinary Directive but EN795-B for mobile anchor devices is probably best. For rescue applications NFPA is always a good indication of a bombproof product but we are seeing a move away from large & heavy in rescue driven by the tactical and wilderness markets so NFPA may end up needing a category below 'T' for Technical.

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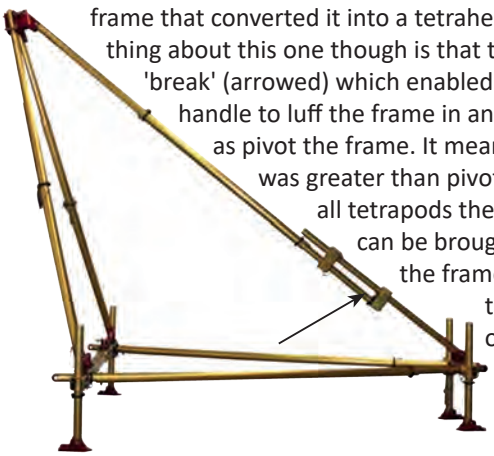
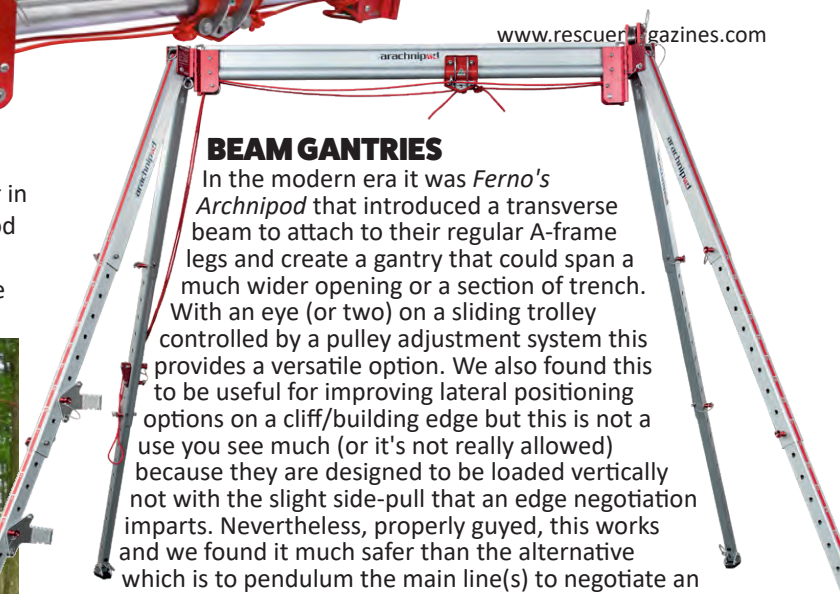
TETRAHEDRAL FRAMES (TETRAPODS)

We're calling this a TETRAPOD. The iconic *Larkin Frame* from Australia (distributed outside Oz by *Lyon Equipment* in the UK) is an offset pyramid which you tip over in order to clear an edge or it can sit upright in a standard tripod configuration except with solid leg restraints instead of the usual webbing or rope! The *Larkin* is a simple, fixed structure but is nonetheless very versatile. In this image you can see how guying and manoeuvring the 'tail' of the frame allows the head to clear an edge by quite a large margin. The frame pivots on two feet and there are pulleys on fixed eyes at the two top corners of the frame. We only know of two competitive designs to this, one is another of our old favourites - the *SRTe OzPod* which was taken over by *DB Sala's Rollgliss* and then *3M* and then disappeared along with all *SRTe* gear. The *Ozpod* was a modular system comprising a tripod (or A-Frame) and a base frame that converted it into a tetrahedral frame. The interesting thing about this one though is that the frame had a hinged 'break' (arrowed) which enabled you to pull back on a handle to luff the frame in and out under load as well as pivot the frame. It meant that edge clearance was greater than pivoting the frame alone. Like all tetrapods the rescuer and casualty can be brought inboard within (or on) the frame rather than close to the edge. The tripod part of this Ozpod still seems to be produced by or on behalf of *Skedco* in the US. A more recent version, though by no means new, is *Kong's Grizzly*. This differs in having no rigid section between the two feet - what would be one of the edges of the pyramid. Like the *OzPod*, this is modular in that the legs or poles can be used to create a bespoke monopod (inset pic) and bipod. The components shackle together with the shackle then creating load bearing eyes at each corner. Multipods and tetrapods can take longer to set up than more basic tri/quadpods, we required a single rescue technician to set up the *Ozpod* as shown above within 5 minutes, no mean feat. In contrast a much simpler tri/quadpod will go up in a couple of minutes and a modular and tetrapod in 3-5minutes. None of these times include attaching stays/rigging.

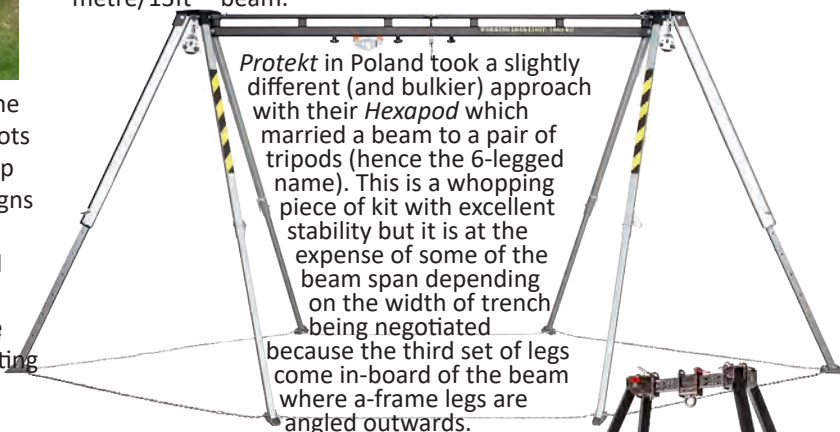


BEAM GANTRIES

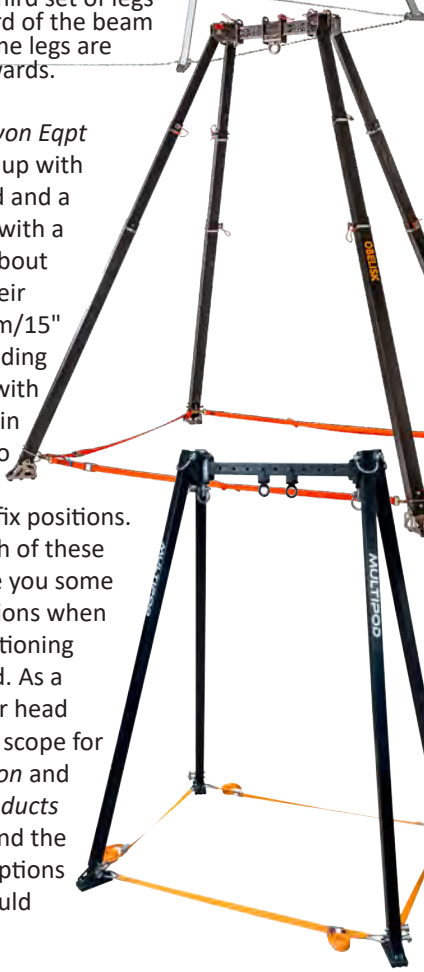
In the modern era it was *Ferno's Archnipod* that introduced a transverse beam to attach to their regular A-frame legs and create a gantry that could span a much wider opening or a section of trench. With an eye (or two) on a sliding trolley controlled by a pulley adjustment system this provides a versatile option. We also found this to be useful for improving lateral positioning options on a cliff/building edge but this is not a use you see much (or it's not really allowed) because they are designed to be loaded vertically not with the slight side-pull that an edge negotiation imparts. Nevertheless, properly guyed, this works and we found it much safer than the alternative which is to pendulum the main line(s) to negotiate an obstacle. In the case of the *Arachnipod* you can have a 2, 3 or 4 metre/13ft beam.



Protekt in Poland took a slightly different (and bulkier) approach with their *Hexapod* which married a beam to a pair of tripods (hence the 6-legged name). This is a whopping piece of kit with excellent stability but it is at the expense of some of the beam span depending on the width of trench being negotiated because the third set of legs come in-board of the beam where a-frame legs are angled outwards.



Then there's the *Obelisk* from *Lyon Eqpt* in the UK (pic right). They came up with a true cross between a quadpod and a manageable sized beam gantry with a very slick trolley system that's about as bombproof as they come. Their stainless steel beam is only 40cm/15" wide but can take one or two sliding eyes that then fix into position with plunge-pins. *SAR Products*, also in the UK have a *Multipod* that also has moveable eyes albeit with fewer fix positions. Both of these give you some options when positioning the load. As a modular head there is scope for both *Lyon* and *SAR Products* to expand the beam options should



HIGH-DIRECTIONALS FRAMES

demand require it. The *SAR Products* head is not as slick as *Lyon*'s but it does offer a tripod option as well as a quadpod.

VARIOUS OTHER FEATURES

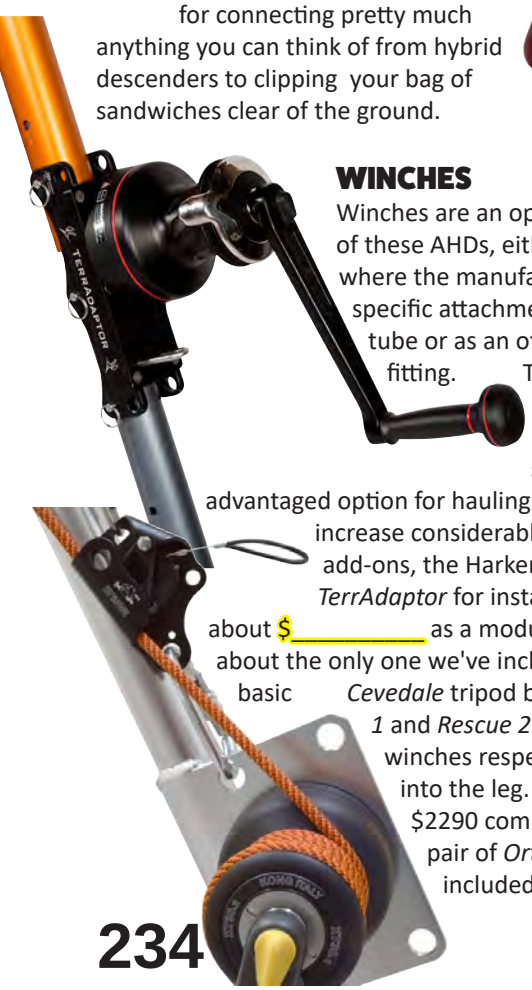
There are often a number of variants of similar tripods and it is sometimes difficult to decide what constitutes a distinct model and what is too small a variation to warrant a separate entry, especially where industrial access is concerned. The rescue models tend to be more distinct as complete kits. *Mittelmann* for instance have 4 models but the *Mid* is simply a half height version of the *Uni* and the *Octopus* has fixed suction cup feet instead of either the regular round or swivelling feet. We've included the *Uni* with the *Mid* as a variant and the *Mini* with the *Octopus* as a variant. *Protekt* too have many variations on their models which you will need to explore yourself but we have included no less than 6 key models (and excluded their small wheeled model altogether!). The *Arachnipod* is a very complex system with numerous kit options for the tripod, quadpod and beam systems that we could not hope to list separately in this guide - there are 8 variations on the one tripod - so our prices give the most basic rescue model to the most complex but even that can be augmented with more optional extras. Above is the previously discussed *Obelisk* head made of stainless steel and this one small detail could make a lot of difference to your purchase if you operate in a marine/ sea cliff environment where regular steel and aluminium alloys will degrade unless kept scrupulously clean and dry.

Very few models provide numbering on their adjustment holes and yet we have always contested that this is an incredibly useful (and simple) feature to ensure correct assembly when you're in a rush, in the dark in poor weather conditions. Of course industry drives much of the AHD development and they don't care so much - it's an extra cost they don't need. *Lyon's Obelisk* for instance is available with number for an additional charge. The *Arachnipod* remains the finest proponent of clear markings with numbers and letters on the top and bottom sections to really ensure there are no mix ups. Their standard feet above show just how clear their marking is, at least while the tripod is new. It's worth maintaining these markings with your own resin paint or marker. These feet also exhibit five features already covered -

1) a swivelling foot that is 2) detachable so that you swap in larger or more specialist feet. 3) A tactile/grippy base for smooth, hard surfaces. 4) A hole for driving in a ground stake and 5) a pointed or spiky end that can dig into softer ground.

Talking of feet, two or three models have suction cup feet intended to used for tank and silo entry but only where you have a relatively clean, non-rusty surface. On site industrial rescue teams may opt for these as their dedicated feet but broad-spectrum teams would be better suited to a modular foot. Nevertheless, in the right situations these suction cup feet are excellent providing the best traction you will get on a a shiny surface. They are basically glass cups using a vacuum lever to suck the cup onto the surface. The *Mittelmann's Octopus* above also has scaffolding style tubes around the frame which we suppose you could jerry-rig to any round-tube frame but these are bespoke sizing and powder-coating. They provide securing for leg restraint (above the metal surface of the tank), extra handholds for entry/egress extra and can also assist in wedging the frame against other surfaces/ walls adjacent the entry point. Mittelmann also sell some 'right angles' that secure on the inside of tripod legs (with the base of the angle flush to the ground) to give hole-entrants something to hold onto as they go in or exit.

Protekt and *Ferno* have steps attached to the leg to aid in rigging or tending the head once erected and similarly *Ferno* also offer a universal hardware attachment plate for connecting pretty much anything you can think of from hybrid descenders to clipping your bag of sandwiches clear of the ground.



WINCHES

Winches are an option on virtually all of these AHDs, either as a bespoke item where the manufacturer can supply a specific attachment to fit the type of tube or as an off-the shelf universal fitting. This can then have a hand winch attached to a leg to provide a smoother, mechanically advantaged option for hauling and lowering. Costs increase considerably for any of these add-ons, the Harken hand winch on this *TerrAdaptor* for instance will set you back about $_____ as a modular option. *Kong* are about the only one we've included as a variant to the basic *Cevedale* tripod because their *Rescue 1* and *Rescue 2* models have 1 and 2 winches respectively integrated into the leg. The basic tripod is $2290 compared to $9000 when a pair of *Ortles* Hand winches are included.

IN THE FOLLOWING TABLES:.....

ORIGIN: Is the parent company - an inset flat may indicate the manufacturer's country if different but we don't always know.

COST: Is for the most basic tripod configuration (not a monopod/bipod option). Some also have a price listed for a variant or the most expensive version or, in the case of Aracnipod TEMS, the best selling (3m) of their 3 most expensive versions**.** Prices are **a**pproximate, include VAT@20% &/or US State Sales Tax. We generally round up the cost. **£$€ in orange is a currency conversion only.**

MATERIALS- HEAD LEGS: The head is the section that ties the legs together and provides the main attachment points. The true Tetrahedral frames typically don't have a 'head' instead just having load bearing eyes in the corners. Legs are all aluminium alloy but some of the 'alu' heads are cast rather than machined.

TUBE PROFILE TELE-SECTIONS: The cross section of material which will be either round tube, square or rectangular and the number of telescoping sections in each leg, usually 2 but some are 3 or even 1 which will not reduce further for transport.

MARKED INCREMENTS: The total number of length adjustments available on any given leg. Usually this will be some kind of independent pin that needs to be secured to the frame to prevent loss but some (like the heavy duty shoring struts) have an integrated sprung plunger or similar locking mechanism built into the leg. MARKED= ■=the holes are numbered/ lettered-much better for coordinating construction.

LAZY-LEG WINCH ADAPTER: Whether the system includes a Lazy-Leg (usually longer) and/or an adapter to the head that accepts a Lazy-Leg because it needs to be able to rotate up and down to a shallower angle than the side legs. WINCH ADAPTER allows a winch to be connected to a leg.

WEIGHT: for the basic tripod/quadpod unless sold as a complete kit. Excludes additional accessories: leg restraints and pulleys etc, unless integrated into the structure of the tripod.

PACK(S) DIMENSIONS: The number of carry bags/packs required to transport the AHD and the dimensions of the largest pack. □= bespoke bag(s) is an option not included in kit price.

MIN / MAX WORKING HEIGHT: The working height is the maximum clearance that you can expect beneath the main load connection point IT IS NOT the overall height of the AHD though there will no doubt be some in here that have supplied that info instead! The Minimum heigh is achieved by compressing the leg to it's minimum setting but will always be dictated by the length of the longest leg section.

MAX FOOTPRINT: The largest circular hole that the **tripod** or **quadpod** can span and remain functional. This can simply refer to the standard to which it adheres - NFPA= 70"/178cm & CE 78"/203cm - a lazy leg can increase the span width much more.

TYPE of DEVICE:

- ■ **MONOPOD:** Single leg with load bearing head
- ■ **BI-POD** Two-legged A-frame with load bearing head
- ■ **TRIPOD:** Three legged frame with load bearing head
- ■ **QUADPOD:** Four legged frame with load bearing head
- ■ **BEAM:** Load-bearing gantry between two sets of legs.
- ■ **TETRAPOD Single or Double Tetrahedral frame**
- ■ **INDEPENDANT STRUTS: Each leg=load-bearing/shoring strut**

MAXIMUM DEVICE LOAD: As with the footprint, this figure can simply be the minimum required to meet a standard like 600lb in the US - they frequently hold much greater loads or quote a higher load for non-human weight. This max weight should be applied to the frame **only via the main load attachment point(s).** This is akin to the Working Load Limit (NOT to the MBL/MBS) and will increase as heigh of AHD is decreased. NOT

the max load that can be applied to the lateral (guy) eyes.
TYPE OF HEAD MONO BIPOD: Whether the head is readily detachable or fixed/bolted or is a beam. BEAM or gantry is an alternative form of head. It is a beam that spans between two pairs of legs and enables a wider work width and/or the main hard point to be moved. They allow a moving but lockable 'trolley' to be used as the load's attachment point. **MONOPOD** or GIN head mounts to a single pole. Many in this list are already capable of operating as a **BIPOD** head.
CONNECTION: is the type of load-bearing main attachment points at the head - for most this is a swivelling ring bolt to help negate unnecessary torque loads on your carabiner/ connector but some have a fixed ring bolt, a shackle or in the case of the AZV a machined eye. The other commonest option is a drilled eye in a plate or multiple eyes in a rigging plate. The *TerrAdaptor* and *AZV,* have machined eye s with pins for connecting any type of hardware, usually a pulley or a lowering device(see ad-right).
INTEGRATED PULLEYS: pulley sheaves built into the structure of the AHD. Can also act as the main connection point carrying the load bearing rope(s) back to a separate anchor.
LATERAL/REAR (GUY) EYES: On or near the head. Some are fully load bearing but their orientation or position restricts use to anchor/stay attachment to keep the AHD stable and resist the direction of load. If none are shown, use main eye(s).
FOOT HINGES BALL-JOINT DETACHES: The foot can swivel upwards for storage or to change from flat to spike etc. like this *Obelisk* foot. BALL JOINT enables 360° rotation and lateral movement of the leg. DETACHES means it can be easily removed for change of foot type and/or storage

ANCHOR EYES SPIKE GRIP: holes that allow spikes or ground stakes to be driven through. SPIKE:the foot is, or incorporates, a spike to dig into ground for a solid purchase (like this *Obelisk*).
GRIP for hard surfaces: May be a tactile/grippy surface like rubber or studs (like this *Obelisk*) or plastic/metal ribbing for purchase on hard surfaces. At least one model has suction cups
SIDE RESTRAINT ANCHOR EYES: These are eyes or eye bolts to, or through which you connect the leg restraints. ANCHOR = rated for load-bearing deviation pulleys or hardware
LEG RESTRAINTS LEGS LOCK: Rope, webbing or chains used to stop legs from spreading. ■=Legs are/can be locked in place.
VERTICAL EDGE: Can operate at, up to or slightly over a cliff or building edge. Properly guyed quadpods offer more stable option than a tripod unless it has a lazy leg.
LUFFING: The frame head can be manoeuvred over and beyond the edge (not just by guying)
HOLE/CON-SPACE:Can be positioned over a hole/well/entry for confined space entry/ vertical entry/rescue.
CONFINE: NOT to be CONFUSED with HOLE/CON-SPACE above where the entry is *into* a confined space but the AHD could be the size of a double decker bus! Here we mean that the device can be taken into, and operated within, a confined space - usually only devices with legs that can retract to allow a frame of less than 4ft in height.
SHORING: Tripods etc. constructed from fully-load bearing shoring struts that could, individually, hold up a house.
STANDARDS: EN365=PPE against falls from height
EN1495=Mast climbing platforms
PD CEN/TS 16415= Personal Fall protection for max 2 persons.
EN795= PPE Anchor devices B= mobile, relates to all AHDs
EN1808 =Suspended access equipment

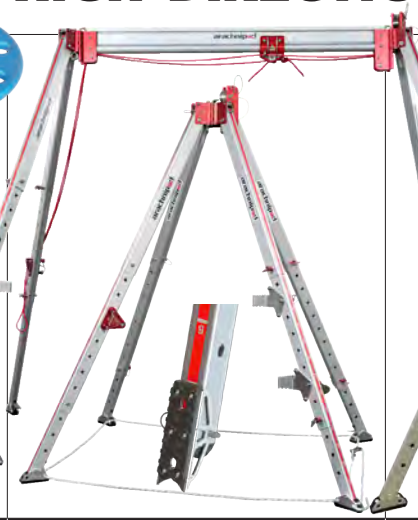
Images NOT to Scale

Accessories shown may be an optional extra

	MANUFACTURER	ABTECH	C.A.M.P.	CMC
	MODEL VARIANT	Rescue 2-Person Tripod RT3 T3	Tripos 3507	Triskelion 760001
	ORIGIN			
	COST Base model inc Tax/VAT Variant or Top model	£1120995 $1425 €1305 - - -	£0 $0 €0 - - -	£1925 $2450 €2255 - - -
STRUCTURE	TYPE of DEVICE	■	■	■
STRUCTURE	MATERIALS HEAD LEGS	Cast Alu Alu	Cast Alu Alu	Steel Alu
STRUCTURE	TUBE PROFILE TELE-SECTIONS	Round 2	Rectangular 2	Rectangular 3
STRUCTURE	MARKED INCREMENTS	- ?	- ?	■ 16x 100cm/4"
STRUCTURE	LAZY LEG WINCH ADAPTER	- □	- □	■ □
SPECIFICATIONS	WEIGHT (BASIC TRIPOD)	21.5 19.4kg 47lb 5oz 42lb 11oz	20kg 47lb 5oz	31.8kg 70lb
SPECIFICATIONS	PACK(S) DIMENSIONS	■ 1	■ 1 175x26x23cm	■ 1 170x31x31cm
SPECIFICATIONS	MIN WORKING HEIGHT	200140cm / 0ft 0"	135cm / 0ft 0"	170cm / 5ft 5"
SPECIFICATIONS	MAX WORKING HEIGHT	260240cm / 0ft 0"	240cm / 0ft 0"	310cm / 10ft
SPECIFICATIONS	MAX FOOTPRINT	200170cm / 0ft 0"	210cm / 0ft 0"	282cm / 9ft 3"
HEAD	MAXIMUM DEVICE LOAD	250kg 550lb	250kg 550lb	220kg 484lb
HEAD	TYPE OF HEAD MONO BIPOD	Detachable - -	Fixed - -	Fixed - -
HEAD	MAIN LOAD EYES	3 Ring Bolts	2 Ring Bolts	3 Plate Eyes
HEAD	INTEGRATED PULLEY(S)	3	3	2
HEAD	LATERAL (GUY) EYES	0	0	3 (on top of each leg)
	LEG STEP LEG EYE	- -	- -	□ □
FEET	HINGED BALL-JOINT DETACH	■ - -	■ - -	■ - -
FEET	ANCHOR HOLES SPIKE GRIP	- - -	- - ■	■ - ■
FEET	SIDE RESTRAINT ANCHOR EYES	- -	■ ■	■ -
FEET	LEG RESTRAINTS LEGS LOCK	■	Chain ■	Webbing with cams
USES	VERTICAL EDGE LUFFING	● -	● -	● -
USES	HOLE CONFINE SHORING	■	■ ●	■
	STANDARDS	EN795B,	EN795B, CEN/TS 16415	NFPA, EN795B, CEN/TS 16415/A
	NOTES		Replaces 1883 EVO Tripod	A modified version of Ferno IndustriPod Leg sections will not accidentally separate
	WEBSITE	abtechsafety.com	abtechsafety.com	cmcpro.com

NOTES: COSTS: £$€ shown in burnt orange are currency conversions only COST: Approx & inc local tax/VAT TYPE OF DEVICE:: ■=MONOPOD ■=BI-POD ■=TRIP

HIGH-DIRECTIONAL FRAMES



EYOLF	FERNO	FERNO	FERNO
Pythagoras	**Arachnipod Std Advantage** APOD-STD APOD-ADV	**Arachnipod TEMS 2m 3/4m** APOD-TEMS APOD-TEMS3/APOD-TEMS4	**IndustriPOD+ Industripod** FWE INPOD+ FWE-INPOD
£2350 $2990 €2750 £2800 $3570 €3290	£3290 $3600 €3830 £3350 $3700 €3900	£10055 $12800 €11705* £11000 $13800 €12600	£1575 $2000 €1835 - - -
■ ■ ■ ■	■ ■ ■	■ ■ ■ ■ ■	■
Alu Alu	Alu Alu	Alu Alu	Steel Alu
Round 2	Rectangular 3	Rectangular 3	Rectangular 3
■ 10x 11cm	■ 20x 10cm/4"	■ 20x 10cm/4"	■ 20x 10cm/4"
■ -	■ □	■ □	■ □
22.2kg 49lb	27 26kg 70 72.2lb	32-00kg 70-00lb	25kg 55lb
□ 1 122 x 15 x 15cm	■ 1 210cm	■ 3 210-400cm	□ 1 175 x 35 x 30cm
110cm / 3ft 7"	170cm / 5ft 5"	170cm / 5ft 5"	175cm / 5ft 9"
190cm / 6ft 3"	267cm / 8ft 9"	269cm / 8ft 10"	256cm / 8ft 4"
220-330cm / 7ft 3"-10ft 10"	250cm / 8ft 3"	253-534*cm/ 11-17ft-5"	252cm / 8ft 2"
272kg 600lb	220-400kg 484-880lb	175-400kg 385-880lb	220kg 484lb
Detachable □■ + bolted	Detachable □ ■	2x Detachable □ ■ + Beam*	Fixed - -
12 Rig Plate Eyes	2 Ring Bolts	4 Ring Bolts + Sliding/locking Eye	3 Plate Eyes
ption - 4 pinned sngl or dble sheaves	1 (Dbl sheave- 1 wire, 1 rope)	2 (each=Dbl sheave- 1 wire, 1 rope)	2 1
18 (on head)	3 (on top of each leg)	3 or 4 (top of each leg)	3 (on top of each leg)
- □	□ □	□ □	□ □
■ - ■	■ - ■	■ - ■	■ - -
■ ■ -	■ ■ ■	■ ■ ■	■ - ■
- -	■ -	■ -	■ -
Webbing with cams	Rope	Rope	webbing with buckles
■ ●	■ ●	■ ●	● -
■ ■	■ ■	■ ■	■
CE pending	EN795B, CEN/TS 16415/B	EN795B, CEN/TS 16415/A	EN795B, CEN/TS 16415/A
Pulley sheaves can be pinned into the head on both sides. tripod version can have a cheaper bolted head with single eye	Tripod can UPGRADE TO TEMS. Alpha-numeric increment labels. Option-Foot steps & anchor points for legs.	**2,3 or 4m Bridge options create the wider footprint. Option-Foot steps & anchor points for legs.	Will accept the same leg accessories as the Arachnipod
eyolf.ca	ferno.com.au	ferno.com.au	ferno.com.au

OD ■=QUADPOD ■=BEAM/GANTRY ■=TETRAPOD ■=INDEPENDANT STRUTS USES: ●●●= OK BUT NOT IDEAL □□□□ =Available as an Option

Images NOT to Scale

Accessories shown may be an optional extra

	MANUFACTURER	HEIGHTEC	HOLMATRO	GLOBESTOCK
	MODEL VARIANT	Quadpod ATR4	Omnishore 1x M10 1xP60 2xP60	G-Tripod Std Compact GSE230S..C
	ORIGIN			
	COST Base model inc Tax/VAT Variant or Top model	£1666 $2115 €1950 - - -	n/a	£835 $1055 €975 £835 $1055 €975*
STRUCTURE	TYPE of DEVICE	■	■ ■ ■ ■	■
STRUCTURE	MATERIALS HEAD LEGS	Steel Alu	Alu Alu	Alu Alu
STRUCTURE	TUBE PROFILE TELE-SECTIONS	Rectangular 2	Round 2*	Tube
STRUCTURE	MARKED INCREMENTS	■ 8x 10cm/4"	- *finite over 2.4m	- 6 x 13cm
STRUCTURE	LAZY LEG WINCH ADAPTER	- -	■ -	- □
SPECIFICATIONS	WEIGHT (BASIC TRIPOD)	26kg 58lb	36.3-79.5 133.5 kg 80-175lb 293lb 11oz	21 18kg 46.2 39.6lb
SPECIFICATIONS	PACK(S) DIMENSIONS	□ 1 175 x 70cm	□	□ 1 157/121x27x18cm
SPECIFICATIONS	MIN WORKING HEIGHT	160cm / 5ft 3"	*38-164-326cm / 1- 5-10ft 3-4-8"	125 96cm/4 3ft 1 2"
SPECIFICATIONS	MAX WORKING HEIGHT	231cm / 7ft 6"	*56-267-523cm / 1-8-17ft 10-9-2"	217 158cm/7 5ft 1 2"
SPECIFICATIONS	MAX FOOTPRINT	206cm / 6ft 9"	530cm / 17ft 0" (@60°)	174/131cm / 5 4ft 8 3"
HEAD	MAXIMUM DEVICE LOAD	300kg 660lb	2400kg 5291lb	200/136kg (250kg non-live load) 440lb
HEAD	TYPE OF HEAD MONO BIPOD	Fixed - -	Detachable ■ ■	Fixed - -
HEAD	MAIN LOAD EYES	2 Ring Bolts + 2 Plate Eyes	7 Rig Plate Eyes	2 Ring Bolts
HEAD	INTEGRATED PULLEY(S)	-	1	3
HEAD	LATERAL (GUY) EYES	4 (on tripod head)	8 (on tripod head)	0
	LEG STEP LEG EYE	- -	- -	- -
FEET	HINGED BALL-JOINT DETACH	■ - -	■ ■ ■	■ - -
FEET	ANCHOR HOLES SPIKE GRIP	- ■ ■	■ - ■	- - ■
FEET	SIDE RESTRAINT ANCHOR EYES	■ ■	■ ■	- -
FEET	LEG RESTRAINTS LEGS LOCK	■	Webbing with Ratchets	Webbing ■
USES	VERTICAL EDGE LUFFING	■ -	■ ●	● -
USES	HOLE CONFINE SHORING	■ ●	■ ■ ■	■ ■ -
	STANDARDS	EN795B, CEN/TS 16415/A	Machinery Directive	EN795B, CEN/TS 16415, UKCA
	NOTES		* theoretical min height with smallest adj strut M10- *Max height using 2xP60 struts (1sstrut shown) *Thread enables finite adjustment.	*Compact roughly the same price as standard
	WEBSITE	heightec.com	holmatro.com	

NOTES: COSTS: £$€ shown in burnt orange are currency conversions only COST: Approx & inc local tax/VAT TYPE OF DEVICE:: ■=MONOPOD ■=BI-POD ■=TRIP

HIGH-DIRECTIONAL FRAMES

IRUDEK	ISC WALES	JSP	KONG
Trip1 Trip4 100209600001/..8	**Std Tripod** TP143B	**Confined Space Rescue Tripod** FAR1003	**Grizzly** 817.400
£670 $845 €782 £860 $1085 €1003	£0 $1345 €0 - - -	£990 $1400 €1300 - - -	£2700 $2550 €2350 - - -
■	■	■	■ ■
Cast Alu Alu	Cast Alu Alu	Cast Alu Alu	- Alu
Square 2	Rectangular 2	Rectangular 2	Round 1
- 8/9 x 12/10cm/54"	- ?	- 2x	Not applicable
- □/■	- -	- □	- -
12.1 23.6kg 26.6 52lb	22kg 49lb 0oz	13kg 28lb 10oz	15-22kg 33-48lb
■ 1	□ 1 190cm	□ 1	■ 1 200x30x15cm
115 222cm / 3 7ft 9 3"	190cm / 6ft 3"	115cm / 3ft 9"	150cm / 4ft 11"
215 314cm / 7 10ft 0 3"	225cm / 7ft 5"	215cm / 7ft 0"	160cm / 5ft 3"
150 245cm / 4 8ft 11 0"	180cm / 5ft 10"	150cm / 4ft 11"	190cm / 6ft 2"
200/500kg 440lb	360kg 771lb	500kg 1100lb	300kg 660lb
Fixed - -	Fixed - -	Fixed - -	None - Tube unions - ■
2 Ring Bolts	2 Ring Bolts	2 Ring Bolts	2 Shackles (in separate 'corners')
1 2	2	1	0 (2 detachable supplied)
0	0	0	1
- -	- -	- -	- -
■ - -	■ - -	■ - -	■ - ■
■ - ■	■ - ■	- - -	■ ■ ■
■ -	- □	■ -	■ -
Webbing ■	■	Webbing with cams	Wire cable
● -	● -	● -	■ ■
■ ● -	■ ● -	■ - -	■ - -
EN795B ATEX II 2G Ex h II c T6	EN795B, NFPA	EN795B,	EN 795/B EN 1496/B CEN/TS 16415/A
Trip4 has two winch mounts on legs ay also be intermediate sizes *Trip 2 & 3*			
irudek.com	iscwales.com	jspsafety.com	kong.it

OD ■=QUADPOD ■=BEAM/GANTRY ■=TETRAPOD ■=INDEPENDANT STRUTS USES: ●●●= OK BUT NOT IDEAL □□□□ =Available as an Option

	Images NOT to Scale Accessories shown may be an optional extra			
	MANUFACTURER	KONG	KRATOS	KRATOS
	MODEL VARIANT	Cevedale Rescue1 Rescue2 842020000KK 842010000KK 842000000KK	Tripod FA6000100 FA6000200	Quadpod FA6010400
	ORIGIN			
	COST Base model inc Tax/VAT Variant or Top model	£1730 $2290 €1710 £8670 $9000 €7160	£550 $750 €650 £650 $900 €750	£900 $1065 €985 - - -
STRUCTURE	TYPE of DEVICE			
STRUCTURE	MATERIALS HEAD LEGS	- Alu	Alu Alu	Alu Alu
STRUCTURE	TUBE PROFILE TELE-SECTIONS	Round 2	Square 2	Square 2
STRUCTURE	MARKED INCREMENTS	- 3 6	- 6	- 6
SPECIFICATIONS	LAZY LEG WINCH ADAPTER	- □ ■	- □	- □
SPECIFICATIONS	WEIGHT (BASIC TRIPOD)	14 20-25kg 30 44-55lb 13oz	14.3 22.35kg 31lb 8oz	15.6kg 34lb 6oz
SPECIFICATIONS	PACK(S) DIMENSIONS	■ 1 130x45x30cm	■	■
SPECIFICATIONS	MIN WORKING HEIGHT	160165cm / 5ft 3 5"	115 190cm / 3 6ft 9 2"	121cm / 4ft
SPECIFICATIONS	MAX WORKING HEIGHT	254cm / 8ft 3"	215 290cm / 7 10ft	320cm / 10ft 6"
SPECIFICATIONS	MAX FOOTPRINT	180cm / 0ft 0"	162 205cm / 5 6ft 3 8"	175cm / 5ft 9"
HEAD	MAXIMUM DEVICE LOAD	1223kg 2697lb	500kg 1100lb	500kg 1100lb
HEAD	TYPE OF HEAD MONO BIPOD	Fixed - -	Fixed - -	Fixed - -
HEAD	MAIN LOAD EYES	3 Ring Bolts	2 Ring Bolts	1 Ring Bolt
HEAD	INTEGRATED PULLEY(S)	0 (2 detachable supplied)	2	2
HEAD	LATERAL/REAR (GUY) EYES	3 (on tripod head)	6 or 8 (2 on each mid-leg & head)	6 or 8 (2 on each mid-leg & head)
HEAD	LEG STEP LEG EYE	- -	□ ■	□ ■
FEET	HINGED BALL-JOINT DETACH	□ - □	■ - -	■ - -
FEET	ANCHOR HOLES SPIKE GRIP	□ - □	- - ■	- - ■
FEET	SIDE RESTRAINT ANCHOR EYES	■ □	■ -	■ -
FEET	LEG RESTRAINTS LEGS LOCK	Wire cable or Rope	Webbing	Webbing
USES	VERTICAL EDGE LUFFING	● -	■ -	■ -
USES	HOLE CONFINE SHORING	■ ● -	■ ● -	■ ● -
	STANDARDS	EN 795/B EN 1496/B CEN/TS 16415/A	EN795:2012 B, ATEX 2014/34/UE, Machinery Directive, EN 1808	EN795:2012 B, ATEX 2014/34/UE, Machinery Directive, EN 1808
	NOTES	*Rescue versions Include 1 and/or 2 integrated rope winches. Kong also has a stand-alone monopods - *STELVIO and 4D.*		
	WEBSITE	kong.it	kratossafety.com	kratossafety.com

NOTES: COSTS: £$€ shown in burnt orange are currency conversions only **COST:** Approx & inc local tax/VAT TYPE OF DEVICE:: ■=TRIPOD ■=QUADPOD

Obelisk

for Technical Rescue teams

Designed and manufactured by Lyon Equipment specifically for emergency service work. Adjustable width cross-head with max height of 2200mm for a large, clear working area below the anchor points.

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WORK & RESCUE

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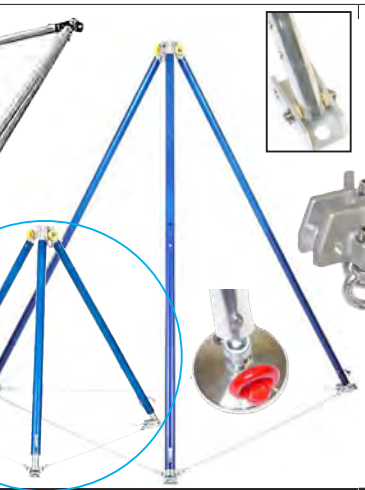
Images NOT to Scale

Accessories shown may be an optional extra

	MANUFACTURER	LYON	LYON	LYON/SPELEAN
	MODEL VARIANT	Obelisk LPP0003	Tribus LPP0041	Larkin Frame -
	ORIGIN			
	COST Base model inc Tax/VAT Variant or Top model	£2544 $3240 €3000 - - -	£1550 $1970 €1850 - - -	£5820 $7300 €6790 - - -
STRUCTURE	TYPE of DEVICE	■ ■	■	■ ■
STRUCTURE	MATERIALS HEAD LEGS	Stainless Steel Alu	Stainless Steel Alu	Cast Alu Alu
STRUCTURE	TUBE PROFILE TELE-SECTIONS	Square 3	Square 3	Round 1
STRUCTURE	MARKED INCREMENTS	□ 23x 7.5cm/3"	□ 23x 7.5cm/3"	Not applicable
SPECIFICATIONS	LAZY LEG WINCH ADAPTER	- -	- -	- -
SPECIFICATIONS	WEIGHT (BASIC TRIPOD)	22kg 48lb 6oz	14kg 30lb 13oz	40kg 88lb 3oz
SPECIFICATIONS	PACK(S) DIMENSIONS	□ 1@ 100x25cm or □ 2	□ 1 100x25cm	■ 1 202x24x30cm
SPECIFICATIONS	MIN WORKING HEIGHT	100cm / 3ft 3"	100cm / 3ft 3"	120cm /4ft
SPECIFICATIONS	MAX WORKING HEIGHT	220cm / 8ft 8"	220cm / 8ft 8"	250cm / 8ft 2"
SPECIFICATIONS	MAX FOOTPRINT	230cm / 7ft 6"	200cm / 6ft 7"	120cm /4ft
HEAD	MAXIMUM DEVICE LOAD	272kg 600lb	272kg 600lb	400kg 880lb
HEAD	TYPE OF HEAD MONO BIPOD	Detachable Beam - -	Fixed - -	Detachable - ■
HEAD	MAIN LOAD EYES	1 or option 2 Moveable Ring Bolts	1 Ring Bolt	2 Machined Eyes
HEAD	INTEGRATED PULLEY(S)	0	0	0
HEAD	LATERAL (GUY) EYES	10* (on tripod head)	6 (on tripod head)	0
	LEG STEP LEG EYE	- -	- -	- -
FEET	HINGED BALL-JOINT DETACH	■ - ■	■ - ■	■ - ■
FEET	ANCHOR HOLES SPIKE GRIP	■ - ■	■ - ■	■ ■ ●
FEET	SIDE RESTRAINT ANCHOR EYES	■ -	■ -	■ ■
FEET	LEG RESTRAINTS LEGS LOCK	Webbing with cams -	Webbing with cams -	■
USES	VERTICAL EDGE LUFFING	■ -	● -	■ ■
USES	HOLE CONFINE SHORING	■ ■ -	■ ■ -	■ ■*-
	STANDARDS	EN795:2012, CEN/TS 16415:2013	EN795B, CEN/TS 16415/A	EN795B, CEN/TS 16415/A
	NOTES	Sliding eye(s) can be set anywhere along a 40cm/16" beam. *10 is really 6 because 2 eyes on the ends are divided into four by the beam		Can be used as full or half sized. *because it can be used as a half sized frame
	WEBSITE	lyonequipment.com	lyonequipment.com	lyonequipment.com

NOTES: COSTS: £$€ shown in burnt orange are currency conversions only COST: Approx & inc local tax/VAT TYPE OF DEVICE:: ■=MONOPOD ■=BI-POD ■=TRIP

HIGH-DIRECTIONAL FRAMES



MITTELMANN	MITTELMANN	PARATECH	PROTEKT
DB Uni Mid -	DB Mini Octopus -		TM15 TM15-G AT017 AT017G
£0 $000 €0 - - -	£0 $000 €0 - - -	£4740 $0 €0 £0 $0 €0	£0 $0 €0 £645 $820 €754
■	■	■ ■ ■ ■	■
Alu Alu	Alu Alu	Cast Alu Alu	Alu Alu
Round 2	Round 2	Round 1,2 or 3	Round 2
- 5 x 5cm/2"	- 5 x 5cm/2"	-	- 6x
□ -	□ -	□ -	- □
23.2kg 51lb	13.4kg 19lb 8oz	0kg 0lb	28.7kg 63lb
□ 3	■ 3		□ 1 226 x 33 x 29cm
120cm / 4ft	80cm / 2ft 8"	0cm / 3ft 1"	197cm / 6ft 5"
240cm / 7ft 10"	105cm / 3ft 5"	0cm / 21ft 9"	313cm / 10ft 3"
260cm / 8ft 6"	100cm / 3ft 3"	0m / 0ft 0"	174cm / 50ft 8"
>200kg >440lb	>200kg >440lb		1000kg 2200lb
Detachable - -	Detachable - -	Detachable ■ -	Fixed - -
2 Ring Bolts	2 Ring Bolts		3
0	0		3
3 (removable on tripod head)	3 (removable on tripod head)		3*
- -	- -	- -	□ □
□ ■ □	□ ■ □	- ■ -	■ - -
■ - -	■ - -	■ - ■	- ■ ■
■ ■	■ ■	■ ■	■ -
Optional Wire -	Optional Wire -	Chain -	Chain -
● -	● -	■ ●	● -
■ ● -	■ ■ -	■ ■ ■	■ - -
EN795B	EN795B		EN795B, CEN/TS 16415/A
Mid is half the height/size of the Uni. Figures are for the round foot - square swivel foot (inset pic) is an option	*Octopus* has suction cup feet for tank entries.		Comes with detachable footholds on legs. G=most basic version, no anodizing or foot-step plates etc.
mittelmann.com	mittelmann.com	paratech.com	protekt.pl

OD ■=QUADPOD ■=BEAM/GANTRY ■=TETRAPOD ■=INDEPENDANT STRUTS USES: ●●●●= OK BUT NOT IDEAL □□□□ =Available as an Option

	Images NOT to Scale Accessories shown may be an optional extra			
	MANUFACTURER	PROTEKT	PROTEKT	PROTEKT
	MODEL VARIANT	TM15 Mini AT017 MINI	TM16 Compact TM16000	TM9-N TM9-N
	ORIGIN			
	COST Base model inc Tax/VAT Variant or Top model	£0 $865 €792 - - -	£1545 $1960 €1805 - - -	£455 $575 €528 - - -
STRUCTURE	TYPE of DEVICE	■	■	■
STRUCTURE	MATERIALS HEAD LEGS	Alu Alu	Alu Alu	Steel Alu
STRUCTURE	TUBE PROFILE TELE-SECTIONS	Round 3	Round 2	Rectangular 2
STRUCTURE	MARKED INCREMENTS	- 10x	- 10x & 14x	- 5x
SPECIFICATIONS	LAZY LEG WINCH ADAPTER	- □	■ □	- □
SPECIFICATIONS	WEIGHT (BASIC TRIPOD)	19kg 41lb 13oz	16.5kg 0lb	15.45kg 52.3lb
SPECIFICATIONS	PACK(S) DIMENSIONS	□ 1 133 x 33 x 29cm	□ 1 117 x 33 x 29cm	□ 1 176 x 26 x 23cm
SPECIFICATIONS	MIN WORKING HEIGHT	111cm / 0ft 0"	106cm / 0ft 0"	180cm / 0ft 0"
SPECIFICATIONS	MAX WORKING HEIGHT	227cm / 0ft 0"	166cm / 0ft 0"	209cm / 0ft 0"
SPECIFICATIONS	MAX FOOTPRINT	109cm / 0ft 0""	284cm / 0ft 0"	149cm / 0ft 0"
HEAD	MAXIMUM DEVICE LOAD	1000kg 2200lb	500kg 1100lb	500kg 1100lb
HEAD	TYPE OF HEAD MONO BIPOD	Fixed - -	Fixed - -	Fixed - -
HEAD	MAIN LOAD EYES	3 Plate Eyes	3 Plate Eyes	3 Plate Eyes
HEAD	INTEGRATED PULLEY(S)	3	3	3
HEAD	LATERAL (GUY) EYES	3*	3*	3*
HEAD	LEG STEP LEG EYE	□ □	□ □	- -
FEET	HINGED BALL-JOINT DETACH	■ - -	■ - ■	■ - -
FEET	ANCHOR HOLES SPIKE GRIP	- ■ ■	- - ■(suction cups)	■ - ■
FEET	SIDE RESTRAINT ANCHOR EYES	■	■	■
FEET	LEG RESTRAINTS LEGS LOCK	- ■	Chain -	Chain -
USES	VERTICAL EDGE LUFFING	● -	■ -	● -
USES	HOLE CONFINE SHORING	■ ■ -	■ ■ -	■ - -
	STANDARDS	EN795B, CEN/TS 16415/A	EN795B, CEN/TS 16415/B	CEN/TS 16415/B
	NOTES	*+3 Pulley Roller Guides that can also function as stay eyes.	Intended for tank work/rescue - suction cup feet can be replaced with conventional foot	
	WEBSITE	protekt.pl	protekt.pl	protekt.pl

COSTS: £$€ shown in burnt orange are currency conversions TYPE OF DEVICE:: ■=MONOPOD ■=BI-POD ■=TRIPOD ■=QUADPOD ■=BEAM/GANTRY ■

			expansion column
PROTEKT	**PROTEKT**	**RIDGEGEAR**	
TM14ZSE TM14/TM7 AT016	**TM12- Hexapod** TM12	**Rescue Tripod** RGR1	
£675/385 $860/490 €790/450 £1310 $1665 €1530	£820 $1040 €955 - - -	£1500 $1900 €1755 - - -	
■ ■	■ ■	■	
Steel Alu	Steel heads/Alu beam Alu	Cast Alu Alu	
Rectangular 2	Rectangular 2	Round 3	
- 7x	- 5x	- 16x 8cm	
- □	- □	- □	
65kg 143lb	86kg 190lb	17.5kg 38lb 9oz	
□ 1 228 x 32 x 30cm	□ 3 251-280 x 36 x 31cm	□ 1 140cm	
179cm / 5ft 11"	139cm / 0ft 0"	170cm / 3ft 9"	
289cm / 9ft 5"	221cm / 0ft 0"	270cm / 7ft 0"	
271cm / 8ft 10"	223 x 983cm / 0ft 0"	180cm / 4ft 11"	
500kg 1100lb	1000kg 2200lb	200kg 4400lb	
Detachable - ■	2xFixed + Beam - -	Fixed - -	
2 Plate Eyes	2 Ring Bolts + 1 Moveable Eye	2 Ring Bolts	
1	0	2	
Vehicle anchor Plate	3*	0	
- -	- -	- -	
■ - -	■ - -	■ - -	
■ - -	■ - ■	- - -	
-	■	■ -	
- ■	Chain -	Webbing with cams	
■ ■	● -	● -	
■ - -	■ - -	■ - -	
EN795B&E, CEN/TS 16415/B&E, EN 1496B	CEN/TS 16415/B	EN795B,	
ZSE is a modification of basic TM14 tripod. TM7 is the same but cannot be ZSE configured	Central beam=2.8m wide		
protekt.pl	protekt.pl	ridgegear.com	

■=TETRAPOD ■=INDEPENDANT STRUTS USES: ●●● = OK BUT NOT IDEAL □□□□ =Available as an Option**NOT IDEAL** □□□□ =Available as an Option

Images NOT to Scale

Accessories shown may be an optional extra

	MANUFACTURER	ROCK EXOTICA	SAR PRODUCTS	SAR PRODUCTS
	MODEL VARIANT	Arizona Vortex -	Quadpod QU001	Multipod QU005
	ORIGIN			
	COST Base model inc Tax/VAT Variant or Top model	£6300 $5279 €7558 - - -*	£1730 $2165 €2023 - - -	n/a* - - -
STRUCTURE	TYPE of DEVICE	■ ■ ■ ■	■	■ ■ ■
STRUCTURE	MATERIALS HEAD LEGS	Alu Alu	Stainless Steel Alu	Stainless Steel Alu
STRUCTURE	TUBE PROFILE TELE-SECTIONS	Round 2	Square 2	Square 2
STRUCTURE	MARKED INCREMENTS	- 6x 14cm/5.5"	- 10x 10cm/4"	- 10x 10cm/4"
SPECIFICATIONS	LAZY LEG WINCH ADAPTER	■ -	- □	- □
SPECIFICATIONS	WEIGHT (BASIC TRIPOD)	33kg 72lb	13.2kg 29lb	17.5kg 38lb 8oz
SPECIFICATIONS	PACK(S) DIMENSIONS	□ 4-6	□ 1	■ 1 120x17cm/47x7" or □ 2 bags
SPECIFICATIONS	MIN WORKING HEIGHT	270cm / 9ft	150cm /5ft	150cm /5ft
SPECIFICATIONS	MAX WORKING HEIGHT	370cm / 12ft	200cm / 6ft 7"	200cm / 6ft 7"
SPECIFICATIONS	MAX FOOTPRINT	1.4-2.25m / 4ft 7"- 7ft 5"	125cm / 4ft 1"	125 x 175cm / 4ft-5ft 9"
HEAD	MAXIMUM DEVICE LOAD	272kg 600lb	300kg 660lb	300kg 660lb
HEAD	TYPE OF HEAD MONO BIPOD	Detachable □ ■	Fixed - -	Removable Beam - -
HEAD	MAIN LOAD EYES	1 machined eye + 3 hardware pins	1 Ring Bolt	2 Shackles + 2 moveable Ring Bolts
HEAD	INTEGRATED PULLEY(S)	Option for 4 pinned sheaves	0	0
HEAD	LATERAL (GUY) EYES	6 (+optional lash-points)	-	4
HEAD	LEG STEP LEG EYE	- □	- -	- -
FEET	HINGED BALL-JOINT DETACH	■ - ■	■ - -	■ - -
FEET	ANCHOR HOLES SPIKE GRIP	■ ■ ■	■ -	■ -
FEET	SIDE RESTRAINT ANCHOR EYES	■ ■	■ ■	■ ■
FEET	LEG RESTRAINTS LEGS LOCK	Webbing& Rope -	Webbing with cam -	Webbing with cam -
USES	VERTICAL EDGE LUFFING	■ ●	■ -	■ -
USES	HOLE CONFINE SHORING	■ ■*	■ ■	■ ■
	STANDARDS	NFPA, EN795B, CEN/TS 16415/B	EN795B, CEN/TS 16415/B	EN795B, CEN/TS 16415/B
	NOTES	*All components can be purchased separately inc. AZORP rig-head shown (blue) -not in kit. *slight increase in some later models		55cm beam * but check out the fixed head Quadprod price as a guide.
	WEBSITE	rockexotica.com cmcpro.com	sar-products.com	sar-products.com

NOTES: COSTS: £$€ shown in burnt orange are currency conversions only COST: Approx & inc local tax/VAT TYPE OF DEVICE:: ■=MONOPOD ■=BI-POD ■=TRIP

HIGH-DIRECTIONAL FRAMES

SKEDCO	SKYLOTEC	SKYLOTEC	SMC
pod SK-700	**Triboc** AP-004	**Jackpod Tri I II** JP-011-1 JP-011-2	**TerrAdaptor** -
£1680 $1865 €2650 - - -	£1020 $1300 €1190 - - -	£2003 $2545 €2336 £4525 $5745 €5274	*£5800 $5350 €6800 £7560 $6920 €8740
■	■	■	■ ■ ■ ■ ■
Alu Alu	Alu Alu	Alu Alu	Alu Alu
Round 2	Rectangular 2	Rectangular 2?	Round 3
■ 13x 12.7cm/5"	- ?	- ?	■ 9x 12.7cm/5"
- □	- □	- □	■ □
32kg 70lb	23.48kg 51.6lb	16.6623.77kg 36.652.3lb	23.8-38kg 52.3-83lb 4oz
■ 1 210x23x23cm/90x9x9"	■ 1 172x22x22cm/68x9x9"	■ 1 00x00x00cm	□ 3 132x26x9cm/52x10x3.5"
249cm / 8ft 2"	0cm / 0ft 0"	120cm / 4ft	122cm / 4ft
305cm / 10ft	0cm / 0ft 0"	310cm / 10ft 2"	396cm / 13ft
241cm / 7ft 11"	0m / 0ft 0"	0m / 0ft 0"	*178cm / 6ft 6"
240kg 528lb	500kg 440lb		272kg 600lb
Fixed - -	Fixed - -	Fixed - -	Detachable □ ■
3 Plate Eyes	3 Plate Eyes + 1 Ring Bolt	1 Plate Eye	3 Rig Plate Eyes + 2 Hardware Pins
0	0	1 3	Option for 2 pinned sheaves
0	2 capped Pins	3	16 (inc 2x lash rings)
- -	- -	- -	- □
■ - -	■ - -	■ - -	■ - ■
■ ■ ■	■ -	■ -	■ ■ ■
■ -	■ -	■ -	■ ■
Chain ■	Chain -	Chain -	Webbing& Rope -
● -	● -	● -	■ ●
■	■ ●	■ ●	■ ●*
EN 795B, NFPA		EN795B, CEN/TS 16415/B	NFPA, EN795B, CEN/TS 16415/B
			Extra height is with optional extensions. *All components can be purchased separately. *4-8' Beam =max load of 3500-8500lbf depending on length and whether 1 or double tube.
skedco.com	skylotec.com	skylotec.com	smcgear.com

OD ■=QUADPOD ■=BEAM/GANTRY ■=TETRAPOD ■=INDEPENDANT STRUTS USES: ●●●●= OK BUT NOT IDEAL □□□□ =Available as an Option

NEW-COMPILING Q2 '24

RAPPELLING/ ABSEILING GLOVES

The gloves in this guide are quite specifically intended for abseiling/rappelling with the potential for a fast moving rope generating a lot of fiction and wear. These will invariably also be used for rigging and belay but technically, those are different applications and many rigging and/or belay gloves are not necessarily the best option for abseiling even though they will perform OK over short distances at low speed and are certainly better than nothing. This guide also does not include rock climbing or crack gloves which wrap the bottom of the fingers only because they are are designed to allow better dexterity and grip on rock during climbing while affording warmth and protection. There is therefore limited protection fast moving abseil rope and none of the reinforcement you might otherwise see. We have also not included mountaineering gloves that may either be for insulation in extreme cold like these WildCountry ____or have enhanced grip for use with poles and ice axes etc. like these Black Diamond Terminators, neither being suitable for grasping a moving rope although the Terminator's have thumb crotch reinforcement so will certainly do the job in short bursts. Rope access and rope rescue are the intended market for most of the bespoke specialist gloves but three other key disciplines also contribute to a very congested market - military/tactical gloves, mountaineering/rock climbing/caving and aborists. We cannot hope to capture everything that is available to do the job of protecting your hand during an abseil/rappel but we have included all of the most renowned models. Some manufacturers like *Eska, Heser, Mechanixx,* and *MoG* make only gloves - they are specialists in gloves but not necessarily in the specialist fields they supply to other than by using outside advisers. In contrast, many of the companies are specialists in our sector - *PMI, CMC, CAMP, Petzl* etc. who know everything there is to know about roping but not necessarily about how to make a glove. In the end, they all seem to have come up with excellent products, you just need to narrow down the most applicable and whether you like the dexterity of fingerless or semi-fingerless or the warmth and comfort of a more insulated full finger model. The one thing you must have is sufficient reinforcement of the palm and thumb-index finger 'channel' to protect you from the heat and abrasion of a fast moving rope over long drop heights. Belaying and lowering can also generate a lot of friction. You can't go far wrong with leather in all its forms - natural and synthetic - split leather or suede is extremely hardwearing and often used as reinforcement of the palm (across which the moving rope is trying to wear out a groove) even if the base material is already regular leather (or cowhide). Goatskin is common because it is tough but extremely flexible providing a better fit and greater comfort. Many 'shooting' gloves have a reinforced section between the thumb ad index finger but don't be fooled, these are just to protect your delicate pudgies from the gnarly pistol grip - a far cry from the abrasion of a fast rope.

The other thing that abseil gloves need is to be flexible enough to allow your hand to grasp tightly - this means a tight curve of the fingers and knuckles though not the back of the hand which remains broadly square. Those with a tighter fit use a Spandex-style material for the back of hand - a nylon or polyester stretch fabric that also 'breathes' unless it is insulated for colder conditions in which case it's more likely to be more waterproof than breathable. Traditional gloves have a 'skirt'-style hem at the wrist and some still offer this but the majority have a neoprene or elastic whist with a Velcro or velcro closure.

SIZING

There is a degree of consensus on glove sizing with a US and European standards scale (see chart) but Virtually all of the gloves in this guide cover 4 or 5 standard sizes and in some cases with sizing specific to a smaller slimmer hand that may (or may not) include most women. However, such generic sizing gives no real indication of how tight the glove will be so you will have to refer to individual catalogues or websites to make sure. as an example, this the quite meticulous size chart from *Metolius Climbing* based on the circumference of the palm and in red is *Petzl*'s sizing :

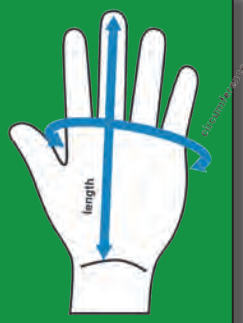
	METOLIUS		PETZL	CMC
XS	6.25 - 7.0 "	15.9 - 17.8 cm	19cm	11-12cm
SMALL	7.0 - 7.75 "	17.8 - 19.7 cm	20cm	12-13cm
MED	7.75 - 8.5"	19.7 - 21.6 cm	21.5cm	13-13.5cm
LARGE	8.5 - 9.25"	21.6 - 23.5 cm	23cm	13.5-14.5cm
XL	9.25 -10.0"	23.5 - 25.4 cm	24.5cm	14.5-15cm
XXL	-	-	-	15-16cm

CMC have a different sizing method - they measure from the tip

RAPPEL/ABSEIL GLOVES

HAND WIDTH SIZING

6-7 "	152 - 178 mm	EU - 6	XS
7-8"	178 - 203 mm	EU - 7	S
8-9"	203 - 229 mm	EU - 8	M
9-10 "	229 - 254 mm	EU - 9	L
10-11"	254 - 279 mm	EU - 10	XL
11 + "	279 plus mm	EU - 11	XXL



of the middle finger to the bottom of the thumb webbing Blue measurements above.
In Europe there is a standard hand sizing ranging from 6 to 11 for XS to XXL - see chart.

MATERIALS
GOATSKIN OR GOAT LEATHER: discuss
LEATHER OR COWHIDE: discuss
SYNTHETIC LEATHER: discuss
NYLON STRETCH FABRIC is a generic term we are using for a man-made fabric that is breathable and highly flexible so is often on the back of the fingers and the back of the hand which needs to bend and flex readily during work. Some are pretty tough materials but some are more comfortable than they are hard-wearing and may be further protected by extra suede/leather or artificial leather or fabric panels. However, in a reverse of most designs, Petzl use stretch fabric on the knuckles rather than reinforcing them, the logic being that these are the two areas that actually need to flex the most so not reinforcing them and instead allowing them to stretch gives extra dexterity. this will be very much personal choice and whether your tasking involves lots of knuckle scraping rather than flex and dexterity.

NEOPRENE: discuss
VELCRO: Velcro is of course a specific brand and if it's not that specific brand it should really be called hook & loop but we feel that Velcro has done a Hoover and been so successful they've turned a brand name into a noun and a verb so we're using it generically with a small v if we don't know or it's a Velcro look-a-like and with a capital V if it's known to be actual Velcro. Although it's pretty generic across all gloves with a closure there are occasions when it's not the best - it can get 'gummed' up and become less efficient if you're working in fine woodchip/sawdust, volcanic ash and even snow/ice. Nevertheless, it's hard to beat on 99% of other environments.

IN THE FOLLOWING TABLES:.....
●●●● = a partial feature or OK but not ideal

ORIGIN: The main flag refers to the manufacturer's home country, but this may not be where the gloves are made. If we know, we show an inset flag.
COST: Prices are for a pair of gloves, include local tax/VAT and we usually round the price up. Prices in **burnt orange** are currency conversions only to give you an idea of comparative price but may need import duty, shipping and local taxes added.
WEIGHT: for a pair of gloves
MATERIALS: FRONT/PALM: The front of the glove is usually some kind of leather or synthetic leather with further reinforcing of the pal with an extra later or a more hardwearing materal.
REAR/FINGERS: usually a stretchy and often breathable fabric with extra padding or leather reinforcement at the knuckles and/or fingers.
REINFORCED ROPE CHANNEL refers to the area between the index finger and the thumb crotch through which the rope runs or is held. Many gloves add an extra panel of reinforcement here since it is the highest area of wear but this also helps in dissipation of heat which might otherwise burn this tender area of your hand. However, if the materials used in the rest of the palm are suitably hard-wearing or already reinforced there may not be a separate panel here.

PULL TAB/HANGING EYE/LOOPS: A Pull tab is a means to pull your gloves on or off and is a solid. Unopenable piece of material like the Palm Pro (right). Hanging loops are usually sewn to the bottom hem of the front of your gloves. You can stick your finger through this and pull the glove on much easier than pulling on the hem alone especially when your hands are cold or weakened from strenuous repetitive hauling or climbing. However, some web loops are not sewn in well enough to withstand you tugging repeatedly on them and will also deteriorate in strength with age so they're ***only for hanging the weight of the gloves***. The commonest option is a an eye or hole in the hem material which is much stronger for both hanging and pulling on. If it's on the front, like the *Metolius* gloves this is more efficient for pulling-on than if located on the back like the Black Diamond glove above. We can't verify the pull strength of all the sewn loops so treat them all as hanging loops-only unless you satisfy yourself that they're up to the job of repeated pulling. The *PMI Fingerless* and *Edelrid Closed Work Glove* (right) are so far unique in having a pull tab sewn between the middle fingers to make taking them OFF easier rather than putting them on.

STANDARDS: for CE standards there are 2 that are applicable:
EN21420 ■ as a SAFETY Glove (previously EN420) meeting a range of requirements including stitch and material quality, fit-for-purpose, water ingress and breathability (comfort), dexterity and the inert nature of the leather and/or materials (in terms of skin reaction)
EN388 ■ for a specific work purpose, in this case, protection against mechanical abrasion/cutting/impact - this covers a wide remit including USAR and extrication but here it refers to the handling of ropes and related hardware. The standard actually differentiates 4 different forms of protection and each is numbered from 1 to 5 with 1 being the least protective.
ABRASION TEARING PUNCTURE CUTTING
EN407 ■ Is for flame/heat resistance and is a feature of some military fast-roping gloves
OTHER COLOURS: the main colour plus an outline if there is a second or trim colour. eg. ■ = black gloves with a green trim

	Images NOT to Scale			
	MANUFACTURER	5.11	ARBORTEC	ARBORTEC
	MODEL VARIANT		3-Digit Climbing AT1100	Utility Climbing AT1000
	ORIGIN			
	COST (inc Tax/VAT)	£50 $00 €00	£19 $0 €00	£18 $0 €00
	WEIGHT (pair)	00g 0oz		
	TYPE OF GLOVE	FULL FINGER	2 FINGERS 3 FINGERLESS	FULL FINGER
MATERIALS	FRONT/REINFORCED PALM	Synthetic suede/Leather/Vibram	Suede Leather/Suede Leather	Leather/Leather
MATERIALS	REAR/ REINFORCED FINGERS	Elastine fabric/Leather/Vibram	Terry Stretch fabic/Padded	Stretch fabic/Leather
MATERIALS	REINFORCED ROPE CHANNEL	■		
	PULL TAB/HANGING EYE/LOOP			
	SIZES MEN WOMEN'S FIT	S, M, L, XL XXL	8,9,10,11	8,9,10,11
	WRIST MATERIAL CLOSURE		? velcro	? velcro
	STANDARDS	CE ■	CE ■■	CE ■■
	OTHER COLOURS / WOMEN			
	WARRANTY NOTES			Also available with chainsaw protection and Gel-filled palm pads AT900.
	WEBSITE		abortecforestwear.com	

	Images NOT to Scale			
	MANUFACTURER	BLACK DIAMOND	BLACK DIAMOND	CAMP
	MODEL VARIANT	Transition -	Stone -	Axion 1879
	ORIGIN			
	COST (inc Tax/VAT)	£50 $67 €00	£40 $52 €00	£41 $54 €44
	WEIGHT (pair)	118g 4.2oz	93g 3.3oz	140g 4.9oz
	TYPE OF GLOVE	FULL FINGER	FULL FINGER	FULL FINGER
MATERIALS	FRONT/REINFORCED PALM	Goatskin/Goatskin	Goatskin/Goatskin	Leather/2 Layer Leather/Kevlar
MATERIALS	REAR/ REINFORCED KNUCKLES	Stretch nylon/ Goatskin	Stretch nylon/ Goatskin/Goatskin	Stretch fabric/ Leather/Rubber
MATERIALS	REINFORCED ROPE CHANNEL	■	■	■
	PULL TAB/HANGING EYE/LOOP	■	■	?
	SIZES MEN WOMEN'S FIT	XS, S, M, L, XL	XS, S, M, L, XL	S, M, L, XL,XXL
	CLOSURE	Velcro	Velcro	Neoprene Velcro
	STANDARDS	CE ■■	CE ■■	CE ■■ 3133,EAC
	OTHER COLOURS / WOMEN	-	-	■
	WARRANTY NOTES	2year	2year Kevlar stitching on reinforced palm and knuckles.	3year Kevlar stitching on reinforced palm
	WEBSITE	blackdiamondequipment.com	blackdiamondequipment.com	camp.it

RAPPEL/ABSEIL GLOVES

ARBORTEC	ARBORTEC	BLACK DIAMOND	BLACK DIAMOND
Fingerless Climbing AT1201	**XT Chainsaw** AT1550	**Crag Half Finger Woman's** -	**Crag Woman's Crag** -
£18 $0 €00	£43 $0 €00	£20 $0 €00	£25 $33 €0
		70.6g 2.5oz	0g 0oz
FINGERLESS	FULL FINGER	FINGERLESS	FULL FINGER
Suede Leather/Suede Leather		Synthetic Suede/-	Synthetic Suede/-
Terry Stretch fabic/Suede(fingertips)		Stretch nylon/ Stretch nylon	Stretch nylon/ Stretch nylon
8,9,10,11	8,9,10,11	XS, S, M, L, XL	XS, S, M, L, XL
? Velcro	? Velcro	Velcro	Velcro
		CE	CE
		/	/
	chainsaw glove but tough enough for abseil	2year Updated version with more dexterous fingers. Pull tabs on fingers	2year Updated version with more dexterous fingers
abortecforestwear.com	abortecforestwear.com	blackdiamondequipment.com	blackdiamondequipment.com

CAMP	CAMP	CMC RESCUE	CMC RESCUE
Axion 2122	**Axion** 3365	**Essential** -	**Rappel** -
£30 $39 €30	£23 $32 €28	£0 $46 €00	£0 $60 €26
85g 3oz	62g 2.2oz	123g 4.3oz	95g 3.4oz
FULL FINGER	FINGERLESS	FULL FINGER	FULL FINGER
Goatskin/Goatskin	Goatskin/Goatskin	leather/	Pittard's Armor-Tan leather/
Stretch fabric/Rubber	Stretch Mesh fabric/-	Breathable mesh/	Spandex/-
S, M, L, XL,XXL	XS,S, M, L, XL	S, M, L, XL XXL	S, M, L, XL XXL
Elastic Velcro	Elastic Velcro	Velcro	Velcro
CE 2132,EAC	CE 3132,EAC	-	-
3year	3year	Touch Screen capable. XS phased out	removable bow on index finger. XS phased out
camp.it	camp.it	cmcpro.com	cmcpro.com

Images NOT to Scale

	MANUFACTURER	DIRTY RIGGER	EDELRID	EDELRID
	MODEL VARIANT	Rope Ops	Work Glove Open	Work Glove Closed
	ORIGIN			
	COST (inc Tax/VAT)	£39 $00 €25	£25 $0 €26	£30 $0 €26
	WEIGHT (pair)	0g 0oz	0g 0oz	0g 0oz
	TYPE OF GLOVE	FULL FINGER	5 FINGERLESS	3 FINGERS 2 FINGERLESS
MATERIALS	FRONT/REINFORCED PALM	Synthetic Leather/Goatskin		
MATERIALS	REAR/ REINFORCED KNUCKLES	Stretch fabric/Synthetic Leather	Stretch nylon	Stretch nylon
MATERIALS	REINFORCED ROPE CHANNEL	■	■	■
	PULL TAB/HANGING EYE/LOOP	■	■	■
	SIZES MEN WOMEN'S FIT	XS, S, M, L, XL, XXL		
	WRIST MATERIAL CLOSURE	? Velcro	? Velcro	? Velcro
	STANDARDS	CE ■	CE ■ ■	CE ■ ■
	OTHER COLOURS / WOMEN		■	■
	NOTES	write-on ID tag. Double stitched.	removable bow on index finger	removable bow on index finger
	WEBSITE	dirtyrigger.com	edelrid.com	edelrid.com

Images NOT to Scale

	MANUFACTURER	HESTER	HESTER	HESTER
	MODEL VARIANT	Climber Short	Climber Long	Ergo Grip Alpha
	ORIGIN			
	COST (inc Tax/VAT)	£55 $0 €00	£60 $0 €00	£140 $0 €00
	WEIGHT (pair)	0g 0oz	0g 0oz	0g 0oz
	TYPE OF GLOVE	5 FINGERLESS	FULL FINGER	FULL FINGER
MATERIALS	FRONT/REINFORCED PALM	Goatskin/Synthetic Suede	Goatskin/Synthetic Suede	'Army' Goat&Cowhide/Goatskin
MATERIALS	REAR/ REINFORCED KNUCKLES	Polyester Stretch fabric/foam	Polyester Stretch fabric/foam	Polyester Stretch fabric/foam
MATERIALS	REINFORCED ROPE CHANNEL	■	■	■
	PULL TAB/HANGING EYE/LOOP	■ ■	■ ■	■
	SIZES MEN WOMEN'S FIT	6, 7, 8, 9, 10, 11 ■	6, 7, 8, 9, 10, 11 ■	6, 7, 8, 9, 10, 11 ■
	CLOSURE	Neoprene Velcro	Neoprene Velcro	Leather none
	STANDARDS	-	-	-
	OTHER COLOURS / WOMEN			
	NOTES			Precurved fingers. Pull loop on little finger. Removable wool insulation lining
	WEBSITE	hestragloves.com	hestragloves.com	hestragloves.com

RAPPEL/ABSEIL GLOVES

ESKA
Rock
-
£30 $0 €26
0g 0oz
FULL FINGER
Goatskin/Leather
Airprene Fabric/Leather
6, 6.5,7,7.5,8,8.5,9,9.5,10,10.5 11
Airprene Velcro
CE 3231
eskagloves.com

GILL
Work Glove Closed
-
£37 $0 €26
0g 0oz
3 FINGERS 2 FINGERLESS
Synthetic Leather/DuraGrip
UV Stretch Fabric/-
none
XS, S, M, L, XL
Neoprene velcro
CE
A sail-racing glove designed for wet and ropes! UV & water resistant

GRIVEL
Cervino
-
£83 $0 €0
0g 0oz
FULL FINGER
Goatskin/Split Goatskin
Goatskin/-
S, M, L, XL
Neoprene none
CE
Kevlar thread. Light polyester lining & plastic wrist connectors
grivel.com

GRIVEL
Rock Gloves
-
£28 $0 €0
135g 0oz
2 FINGERS 3 FINGERLESS
Goatskin/Split Goatskin
Goatskin/-
S, M, L, XL
Neoprene velcro
CE
grivel.com

HESTER
Ergo Grip C Zone
-
£150 $0 €00
0g 0oz
FULL FINGER
Goatskin/Neoprene/Synth Suede
Polyester Stretch fabric/foam
6, 7, 8, 9, 10, 11
Neoprene Velcro
-
Waterproof inner lining bonded to outer. Precurved fingers. Pull loop on little finger
hestragloves.com

HESTER
Ergo Grip Vektor
3001910
£115 $0 €00
0g 0oz
FULL FINGER
Synthetic Suede/Synthetic Suede
Polyester Stretch fabric/foam
6, 7, 8, 9, 10, 11
Neoprene Velcro
-
Precurved fingers. Wool insulation lining
hestragloves.com

HESTER
Army
30140-100720
£115 $0 €00
0g 0oz
FULL FINGER
Goatskin/'Army' Cowhide
Cowhide/Stretch Cordura
6, 7, 8, 9, 10, 11
Neoprene Velcro
-
Removable wool insulation lining
hestragloves.com

IRUDEK
Eskua 200
-
£0 $0 €26
60g 0oz
2 FINGERS 3 FINGERLESS
Synthetic Leather/Kevlar
Stretch nylon/ Synth Leather
8,9,10
velcro
CE + cut resist
Neoprene wrist band
irudek.com

Images NOT to Scale

ADD 2x KONG Italy Gloves

	MANUFACTURER	KINETIXX	KINETIXX	KINETIXX
	MODEL VARIANT	Climb/Abseil 7100-390-1	Pro KH218	Fast Rope KH218
	ORIGIN			
	COST (inc Tax/VAT)	£55 $75 €64	£00 $00 €00	£145 $190 €166
	WEIGHT (pair)	0g 0oz	0g 0oz	0g 0oz
	TYPE OF GLOVE	FULL FINGER	FINGERLES	FULL FINGER
MATERIALS	FRONT/REINFORCED PALM	Goatskin/Split Goatskin	Goatskin/Split Goatskin	Leather/Silicon/Aramid
MATERIALS	REAR/ REINFORCED KNUCKLES	PES/Spandex/Split Goatskin	PES/Spandex/Split Goatskin	Leather/Aramid
MATERIALS	REINFORCED ROPE CHANNEL	■	■	■
	PULL TAB/HANGING EYE/LOOP	■	none	■
	SIZES MEN WOMEN'S FIT	XS, S, M, L, XL, XXL, XXXL	XS,S, M, L, XL, XXL	XS, S, M, L, XL, XXL
	WRIST MATERIAL CLOSURE	Neoprene velcro	Neoprene velcro	Leather velcro
	STANDARDS	CE ■■	CE ■■	CE ■■
	OTHER COLOURS / WOMEN			
	NOTES	Touchcreen-capable	DISCONTINUED?	
	WEBSITE	Kinetixx.com	Kinetixx.com	Kinetixx.com

Images NOT to Scale

	MANUFACTURER	METOLIUS CLIMBING	METOLIUS CLIMBING	METOLIUS CLIMBING
	MODEL VARIANT	Synthetic Belay	Insulated	Talon 3/4
	ORIGIN			
	COST (inc Tax/VAT)	£0 $0 €0	£0 $0 €0	£0 $0 €0
	WEIGHT (pair)	0g 0oz	0g 0oz	0g 0oz
	TYPE OF GLOVE	FULL FINGER	FULL FINGER	FINGERLESS
MATERIALS	FRONT/REINFORCED PALM	Suede/Kevlar	Suede/Kevlar	Suede/Kevlar
MATERIALS	REAR/ REINFORCED KNUCKLES	Stretch nylon/Suede	Stretch nylon/Suede	Stretch nylon/Suede
MATERIALS	REINFORCED ROPE CHANNEL	■	■	■
	PULL TAB/HANGING EYE/LOOP	■	■	■■
	SIZES MEN WOMEN'S FIT	XS, S, M, L, XL	XS, S, M, L, XL	XS, S, M, L, XL
	WRIST MATERIAL CLOSURE	? velcro	? velcro	velcro
	STANDARDS			
	OTHER COLOURS / WOMEN			
	WARRANTY NOTES			Also pull tabs on fingers
	WEBSITE	metoliusclimbing.com	metoliusclimbing.com	metoliusclimbing.com

RAPPEL/ABSEIL GLOVES

MAMMUT	MARLOW ROPE	MARLOW ROPE	
Pordoi 1190-00240	**Fast Rope** FAA127/28/29/30/63.	**Fast Rope Aramid** FAA139/35/36	
£32 $40 €36	£00 $00 €00	£00 $00 €00	
54g 0oz	0g 0oz	0g 0oz	
FINGERLESS	FULL FINGER	FULL FINGER	
Synth Leather/Synth Leather	Leather/Split Leather	Aramid/Aramid/Leather	
Elastic Dyneema/Suede	4-way Spandex/-	Aramid/Leather	
	-	-	
6,7,8,9,10,11,12	S, M, L , XL, XXL	S, M, L	
Elastic Dyneema velcro	Neoprene/Leather velcro	- web/buckle	
CE			
Attachment clip. Pull loops on fingers	Kevlar lined interior		
metoliusclimbing.com	marlowropes.com	marlowropes.com	

METOLIUS CLIMBING	METOLIUS CLIMBING	METOLIUS CLIMBING	
Talon	**Rock Gloves**	**Belay**	
£0 $0 €0	£0 $0 €0	£45 $40 €0	
0g 0oz	0g 0oz	0g 0oz	
FULL FINGER	FINGERLESS	FULL FINGER	
Suede/Kevlar	Suede/Kevlar	Split Cowhide/Split Cowhide	
Stretch nylon/Suede	Stretch nylon/Suede	Cowhide/-	
XS, S, M, L, XL	XS, S, M, L, XL	XS, S, M, L, XL	
velcro	velcro	velcro -	
CE	CE	-	
		-	
metoliusclimbing.com	metoliusclimbing.com	metoliusclimbing.com	

Images NOT to Scale

	MANUFACTURER	MoG	MoG	PALM
	MODEL VARIANT	Abseil/Rappel -	Fast Rope -	Pro 12331
	ORIGIN			
	COST (inc Tax/VAT)	£45 $40 €0	£0 $0 €105	£50 $40 €00
	WEIGHT (pair)	0g 0oz	0g 0oz	140-165g
	TYPE OF GLOVE	FULL FINGER	FULL FINGER	FULL FINGER
MATERIALS	FRONT/REINFORCED PALM	Split Cowhide/Split Cowhide	Split Cowhide/Split Cowhide	2mmTitaniumNeoprene/Armortex
MATERIALS	REAR/ REINFORCED KNUCKLES	Cowhide/-	Cowhide/-	2mmTitaniumNeoprene/Armara
MATERIALS	REINFORCED ROPE CHANNEL	■	■	■
	PULL TAB/HANGING EYE/LOOP	■ ■	■ ■	■
	SIZES MEN WOMEN'S FIT	S, M, L, XL, XXL	S, M, L, XL, XXL	S, M, L, XL
	WRIST MATERIAL CLOSURE	velcro -	velcro -	Neoprene Velcro
	STANDARDS	-	-	
	OTHER COLOURS / WOMEN	-	-	-
	WARRANTY NOTES			Insulated against cold & wet. Tightening strap
	WEBSITE	moggloves.com	moggloves.com	https://palm.equipment

Images NOT to Scale

Various gate closure types shown but data is for screwgate or the most basic locking model (not snap-gate)

	MANUFACTURER	PMI	PMI	PMI
	MODEL VARIANT	Fingerless K53	Rope Tech Stealth Tech K53	Lightweight Rappel KH218
	ORIGIN			
	COST (inc Tax/VAT)	£00 $00 €00	£00 $52/42 €00	£0 $50 €0
	WEIGHT (pair)	133-162g 4.7-5.7oz	224-298g 7.9-10.5oz	133-162g 4.7-5.7oz
	TYPE OF GLOVE	FINGERLESS	FULL FINGER	FULL FINGER
MATERIALS	FRONT/REINFORCED PALM	Goatskin/Cowhide	Synthetic Leather/Cowhide	Goatskin/Cowhide
MATERIALS	REAR/ REINFORCED KNUCKLES	Goatskin/-	Stretch Fabric/Synthetic Leather	Goatskin/-
MATERIALS	REINFORCED ROPE CHANNEL	■	■	■
	PULL/HANGING EYE/LOOP	■	■ (stows inside)	none
	SIZES MEN WOMEN'S FIT	S, M, L, XL	XS, S, M, L, XL, XXL	S, M, L, XL, XXL
	WRIST MATERIAL CLOSURE	Goatskin Velcro	Neoprene Velcro	none
	STANDARDS			
	OTHER COLOURS / WOMEN			-
	WARRANTY NOTES	Pull-off loop on fingers	Stealth Tech = black version. Precurved fingers.	Updated design soon
	WEBSITE	pmirope.com		pmirope.com

RAPPEL/ABSEIL GLOVES

	
PETZL	PETZL
Cordex K52	Cordex Plus K53
£48 $40 €00	£00 $00 €00
100-120g 0oz	132-146g 0oz
FULL FINGER	FULL FINGER
Goatskin/Goatskin	Goatskin/Goatskin
Stretch nylon/-	Goatskin/ Stretch nylon/-
XS (7.5), S, M, L, XL	XS (7.5), S, M, L, XL
Neoprene Velcro	Neoprene Velcro
EAC, UKCA, CE	EAC, UKCA, CE
Petzl.com	Petzl.com

	
PMI	PMI
Heavyweight Tactical KH218	RTG GL227
£0 $50 €0	£0 $0 €0
224-298g 7.9-10.5oz	0g 0oz
FULL FINGER	FULL FINGER
Cowhide/3LayerCowhide	Goatskin/Cowhide
Cowhide/-	Kevlar/-
none	none
S, M, L, XL	S, M, L, XL, XXL
none	Elasticated Kevlar none
Updated design soon. Tactical=Black	RTG=Rescue Technician Glove
pmirope.com	pmirope.com

	Images NOT to Scale			
	MANUFACTURER	RESCUE3	ROCK EMPIRE	RIDGEGEAR
	MODEL VARIANT		Rock Gloves -	Fingerless RG/Glove/SF
	ORIGIN			
	COST (inc Tax/VAT)		£00 $00 €25	£35 $00 €25
	WEIGHT (pair)		0g 0oz	0g 0oz
	TYPE OF GLOVE		2 FINGERS 3 FINGERLESS	FINGERLESS
MATERIALS	FRONT/REINFORCED PALM		Suede/Kevlar	Synthetic Leather/Split Cowhide
MATERIALS	REAR/ REINFORCED KNUCKLES		Nylon stretch fabric/Suede	Polyester fabric/Neoprene
MATERIALS	REINFORCED ROPE CHANNEL			
	PULL TAB/HANGING EYE/LOOP			
	SIZES MEN WOMEN'S FIT		XS, M, L, XL	XS, M, L, XL
	WRIST MATERIAL CLOSURE		Velcro	Elastic velcro
	STANDARDS		CE	CE
	OTHER COLOURS / WOMEN			
	WARRANTY NOTES		pull tabs on fingers	
	WEBSITE			

	Images NOT to Scale			
	MANUFACTURER	SINGING ROCK	SINGING ROCK	SINGING ROCK
	MODEL VARIANT	Grippy 3/4 KH218	Grippy KH218	Falcon 3/4 KH218
	ORIGIN			
	COST (inc Tax/VAT)	£22 $0 €0	£28 $0 €0	£18 $0 €0
	WEIGHT (pair)			
	TYPE OF GLOVE			
MATERIALS	FRONT/REINFORCED PALM			
MATERIALS	REAR/ REINFORCED KNUCKLES			
MATERIALS	REINFORCED ROPE CHANNEL			
	PULL TAB/HANGING EYE/LOOP			
	SIZES MEN WOMEN'S FIT			
	WRIST MATERIAL CLOSURE			
	STANDARDS			
	OTHER COLOURS / WOMEN	-	-	-
	WARRANTY NOTES			
	WEBSITE	singingrock.com	singingrock.com	singingrock.com

RAPPEL/ABSEIL GLOVES

			
RIDGEGEAR	**SALEWA**	**SAR PRODUCTS**	**SAR PRODUCTS**
Full Finger RG/Glove/LF	Via Ferrata Leather -	Half -	Full -
£35 $00 €44	£38 $49 €25	£35 $48 €42	£35 $48 €42
80g 2.8oz	80g 0oz	0g 0oz	0g 0oz
FULL FINGER	FINGERLESS	3 FINGERS 2 FINGERLESS	FULL FINGER
Synthetic Leather/Split Cowhide	Goatskin/Kevlar	Suede/Kevlar	Suede/Kevlar
Polyester fabric/Neoprene	Nylon stretch fabric/-	Nylon stretch fabric/Suede	Nylon stretch fabric/Suede
	XS, M, L, XL, XXL	XS, M, L, XL	XS, M, L, XL
	Nylon stretch fabric Velcro	Velcro	Velcro
		CE	CE
	pull loops & tabs on fingers		
		sar-products.com	sar-products.com

			
SINGING ROCK	**SINGING ROCK**	**SKYLOTEC**	**SKYLOTEC**
Falconer Tactical KH218	**Falconer Full** KH218	**CT ProGrip** KH218	**CT ProGrip Plus** KH218
£20 $0 €0	£25 $0 €0		
-	-		
		DISCONTINUED	DISCONTINUED
singingrock.com	singingrock.com	skylotec.com	skylotec.com

	Images NOT to Scale			
	MANUFACTURER	SKYLOTEC	SKYLOTEC	SKYLOTEC
	MODEL VARIANT	CT ProGrip Ferrata KH218	Skygrip Full -	Skygrip Half -
	ORIGIN			
	COST (inc Tax/VAT)			
	WEIGHT (pair)			
	TYPE OF GLOVE		FULL FINGER	FINGERLESS
MATERIALS	FRONT/REINFORCED PALM			
MATERIALS	REAR/ REINFORCED KNUCKLES			
MATERIALS	REINFORCED ROPE CHANNEL			
	PULL TAB/HANGING EYE/LOOP			
	SIZES MEN WOMEN'S FIT			
	WRIST MATERIAL CLOSURE			
	STANDARDS			
	OTHER COLOURS / WOMEN			
	WARRANTY NOTES	DISCONTINUED		
	WEBSITE	skylotec.com	skylotec.com	skylotec.com

	Images NOT to Scale			
	MANUFACTURER	STUBAI	STUBAI	STUBAI
	MODEL VARIANT	Eternel 3/4 95007	Eternel 95006	Iconic 9500
	ORIGIN			
	COST (inc Tax/VAT)	£30 $39 €32	£00 $00 €	£71 $92 €72
	WEIGHT (pair)	60g 2.1oz	70g 2.5oz	0g 0oz
	TYPE OF GLOVE	FULL FINGER	FULL FINGER	FULL FINGER
MATERIALS	FRONT/REINFORCED PALM	Lycra/Leather	Lycra/Leather	Leather/Leather
MATERIALS	REAR/ REINFORCED KNUCKLES	mesh fabric/Leather	mesh fabric/Leather	Leather/Stretch fabric/Leather
MATERIALS	REINFORCED ROPE CHANNEL	■	■	■
	PULL TAB/HANGING EYE/LOOP	-	-	■
	SIZES MEN WOMEN'S FIT	S/7, M/8, L/9, XL/10,	S/7, M/8, L/9, XL/10,	M/8, L/9, XL/10, XXL/11
	WRIST MATERIAL CLOSURE	Elastic Velcro	Elastic Velcro	Neoprene velcro
	STANDARDS			CE ■ ■
	OTHER COLOURS / WOMEN			■
	WARRANTY NOTES			
	WEBSITE	stubai.com	stubai.com	stubai.com

PMI ROPE:

WHERE TECHNICAL EXCELLENCE MEETS DAILY SAFETY

PMIROPE.COM

Advantage Helmet

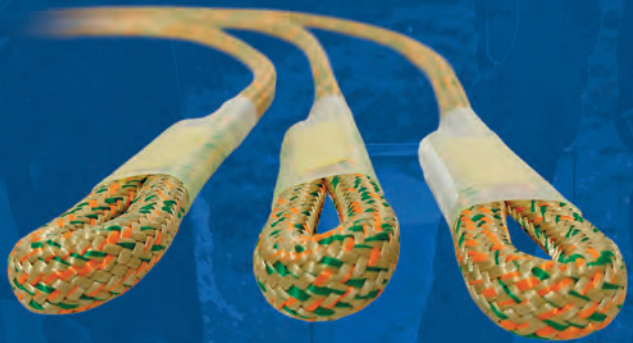
**THINK SAFETY.
THINK ADVANTAGE**

Kevlar® head protection
Choice of different colors
ANSI Z89.1 TYPE 1, CLASS G (2200V)
TYPE 1 & 2, EN 397, NFPA 1951

Extreme Pro Rope

**TOP-TIER TERMINATION:
CRAFTED FOR THE PROS**

Unicore® technology
MBS: 42.9 kN (9644 lbf)
Core - 100% Nylon 6.6
Sheath - 100% Polyester



Eye and Eye Prusik

**BUILT FOR HIGH-LOAD
PRECISION AND EASE**

Eye MBS: 14.2 kN (3192 lbf)
Basket MBS: 27.6 kN (6204 lbf)
Technora/polyester sheath

Rope Tech Gloves

A PERFECT FIT FOR EVERY GRIP

Ultra-lightweight design: 0.221 lbs
7 sizes: XXS, XS, S, M, L, XL, XXL
Materials: synthetic leather, cowhide, spandex

NEW- COMPILING Q2 '24

LOW STRETCH KERNMANTLE 9-13mm ACCESS&RESCUE ROPES

The vast majority of technical rope work uses between 10.5 to 11.5mm low stretch kernmantle ropes perhaps with some specialist double braids here and there. The fire industry in the US uses ½" so between 12.5 and 13mm and wilderness rescuers and tactical operators use between 6 and 10mm low stretch ropes. 11 to 11.5mm static/semi-static or low stretch ropes may be the lightest rope in urban-industrial fire rescue but in the boonies they're the heaviest rope you want to be lugging up a mountain or down a cave or throwing on the heli. They do, however, offer an extra degree of strength and durability that might swing things your way, especially if the rock on your patch is particularly aggressive. We've used the term 'low-stretch' and included 'static' ropes but there is technically a difference between 'Static' which the US Cordage Institute describes as having 6% elongation at 10% MBS and 'Semi-static' which has between 6 and 10% stretch at 10% MBS.

Softer or more supple ropes are great for handling and knot tying but are rarely as abrasion resistant as the tough-as-old-boots stalwarts like *Sterling's HTP*, *Maxim's KMIII Max* (*New England/Teufelberger*)and *PMI's Pit Rope* or the more recent widespread introduction of technical fibres like *Technora*. You and your hardware need to determine what works best with each other - never commit to operations with a rope that has not been tested on the hardware and systems that you will be using. We've tested rope in the past that has worked well for years in a certain device or method only to fail catastrophically when tested on a new device.

Most of the regular, more dynamic, braid-on-braid arborist climbing ropes are not included unless singled out as suitable for rescue. You can see several pages of entirely different and often amazingly colourful arborist ropes in our ARBORIST EQUIPMENT BUYERSGUIDE.

ROPE DIAMETER can be a contradiction because not only do quoted diameters often vary by a couple of mm either side even before load is applied, but a number of manufacturers seem to have lost their calculators or they are simply rounding the figures off so that you may see a 1/2" rope given as anywhere between 12mm and 13mm when in fact, to be precise it should be 12.7mm. We have quoted most figures as per the manufacturer.'s spec but if they only list one we've given the conversion figure as well. The key difference for arborists in choosing an 11mm/ 7/16th (or perhaps even a 10mm) over a 1/2" rope is in how it feels in the hand and how it operates in modern devices like pulleys, descenders, ascenders and with prusiks etc. Some brands like *Edelrid, Mammut, Tendon* and *Marlow* use the runner thread to readily identify diameter so that 9mm would be one marker thread, two threads would be 10 or 10.5mm, three threads is 11mm and four threads is 12mm. This isn't uniform throughout the industry so you cannot simply assume that any 3-marker thread rope is 11mm but within those ranges that adopt this marking it makes life easier, particularly where there could be a difference in standards between two similar sized ropes which could adversely affect your legal position in the event of an accident. Generally speaking, 12 to 16 strand ropes are soft and knobblier than a 24 to 48 strand rope which is smoother an operates well in hardware.

CONSTRUCTION: At the risk of going back to basics just a bit too far ,we had better recap exactly what differentiates a kernmantle from a double braid and a static from a low stretch rope and how they differ from your mum's washing line. If they don't differ from your mum's washing line you need to upgrade your life insurance policy. Traditionally rope has been constructed by twisting bundles of fibre together - **LAID ROPE**. Laid rope is like Rapunzle's hair - pre-twisted strands of fibre (or hair) make a larger bundle of fibre which can then be spiralled or braided so that it forms an interlocking spiral of rope (or hair) fibres. You can see all the 'workings' of a laid rope, you can push stuff through the middle of a laid rope and, in the case of the industry standard **3-STRAND** Nylon, you can cut or contaminate all of your load-bearing fibres because they're all exposed. Oh, and it's quite an elastic rope because all the fibres are spiralled so in any given linear inch of rope there is actually 2 inches of rope (or whatever the figure happens to be) wrapped up in those twists. Variations on 3-strand include **MULTIPLAIT** (**Solid Braid**) in which some of the bundles are plaited in one direction and others the opposite way - this circumvents the unfortunate inclination of a spiralled rope to want to twist back to its virginal, parallel state. All of the more complex designs attempt to balance the direction of spiralled fibres so that they no longer have the inclination to untwist - this is known as an S-twist and a Z-twist. The next step up from 3-strand and multiplait is to cover all those exposed fibres with a sheath •BRAIDED rope. Typically in yachting and your mum's washing line this may be simply to protect the core or even just to add colour to an otherwise bland rope - people with large boats like to colour-coordinate - don't mistake these ropes for a life-support rope - they are NOT the same. Braided ropes are differentiated by the number of plaits in their weave (also known as 'bobbins' or 'carriers' as we have referred to it in our tables) - either 12, 16 or 24 with 12 and 16-strand covers bearing most of the load. The outer cover may be woven

*The tree industry has implemented a more technically accurate acronym for SRT & DRT or Single/Double Rope Technique. The terms SRS Stationary Rope System and then SRWP Stationary Rope Work Positioning have been introduced and gallantly lauded by industry hierarchy and training establishments but once you start fiddling with replacement acronyms you know you're on the slippery road back to calling it SRT! MRS is Moving Rope System, which used to be DdRT or Doubled Ropes. These are laudable changes but SRT is so engrained in the wider sport and professional rope access & rescue communities that it's always going to be around.

LOW STRETCH ACCESS&RESCUE ROPES

tighter or looser depending on how you want it to handle with tighter weaves giving a stiffer, more durable rope and looser weave an easier knot tying and handling rope.

KERNMANTLE has a single, load-bearing, tightly woven sheath covering and comes from the German for KERN meaning core and MANTLE meaning sheath. A woven protective sheath covers a core of twisted/plaited multiple (separate) fibres. Broadly speaking we talk of static ropes as having a parallel bundle core and dynamic rope as having a spiralled core although even static ropes will have some spiralled fibres and bundles. The job of the sheath is to protect the core from abrasion and heat damage and traditionally this meant that three-quarters or so of the rope's total load bearing capacity remained intact within the core while the sheath took a pummelling. Over the years this has changed somewhat so that sheaths now often constitute around 40% of the total rope strength making them A) an even more vital load-bearing element than they traditionally have been and B) a huge influence on the handling characteristics of the rope. It used to be that a soft, easily tied rope wasn't so good at withstanding abuse and you needed something like the Sterling HTP with it's iron bar-like characteristics to withstand a sharp granite edge or to highline the Grand Canyon. Nowadays, it's not so clear cut but manufacturers are always striving to make a rope with the best handling, easiest knot tying and able to take whatever abuse you throw at it. The sheath carrier, plait or bobbin count on more flexible Kernmantles tends to be the higher numbers, typically 40-48 while stiffer, more abrasion resistant ropes will be around 32 or 24 but in reality it's again not that clear-cut - best to go to your local store and fondle the rope for yourself. If you really want to go all out in the bombproof stakes there's a rope by *Tendon (Lanex*) that has stainless steel fibres as part of its sheath to prevent it being cut. This is a bit of a departure from the more usual Kevlar-Aramid-type fibres and an interesting concept for law enforcement and a possibility for arborists wielding a chainsaw. It's not as heavy as you might expect at only a couple of grams per metre more than Aramid.

UNIFIED & BONDED SHEATH/CORE ROPES

This is the integration of some core fibres of kernmantle into the weave of the sheath. This is not an attempt to share load but rather to eliminate one of the drawbacks of a separate sheath; slippage, creep or milking which can be exacerbated by a prusik or the cams of a descender squeezing and bunching the sheath as it is pulled through under load. This remains a preoccupation for arborists as braided ropes are generally more susceptible to milking. Kernmantles are now mostly pre-shrunk to help eliminate milking which annoyed cavers used to soaking their new ropes in the bath in an effort to shrink the sheath onto the core and have an excuse not to have a bath themselves. Some ropes have the sheath bonded or glued to the core or , in the case of Arbor-Access, the sheath strands are partially woven into the fibres of the core so that it can no longer move differentially when subjected to high loads using compressing cam hardware. Ropes like *Meetic* from *Courant*, *Link-Tec* from *Edelrid*, *Platinum* from Teufelberger/ *New England* and *Unicore* from *Beal* & *PMI* are examples. Cost is higher but if you've had problems with sheath slippage this could be the answer but remember that, while this construction can limit milking and may improve durability, there will be some downsides otherwise ALL ropes would be made this way - some ropes may exhibit 'dimpling' under excessive load or the bonding agent may eventually flake off but they are worth a look.

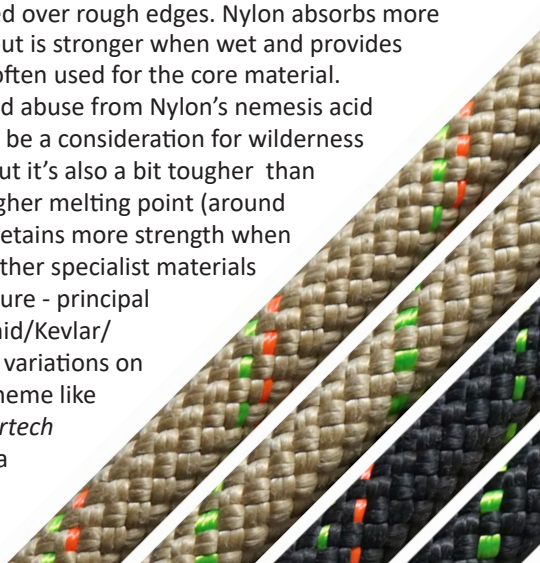
IN THE FOLLOWING TABLES.....:

The data in these tables is always ridiculously difficult to compile because there is so much conflicting information even within the same company with catalogues or websites saying one thing and the stockists saying another. In the end we've had the various companies sign off their own listings but even so there's a lot of data not given for some of our entries, the best we can do is tell you the ropes exist!

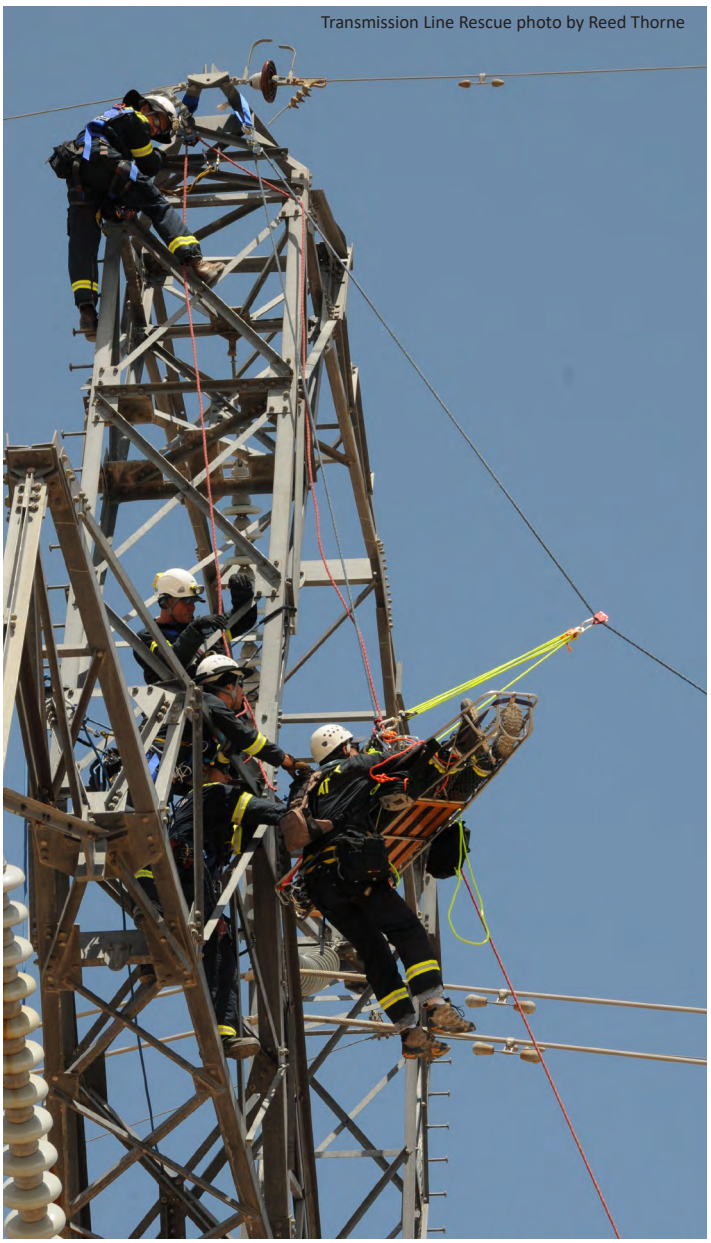
COST: Some manufacturers stoically ignore our question about a retail price. so we've circumvented that by listing an approximate retail price from key distributors. Not all ropes are sold by the metre invariably because of pre-sewn/spliced eyes so they are sold in set lengths so we've used a ratio of the shortest length sold and rounded up by 10%. This is the most expensive way to price rope so these may not be exact but they give you a rough idea. Prices are per metre with **per foot** also shown for US $Dollars. all **EXCLUDE Splices/Sewn eyes** unless otherwise stated We usually round the prices up but if it seems a little precise it will be a manufacturers stated retail cost. We also now show a straight currency conversion in burnt-orange £$€ - this NOT an accurate cost because it precludes import duty and bulk shipping but it again gives you a rough idea for comparison.

WEIGHT - This is the WEIGHT or MASS per metre and per 100feet. We have made conversions based on a linear mass density conversion rounded to one decimal place (we occasionally sneak in two if it's .25 for a quarter).

MATERIALS Nylon is referred to in Europe as *polyamide* because Nylon is Dupont's trade name and differentiated by some as such or as Nylon 66 or Perlon. Nylon has good strength to weight ratio and shock absorption, doesn't melt at too low a temperature (around 460° F or 238° C), can operate in wet and ice (albeit at reduced capacity) and is pretty robust when it comes to being dragged over rough edges. Nylon absorbs more water than Polyester but is stronger when wet and provides more elasticity so it's often used for the core material. Polyester can withstand abuse from Nylon's nemesis acid which doesn't tend to be a consideration for wilderness rescuers or arborists but it's also a bit tougher than nylon, has a slightly higher melting point (around 480° F or 249° C) and retains more strength when wet. There are some other specialist materials used in rope manufacture - principal amongst these is Aramid/Kevlar/ Technora/ Twaron - all variations on the ballistic material theme like these *Bluewater Armortech* ropes, that can make a



rope extremely tough and highly resistant to heat, bullets and chainsaws. Well actually just heat really, bullets go round and chainsaws think about it for a bit longer than with standard ropes and then go straight through the middle. But these toughened ropes certainly have potential and are being used increasingly throughout the rope access and rescue fields. Since you can't tell a polyester from a nylon just by looking at it some manufacturers like PMI use special marking to denote material - in PMI's case barber-pole' sheath runners denote nylon and a cross-pattern denotes polyester content, this is a simple idea that we would like to see adopted more widely.


Transmission Line Rescue photo by Reed Thorne

MBL is Minimum Breaking Load (or MBS -Minimum Breaking Strength if given in kiloNewtons (kN), The units of force are kN and lbf but they pretty much equate to the more recognisable kg and lb. For some reason a lot of arborist ropes are quoted with an ***average strength*** rather than the minimum strength. This is a figure you'll rarely see us quote unless we really have to because it's a misleading figure that should never have become standard use. For rescue-purposes, an average is NOT the worst-case scenario figure - the rope could and by definition, has, failed at a lower figure. We never quote it in TECHNICAL RESCUE because, when dealing with life-support equipment you always base your calculations on the ***minimum*** load that will cause it to fail (Minimum Breaking Load) but don't forget that even that figure is when the rope is dry, brand new and in a straight line with no bends in it. Some only quote a figure for spliced rope which we can assume will be less than similar rope quoting an in-line strength. Also, double-check with the manufacturer because we come across an awful lot of distributors with different strength figures for the same rope largely because it's not clear whether they are quoting Average or Minimum Breaking Load. We've included the European favourite of breaking strength in a figure 8 knot as an indication of the strength reduction of tied knots over sewn or spliced terminations which retain much greater strength. For instance *Courant's Komora* arborist rope has an MBL of 30kN in a straight line with no bends but with a splice this figure drops to 19 kN. That's often still better than around 15kN with a tied. Expect MBL to reduce by at least 10% when spliced.

ELONGATION/STRETCH

We often see (and use)the terms 'Low-stretch' and 'static' ropes interchangeably but there is technically a difference between 'Static' which the US Cordage Institute describes as having 6% elongation at 10% MBS and 'Semi-static' which has between 6 and 10% stretch at 10% MBS. n our Arborist Climbing Rope Guide we show up to four figures (when given) for elongation or stretch. The first is the industry standard degree of stretch at 10% of the minimum breaking load. This is some harsh treatment and would rarely concern a climbing rope unless you're huge, it's more for rigging ropes being subjected to high loads and, even worse, dynamic loads. The second figure is used mostly in Europe is for Static Elongation at 50 to150kg loading over a set time period. The third figure is the US norm for stretch at 136kg/300lbs and this is much more indicative of a climber's body mass. Finally we included the US ANSI Z133 driven figure of 540lb not because we necessarily agree that arborists have put on a lot of weight over Christmas but because the operating weight of a climber has generally increased substantially in recent years with all the hardware, full body harnesses, protective clothing and even helmets, a *Protos* with accessories is a helluva lot heavier than a 1970's builder's helmet. In rescue, we've increased our figure for a rescue load twice in the last 30 years as average bodyweights and kit increased so 245kg/540lbf could well be the kind of weight that a working arborist might attain when wet and fully kitted but a competition or recreational climber very rarely would!

In Europe, the use of a sub-13mm/ 1/2" rope is nothing new, in fact 1/2" and above was unusual with 12mm being closer to an Arborist norm. In the US this has become such a measure of the minimum that the US standard ANSI specifically states that any arb rope UNDER 1/2" require specialist training before use! That means ALL of the hybrid-specialised ropes. A case of

Introducing

11mm Pro-G

Strong - Supple - Predictable

BlueWater's 11mm NFPA-G rated low elongation line features:

- < 48 carrier sheath
- < Designed to run well in all devices
- < Whopping 9,447 lbf. published tensile strength
- < Polyester sheath with Nylon core
- < Available in 2 highly visible contrasting colors

Diameter:	11mm
Tensile Strength:	9,447 lbf. (42 kN)
Grams Per Meter:	93
Elongation	@ 300 lbf. = 2.6% @ 600 lbf. = 4.7% @ 1000 lbf. = 6.8%

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standards not keeping up with developments? Equally the NFPA standard lists rope to within 0.5mm which is why you see such a discrepancy in the definition of a 7/16" rope - some 11mm can be listed as anything from 10.8 to 11.6. *BWII* ropes comply with the updated ANSI Z359.15 standard for a single anchored lifeline which you would think is a definition that could be applied to arb ropes. A whole can o'worms we don't want to open right now!

EASE of TYING is really 'FLEXIBILITY' and should more correctly be defined as the '*coefficient of* **knotability** *as a ratio of 1.1 times the rope diameter*' but we couldn't fit that in the header. It refers to deformation of a rope in an overhand knot subjected to a 10kg load but is basically how easy it is to tie a knot. This is again not quoted by everyone but ranges from 0.6 for the easiest to tie to 1.1 for the hardest. Ropes closer to 1 hold their shape well, work well in mechanical devices and are easier to untie.

SHEATH CONSTRUCTION: This is expressed as the number of carriers/threads used to construct the outer 'jacket' or braid. Unlike arborist ropes that ar universally described by the number of braids, kernmantle are described by the carrier or thread count. The lower the number, the more flexible the rope will be. Kernmantle (**KM**) is technically any rope with a sheath over a separate core but is more usually a single 32 carrier (16 braid) or 48 carrier (24-braid) sheath over parallel core fibres with less stretch than traditional arb ropes. Some ropes here and most arborist ropes are described as 24-braid with **DB** or double braid as the norm for climbing. This means the core package (comprised of multiple bundles of fibres) has its own woven sheath. The core bundles can be separate from each and parallel or twisted together in a plait or braid. At least one manufacturer describes a *Double Braid Kernmantle* which we would term **DB** rather than **KM**.

USES: ALL of the ropes in this GUIDE can be used for abseiling, ascending, hauling and for highlines but some will do it better than others and with greater safety margins. A mark in these **SUITABLE FOR** columns obviously doesn't mean that this is the ropes' only area of use. We've left it up to the manufacturer to decide which markets they feel the rope is most suitable for.

SPECIAL: BONDED indicates the sheath and core are linked - either by bonding agent or intertwined fibres such that the sheath will not slip/milk. Particularly suitable for ascenders and descenders as well as winches and camming hardware.

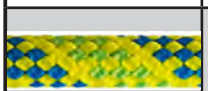
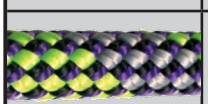
SUITABLE FOR: There are five usage columns; **HAUL/HIGHLINE** which will always be very low stretch, tougher sheath ropes. **ACCESS**, general purpose single-person work rope often at the more budget end of pricing. Many are also suitable for the loads and rigors of rescue. Check the data for strength, elongation and flexibility to determine if it's suitable. **RESCUE**, higher load capacity and higher quality. **CAVING**, lighter, tight-sheath. **TACTICAL**, may mean the rope has technical fibres incorporated like Technora that make it much stronger in small diameters and tougher over sharp edges and for high speed descents but it could just as easily simply mean the rope is available in black! We have a whole guide to Tactical Ropes in our **BLACK EQUIPMENT BUYERSGUIDE** .. Water Rescue Ropes are in our **WATER RESCUEBUYERSGUIDE** so we have not included them unless water is a secondary use *Beal ProWater* and the Taiwanese '*Ropers*' water rescue as the only ones with an MBS of 25kN enabling them to be used for normal rope

rescue/access activities as well as in water.
Many splices and compact sewn eyes can be fed through hardware and these are more common in arb work than in access and rescue. However, there are plenty and thy can siginficantly reduce the bulk at anchor the end of your rope enabling you to get much closer to the anchor (if load angles permit)_- this can be perfect for emergency response where you may not get to choose your anchors quite as much as you would for general access work. Generally speaking, Single and Double Rope Technique (now called SRS- Stationary Rope Systems by arborists) require low stretch rope for which kernmantle semi-static and static ropes are perfect. The softer arborist ropes mentioned earlier are more supple 32 and 24 strand double braids and can handle some access work but are better suited to Doubled Rope Technique (Moving Rope Systems) than most Kernmantle ropes are.

STANDARDS: CE and **ANSI** pretty much cover the arb market in Europe and USA but some ropes crossing over from rescue may also have an NFPA rating. CE in this case is EN1891 and divided into class A and B ropes. While the physical diameter of rope can be the same (8.5-16mm), class A ropes have a higher MBL at min-22kN compared to 18kN for class B but class B can have less sheath slippage at 15mm compared to 30mm for a class A so this can make a class B preferable with some hardware. Class A will tend to be tougher and stronger but class B can be just as good, if not better if you take good care of it. 15kN is a minimum for knot/splice/sewn strength so where quoted may not be the max strength of that particular rope, just the minimum to meet the standard. **ANSI Z133 requires climbing ropes to be ½" but it does accept 11mm 7/16"for arborist 'trained in the use" of this thinner rope.** The 'newly' defined ANSI Z359.15 Single Anchor Lifeline standard may now also be relevant to SRT/SRS applications in arb. The **CI** & **BERRY** designations are unique to the USA and are not standards as much as compliance to the **US Cordage Institute** and **military** requirements for 100% home produced ropes. These are not mandated for arborists but since many of these ropes cross over to other sectors we have started to list them.

SHRINKAGE in water. Some ropes are pre-shrunk or use fibres that won't shrink which is not necessarily the same as thermo-stabilsed or 'heat-set' rope although that process will help reduce overall shrinkage. Untreated Nylon does 'retract' a little unless factory pre-shrunk. This harks back to the days when the first thing you did with a new rope was chuck it in the bath overnight. This figure is not the same as Sheath Slippage which is where the sheath 'milks' some extra length in relation to the core and ends up with a dubious looking end. The ropes listed in the '**OPTIMIZED FOR ASC/DESC**' column will specifically NOT do this.

SHEATH %. This is the opposite to CORE percentage so we haven't bothered listing both - do the math(s). The higher the sheath percentage the stiffer the rope. It will therefore usually have a much higher initial resistance to abrasion over an edge or sheath creep under high loads from a camming device.

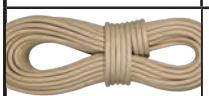
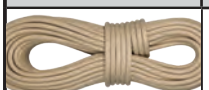
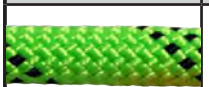
Images NOT to Scale	MODEL	COMPANY	ORIGIN	COST per Metre /3.28ft per Foot	Ø mm Inches"	WEIGHT g/m lb/100'	MATERIALS: SHEATH CORE	STANDARDS	EASE of TYING Sherrill Rating	SHEATH CARRIER	SPLICEABLE PRE-SPLICED PRE-SEWN
	**Arborist 32str KM** Crossfire	ALLGEAR		£0 $0 $0 €0	11 7⁄16"	89g 6.1lb	Polyester Nylon	ANSI		32 KM	■
	**Arborist 32str KM** Finish Line, Blue Finish-Line, Red Finish Line,	ALLGEAR		£0 $0 $0 €0	11 7⁄16"	89g 6.1lb	Polyester Nylon	ANSI		32 KM	■
	**Arborist 32str KM** Tower Line	ALLGEAR		£0 $0 $0 €0	11 7⁄16"	89g 6.1lb	Polyester Polyester	ANSI		32 KM	■
	**Arborist 32str KM** TowerLine	ALLGEAR		£0 $0 $0 €0	12.7 ½"	99g 6.7lb	Polyester Polyester	ANSI		32 KM	■
	**Endurance** Aya, LuckyLine	ATLANTIC BRAIDS		£0 $0 $0 €0	11.1 7⁄16"	89g 6lb	Polyester Nylon	?		32 KM	■
	**Endurance**	ATLANTIC BRAIDS		£0 $0 $0 €0	12.7 ½"	118g 7.9lb	Polyester Nylon	?		32 KM	■
	**Dynastat**	BEAL		£2.40 $0 $0 €0	10.5 13⁄32"	75g 5lb	Nylon Nylon/Vectran	CE A*	0.82	16 KM	■
	Access Unicore	BEAL									
	Antipodes	BEAL									
	Australis	BEAL									
	Hotline	BEAL									
	**Industrial**	BEAL		£3.30 $2.70 $1.15 €2.70	10.5 5⁄16"	74g 5lb	Polyester Nylon	CE A	-	32 KM	■
	**Industrial**	BEAL		£3.30 $2.70 $1.15 €2.70	11 7⁄16"	74g 5lb	Polyester Nylon	CE A	-	32 KM	■
	**Industrial**	BEAL		£3.30 $2.70 $1.15 €2.70	12 ½"	74g 5lb	Polyester Nylon	CE A	-	32 KM	■
	Intervention	BEAL									
	Intervention	BEAL									

NOTES: COST: excludes eyes unless specified in NOTES. INCLUDES local taxes/VAT, Some are not sold by m/ft, price shown is a propor

LOW STRETCH ACCESS&RESCUE ROPES

SPECIAL: FIRE/HEAT RETARD	SPECIAL: BONDED SHEATH	SUITABLE FOR: HAUL/HIGHLINES	ACCESS	RESCUE	CAVING	CANYONING	TACTICAL	MINIMUM BREAK LOAD: MBL MINIMUM Break Load Spliced Sewn Knotted	SHRINKAGE %	SHEATH SLIPPAGE (MILKING) %	ELONGATION %: @10% MBS @30% MBS @50-150 kg @300LB/136K @540 lb/245kg	SHEATH %	OTHER COLOURS					NOTES	WWW.
-				■				35.2kN 7920lbf			15%							*Model names equates to colour options.	allgearinc.com
-				■				31.2kN 7020lbf			3%							*Model names equates to colour options.	allgearinc.com
-				■				27.2kN 6120lbf			3%							*Model names equates to colour options.	allgearinc.com
-				■				32.8kN 7380lbf			3%								allgearinc.com
-				■				37.5kN 8300lbf			7%								atlanticbraids.com
-				■				48kN 10600lbf			7%	?							atlanticbraids.com
-				■				25kN 6744lbf 16/19kN 3597/4271lbf	0%	0.8%	2%	44%						*Conforms to both Semi-static (EN1891) and Dynamic (EN892) Standards	bealplanet.com
-				■															bealplanet.com
-				■															bealplanet.com
-				■															bealplanet.com
-				■															bealplanet.com
-				■				34kN 7643lbf 19.5/24kN 4384/5395lbf	1.1%	0.8%	2.1%	36%						Also 10.5 & 12mm versions - see Rope Eqpt BUYERS GUIDE	bealplanet.com
-				■				34kN 7643lbf 19.5/24kN 4384/5395lbf	1.1%	0.8%	2.1%	36%						Also 10.5 & 12mm versions - see Rope Eqpt BUYERS GUIDE	bealplanet.com
-				■				34kN 7643lbf 19.5/24kN 4384/5395lbf	1.1%	0.8%	2.1%	36%						Also 10.5 & 12mm versions - see Rope Eqpt BUYERS GUIDE	bealplanet.com
-				■															bealplanet.com
-				■															bealplanet.com

rtion of shortest length x10% & rounded up. EASEofTYING: 1-10 from hardest to easiest SHEATH: DB=Double Braid, KM=KernMantle

Images NOT to Scale	MODEL	COMPANY	ORIGIN	COST per Metre /3.28ft per Foot	Ø mm Inches"	WEIGHT g/m lb/100'	MATERIALS: SHEATH CORE	STANDARDS	EASE of TYING Sherrill Rating	SHEATH CARRIER	SPLICEABLE PRE-SPLICED PRE-SEWN
	North Sea	BEAL			11						
	Pro Water	BEAL			11						
	Raider	BEAL			11						
	Raider Tactic	BEAL			11						
	Rescue VLS	BEAL			11.3						
	Segment	BEAL			11						
	Hardcore	BLACKSAFE			11						
	Armortech	BLUEWATER		£0 $0 $0 €0	10.5mm 13/32"	98g 6.55lb	Technora/ Polyester Nylon	ANSI	-	32 KM	■
	Assaultline/ BWII+	BLUEWATER		£0 $0 $0 €0	10.5mm 13/32"	89g 6.1lb	Polyester Nylon	CE A NFPA	-	32 KM	■
	Protac	BLUEWATER		£0 $0 $0 €0	10.5mm 13/32"	72g 4.8lb	Polyester Nylon	CE B		32 KM	
	SpecStatic	BLUEWATER		£0 $0 $0 €0	10.5mm 13/32"	?		NFPA ANSI	-	32 KM	
	Armortech	BLUEWATER		£0 $0 $0 €0	11mm 7/16"	98g 6.55lb	Technora/ Polyester Nylon	ANSI	-	32 KM	■
	DGR	BLUEWATER		£0 $0 $0 €0	11mm 7/16"	85g 5.7lb	Polyester Nylon	NFPA ANSI		KM	
	Pro G	BLUEWATER		£0 $0 $0 €0	11mm 7/16"	92g 6.2lb	Polyester Nylon	NFPA		48 KM	

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LOW STRETCH ACCESS&RESCUE ROPES

SPECIAL		SUITABLE FOR						MINIMUM BREAK LOAD			ELONGATION %									
FIRE/HEAT RETARD	BONDED SHEATH	HAUL/HIGHLINES	ACCESS	RESCUE	CAVING	CANYONING	TACTICAL	MBL MINIMUM Break Load Spliced Sewn Knotted	SHRINKAGE %	SHEATH SLIPPAGE (MILKING) %	@10% MBS @50-150 kg @300LB/136K @540 lb/245kg	SHEATH %		OTHER COLOURS					NOTES	WWW.
-				■																
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-				■																
-				■																
-				■																
-				■																
-				■																
-				■				32.1kN 7216lbf	0%		1.9%	39.4%*							Double sheath-core sheath= 54%. Technora sheath over polyester sheathed kernmantle Up to 934 deg F	bluewaterropes.com
-				■				32.9kN 7399lbf	1.9%		2.9%	53%								bluewaterropes.com
-				■				31.5kN 7081lbf			3.1%	50%								
-				■				?	-											bluewaterropes.com
-				■				32.1kN 7216lbf	0%		1.9%	39.4*							Double sheath-core sheath= 54%. Technora sheath over polyester sheathed kernmantle Up to 934 deg F	bluewaterropes.com
-				■				33.5kN 7541lbf			3.4%	48%								bluewaterropes.com
-				■				42kN 9447lbf			3.1%									bluewaterropes.com
-				■																

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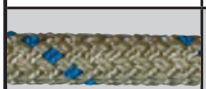
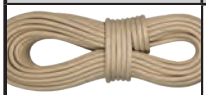
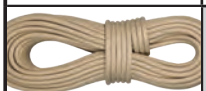
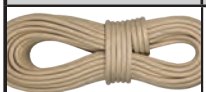
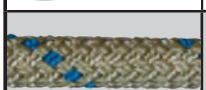
Images NOT to Scale	MODEL	COMPANY	ORIGIN	COST per Metre /3.28ft per Foot	Ø mm Inches"	WEIGHT g/m lb/100'	MATERIALS: SHEATH CORE	STANDARDS	EASE of TYING Sherrill Rating	SHEATH CARRIER	SPLICEABLE PRE-SPLICED PRE-SEWN
	Protac	BLUEWATER		£0 $0 $0 €0	11mm 7/16"	100g 6.7lb	Polyester Nylon	CE A NFPA UIAA		32 KM	
	Safeline	BLUEWATER		£ $0 $0 €	11mm 7/16"	88g 5.86lb	Polyester Nylon	CE A NFPA UIAA	-	16 KM	■
	Assaultline/ BWII+	BLUEWATER		£ $3.80 $1.15 €	11.4mm 7/16"	89g 6.1lb	Polyester Nylon	CE A NFPA UIAA	-	32 KM	■
	Armortech	BLUEWATER		£ $7.60 $2.30 €	11.5mm 7/16"	98g 6.55lb	Technora/ Polyester Nylon	ANSI	-	32 KM	■
	Technora Assaultline	BLUEWATER		£ $4.05 $1.20 €	11.5mm 7/16"	92g 6.2lb	Technora Polyester	NFPA	-	32 KM	■
	SpecStatic	BLUEWATER		£ $3.65 $1.10 €0	11.5mm 7/16"	100g 7.3lb	Polyester Polyester	NFPA ANSI	-	32 KM	
	Armortech	BLUEWATER		£0 $0 $0 €0	12mm ½"	98g 6.55lb	Technora/ Polyester Nylon	ANSI	-	32 KM	■
	Safeline White Safeline	BLUEWATER		£0 $0 $0 €0	12.5mm ½"	108g 8.2lb	Polyester Nylon	CE A NFPA ANSI UIAA	-	16 KM	■
	Protac	BLUEWATER		£0 $0 $0 €0	13mm ½"	114g 8.41lb	Polyester Nylon	CE A NFPA UIAA		32 KM	
	Armortech	BLUEWATER		£0 $0 $0 €0	13mm ½"	98g 6.55lb	Technora/ Polyester Nylon	ANSI	-	32 KM	■
	Assaultline/ BWII+	BLUEWATER		£ $3.80 $1.15 €	13mm ½"	89g 6.1lb	Polyester Nylon	CE A NFPA	-	32 KM	■
	SpecStatic	BLUEWATER		£0 $5.00 $1.55 €0	13mm ½"	137g 10.1lb	Polyester Polyester	NFPA ANSI	-	32 KM	
		BORNACK									
		BRC									
		BRC									
		BRC									

NOTES: COST: excludes eyes unless specified in NOTES. INCLUDES local taxes/VAT, Some are not sold by m/ft, price shown is a propo

LOW STRETCH ACCESS&RESCUE ROPES

SPECIAL		SUITABLE FOR						MINIMUM BREAK LOAD			ELONGATION %							
FIRE/HEAT RETARD	BONDED SHEATH	HAUL/HIGHLINES	ACCESS	RESCUE	CAVING	CANYONING	TACTICAL	MBL MINIMUM Break Load Spliced Sewn Knotted	SHRINKAGE %	SHEATH SLIPPAGE (MILKING) %	@540 lb/245kg @300LB/136K @50-150 kg @10% MBS	SHEATH %	OTHER COLOURS					NOTES	WWW.
-				■				40.5kN 9107lbf			1.2%	41%							bluewaterropes.com
-				■				35.9kN 8061lbf			2.7%	46%							bluewaterropes.com
-				■				32.9kN 7399lbf	1.9%		2.9%	53%							bluewaterropes.com
-				■				32.1kN 7216lbf	0%		1.9%	39.4%*						Teflon-coatd, double sheath-core sheath= 54%. Technora over polyester sheathed nylon Up to 934 deg F	bluewaterropes.com
-				■				40 kN 8993lbf	-		2.8%	53%						highly abrasion-resistant. Black=military only	bluewaterropes.com
-				■				35.1kN 7891lbf	-		1.2%	41%						Very low elongation, not for MRS/DdRT. Suited to ziplines.	bluewaterropes.com
-				■				32kN 7223lbf	0%		1.9%	39.4%*						Teflon-coatd, double sheath-core sheath= 54%. Technora over polyester sheathed nylon Up to 934 deg F	bluewaterropes.com
-				■				44.4kN 9983lbf			2.2%	45%							bluewaterropes.com
-				■				43.4kN 9840lbf			2%	46%							bluewaterropes.com
-				■				32.1kN 7216lbf	0%		1.9%	39.4%*						Teflon-coatd, double sheath-core sheath= 54%. Technora over polyester sheathed nylon Up to 934 deg F	bluewaterropes.com
-				■				44.4kN 10000lbf	1.9%		3.8%	53%							bluewaterropes.com
-				■				47.5kN 10677lbf	-		1%	39%						Very low elongation, not for MRS/DdRT. Suited to ziplines.	bluewaterropes.com
-				■															
-				■															
-				■															
-				■															

rtion of shortest length x10% & rounded up. **EASEofTYING:** 1-10 from hardest to easiest SHEATH: DB=Double Braid, KM=KernMantle

Images NOT to Scale	MODEL	COMPANY	ORIGIN	COST per Metre /3.28ft per Foot	Ø mm Inches"	WEIGHT g/m lb/100'	MATERIALS: SHEATH CORE	STANDARDS	EASE of TYING Sherrill Rating	SHEATH CARRIER	SPLICEABLE PRE-SPLICED PRE-SEWN
	Blazer	CAMP									
	Iridium	CAMP									
	Lithium heatcore	CAMP									
	Hercules	CANCORD									
	Workman Evo	CLIMBING TECHNOLOGY									
	Lifelne	CMC									
	Static Pro Lifeline	CMC									
	Versaline	CMC									
	Bulwark Safety X Semi-Static	COASTLINE CORDAGE		£0 $2.80 $85 €0	11mm 7/16"	82g 5.6lb	Polyester Nylon	NFPA		32 KM	
	Bulwark Safety X Semi-Static	COASTLINE CORDAGE		£0 $0 $0 €0	12.5m ½"	98g 6.7lb	Polyester Nylon	NFPA		32 KM	
	Rebel	COURANT		£2.25 $0 $0 €0	11mm 7/16"	88g 5.9lb	Polyester Nylon	NFPA ANSI	1.18	32 KM	-
	Squir v2	COURANT		£2.30 $0.80 €2.60	11.5mm 7/16"	91g 6.1lb	Polyester Nylon	CE A	0.74	32 KM	■ ■

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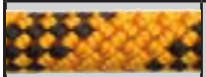
LOW STRETCH ACCESS&RESCUE ROPES

SPECIAL			SUITABLE FOR					MINIMUM BREAK LOAD			ELONGATION %								
FIRE/HEAT RETARD	BONDED SHEATH	HAUL/HIGHLINES	ACCESS	RESCUE	CAVING	CANYONING	TACTICAL	MBL MINIMUM Break Load Spliced Sewn Knotted	SHRINKAGE %	SHEATH SLIPPAGE (MILKING) %	@540 lb/245kg @300LB/136K @50-150 kg @10% MBS	SHEATH %	OTHER COLOURS					NOTES	WWW.
-				■		■													
-				■		■													
-				■		■													
-				■		■													
-				■		■													
-				■		■													
-				■		■													
-				■		■													
-				■		■													
-				■		■													
-				■		■													
-				■		■													
-				■		■		36.9kN 8294lbf			2%								coastlinegroup.ca
-				■		■		36.9kN 8294lbf			2%								coastlinegroup.ca
-				■		■		33kN 7419lbf 23kN 5171lbf	2.2%	0	2.5%	41%							cordescourant.com
-				■		■		30kN 6744lbf 21kN 4721lbf	2.7%	0	2%	43%						Pink Dragon version is a limited edition for breast Cancer Awareness	cordescourant.com

rtion of shortest length x10% & rounded up. EASEofTYING: 1-10 from hardest to easiest SHEATH: DB=Double Braid, KM=KernMantle

Images NOT to Scale	MODEL	COMPANY	ORIGIN	COST per Metre /3.28ft per Foot	Ø mm Inches"	WEIGHT g/m lb/100'	MATERIALS: SHEATH CORE	STANDARDS	EASE of TYING Sherrill Rating	SHEATH CARRIER	SPLICEABLE PRE-SPLICED PRE-SEWN
	Rush	COUSIN-TRESTEC		£0 $0 $0 €0	11mm 7/16"	74g 5lb	Nylon Nylon	CE A	1.1	32 KM	
	Response LSK 11	DONAGHYS		£0 $0 $0 €0	11mm* 7/16"	91g 6.1lb	Polyester Nylon	CE A ANSI	1.18	32 KM	
	Response XT	DONAGHYS		£0 $0 $0 €0	11mm* 7/16"	91g 6.1lb	Nylon Nylon	CE A ANSI	1.18	32 KM	
	NRG	DONAGHYS		£0 $0 $0 €0	12mm ½"	108g 7.2lb	Nylon Nylon	CE A ANSI		24 KM	
	Pintail Light 9	EDELRID		£0 $0 $0 €0							
	Performance Static 9	EDELRID		£0 $0 $0 €0							
	Enduro Static 9.5	EDELRID		£0 $0 $0 €0							
	Enduro Static 10	EDELRID		£0 $0 $0 €0							
	Pintail Static 10	EDELRID		£0 $0 $0 €0	10mm 5/16"						
	Performance Static 10	EDELRID		£0 $0 $0 €0	10mm 5/16"						
	Performance Static 10.5	EDELRID		£0 $0 $0 €0							
	Enduro Static 10.5	EDELRID		£0 $0 $0 €0							

LOW STRETCH ACCESS&RESCUE ROPES

SPECIAL		SUITABLE FOR					MINIMUM BREAK LOAD			ELONGATION %		OTHER COLOURS					NOTES	WWW.
FIRE/HEAT RETARD	BONDED SHEATH	HAUL/HIGHLINES	ACCESS	RESCUE	CAVING	CANYONING	TACTICAL	MBL MINIMUM Break Load Spliced Sewn Knotted	SHRINKAGE %	SHEATH SLIPPAGE (MILKING) %	@10% MBS @50-150 kg @300LB/136K @540 lb/245kg	SHEATH %							
-				■				34.1kN 7666lbf >15kN 3372lbf	2.5%	0.3%	1.8%	39%							cousin-trestec.com
-								31.9kN 7171lbf >15kN 3372lbf	0.3%	2.6%	3.2%	51%						'Response LSK' name used by 2 competitors. Also in black, white with yellow/blue fleck *Actual test diam=11.4mm	donaghys.com
-								31.9kN 7171lbf >15kN 3372lbf	?	?	3.2%	51%						XT uses heat-set Nylon core. *Actual test diam=11.4mm	donaghys.com
■								29kN 6520lbf	?	?	?	?							donaghys.com
																			edelrid.com
																			edelrid.com
																			edelrid.com
																			edelrid.com
-				■															edelrid.com
-				■															edelrid.com
-				■															edelrid.com
-				■															edelrid.com

Images NOT to Scale	MODEL	COMPANY	ORIGIN	COST per Metre /3.28ft per Foot	Ø mm Inches"	WEIGHT g/m lb/100'	MATERIALS: SHEATH CORE	STANDARDS	EASE of TYING Sherrill Rating	SHEATH CARRIER	SPLICEABLE PRE-SPLICED PRE-SEWN
	Prostatic Synctec 10.5	EDELRID		£0 $0 $0 €3.30	10.5mm 6/16"	81g 5.4lb	Nylon Nylon	CE A	-	24 KM	■
	Static Low Stretch 10.5	EDELRID		£0 $0 $0 €0							
	PowerStatic 11	EDELRID		£0 $0 $0 €3.30	11mm 7/16"	81g 5.4lb	Nylon Nylon	CE A	-	24 KM	■
	Interstatic Project	EDELRID		£0 $0 $0 €3.30	11mm 7/16"						
	Static Low Stretch 11	EDELRID		£0 $0 $0 €3.30	11mm 7/16"						
	Performance Static 11	EDELRID		£0 $0 $0 €0	11mm 7/16"						
	Enduro Static 11	EDELRID		£0 $0 $0 €0	11mm 7/16"						
	Prostatic Synctec 11	EDELRID		£0 $0 $0 €0	11mm 7/16"						
	Power Float 11	EDELRID		£0 $0 $0 €0	11mm 7/16"						
	Performance Static 12	EDELRID		£0 $0 $0 €0	12mm 1/2"						
	Tutus Static 9	ENGLISH BRAIDS		£0 $0 $0 €0	9mm 3/8"	53.4g	Nylon Nylon	CE			
	Tutus Static 10.5	ENGLISH BRAIDS		£0 $0 $0 €0	10.5mm 7/16"	67.9g	Nylon Nylon	CE			
	Tutus Static 11	ENGLISH BRAIDS		£0 $0 $0 €0	11mm 7/16"	74.6g	Nylon Nylon				
	Tutus Static 12	ENGLISH BRAIDS		£0 $0 $0 €0	12mm 1/2"		Nylon Nylon				
	Silva-Tex 16HD	ENGLISH BRAIDS		£0 $0 $0 €0	12.7mm 1/2"	114g 7.7lb	Polyester Nylon	CE A	-	16 KM	
	Pro/Espeleo Endurance 9.5 Canyon Endurance	FIXE CLIMBING		£ $ $0 €0	9.5mm 3/8"	59g 0lb	Nylon Nylon	CE A	-	32 KM	■

NOTES: COST: excludes eyes unless specified in NOTES. INCLUDES local taxes/VAT, Some are not sold by m/ft, price shown is a propo

LOW STRETCH ACCESS&RESCUE ROPES

SPECIAL			SUITABLE FOR					MINIMUM BREAK LOAD			ELONGATION %									
FIRE/HEAT RETARD	BONDED SHEATH	HAUL/HIGHLINES	ACCESS	RESCUE	CAVING	CANYONING	TACTICAL	MBL MINIMUM Break Load Spliced Sewn Knotted	SHRINKAGE %	SHEATH SLIPPAGE (MILKING) %	@10% MBS @50-150 kg @300LB/136K @540 lb/245kg	SHEATH %	OTHER COLOURS						NOTES	WWW.
-	-					■		35kN 7868lbf	2.5%											edelrid.com
-				■																edelrid.com
-	-							35kN 7868lbf	2.5%											edelrid.com
																				edelrid.com
																				edelrid.com
-				■																edelrid.com
-				■																edelrid.com
-				■																edelrid.com
						■														edelrid.com
																				edelrid.com
-				■																englishbraids.com
-				■																englishbraids.com
-				■																englishbraids.com
-				■																englishbraids.com
-				■				37.4kN 8408lbf 25.4kN 5710lbf	0												englishbraids.com
-				■				24kN 0lbf	0.05%	0	3.5%	37%							Espelio=caving - same rope as Pro Canyon in red with mid-point marker	fixeclimbing.com

rtion of shortest length x10% & rounded up. EASEofTYING: 1-10 from hardest to easiest SHEATH: DB=Double Braid, KM=KernMantle

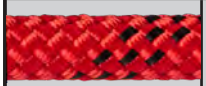
Images NOT to Scale	MODEL	COMPANY	ORIGIN	COST per Metre /3.28ft per Foot	Ø mm Inches"	WEIGHT g/m lb/100'	MATERIALS: SHEATH CORE	STANDARDS	EASE of TYING Sherrill Rating	SHEATH CARRIER	SPLICEABLE PRE-SPLICED PRE-SEWN
	Canyon10 Espeleo 10	FIXE CLIMBING		£ $ $0 €0	10mm ⅜"	59g 0lb	Nylon Nylon	CE A	-	32 KM	■
	Pro 10.5	FIXE CLIMBING		£ $ $0 €0	10.5mm 13/32"	59g 0lb	Nylon Nylon	CE A	-	32 KM	■
	Ranger 10.5	FIXE CLIMBING		£ $ $0 €0	10.5mm 13/32"	59g 0lb	Nylon Nylon	CE A	-	32 KM	■
	Ranger 11	FIXE CLIMBING		£ $ $0 €0	11mm 7/16"	59g 0lb	Nylon Nylon	CE A	-	32 KM	■
				£0 $0 $0 €	11mm 7/16"						
				£0 $0 $0 €0	11mm 7/16"						
				£0 $0 $0 €0	11mm 7/16"						

NOTES: COST: excludes eyes unless specified in NOTES. INCLUDES local taxes/VAT, Some are not sold by m/ft, price shown is a propo

LOW STRETCH ACCESS&RESCUE ROPES

SPECIAL			SUITABLE FOR					MINIMUM BREAK LOAD			ELONGATION %								
FIRE/HEAT RETARD	BONDED SHEATH	HAUL/HIGHLINES	ACCESS	RESCUE	CAVING	CANYONING	TACTICAL	MBL MINIMUM Break Load Spliced Sewn Knotted	SHRINKAGE %	SHEATH SLIPPAGE (MILKING) %	@540 lb/245kg @300LB/136K @50-150 kg @10% MBS	SHEATH %					OTHER COLOURS	NOTES	WWW.
-				■				24kN 0lbf	0.05%	0	3.5%	37%						Espelio=caving - same rope except Canyon in yellow with mid-point marker	fixeclimbing.com
-				■				24kN 0lbf	0.05%	0	3.5%	37%						Espelio=caving - same rope as Pro Canyon in red with mid-point marker	fixeclimbing.com
-				■				24kN 0lbf	0.05%	0	3.5%	37%						Espelio=caving - same rope as Pro Canyon in red with mid-point marker	fixeclimbing.com
-				■				24kN 0lbf	0.05%	0	3.5%	37%						Espelio=caving - same rope as Pro Canyon in red with mid-point marker	fixeclimbing.com
-				■															
-				■															

rtion of shortest length x10% & rounded up. EASEofTYING: 1-10 from hardest to easiest SHEATH: DB=Double Braid, KM=KernMantle

Images NOT to Scale	MODEL	COMPANY	ORIGIN	COST per Metre /3.28ft per Foot	Ø mm Inches"	WEIGHT g/m lb/100'	MATERIALS: SHEATH CORE	STANDARDS	EASE of TYING Sherrill Rating	SHEATH CARRIER	SPLICEABLE PRE-SPLICED PRE-SEWN
	Climbing Rope	HUSQVARNA		£5.10 $ $0 €	11.8mm 15⁄32"	96.5g 6.5lb	Polyester Nylon	CE A ANSI	-	32 KM	■
	Safe Nordic	LIROS		£2.40 $3.50 $1.10 €2.75	11.5mm 7⁄16"	80g 5.4lb	Nylon Nylon	CE A	1	32 DB	■
	Safe Plus	LIROS		£0 $0 $0 €3.50	11.5mm 7⁄16"	100g 6.7lb	Polyester Nylon	CE A	-	32 DB	■
	Black Marlow 9	MARLOW ROPES		£0 $0 $0 €0	9mm 3⁄8"	0g 0lb	Polyester Polyester	CE UKCA		4 KM	■ ■■
	ADD PROTEC 500 9mm	MARLOW ROPES		£0 $0 $0 €0	9mm 3⁄8"	0g 0lb					
	LSK 9	MARLOW ROPES		£0 $0 $0 €0	9mm 3⁄8"	0g 0lb	Nylon Nylon	CE UKCA		32 KM	■ ■■
	LSK 10.5	MARLOW ROPES		£0 $0 $0 €0	10.5mm 3⁄8"	0g 0lb	Nylon Nylon	CE UKCA		32 KM	■ ■■
	Static PH-I 10.5	MARLOW ROPES		£0 $0 $0 €0	10.5mm 3⁄8"	0g 0lb	Nylon Nylon	CE UKCA		32 KM	■ ■■
	ADD PROTEC 500 11mm	MARLOW ROPES		£0 $0 $0 €0	9mm 3⁄8"	0g 0lb					
	ADD DIABLO 11mm	MARLOW ROPES		£0 $0 $0 €0	9mm 3⁄8"	0g 0lb					
	LSK 11	MARLOW ROPES		£0 $0 $0 €0	11mm 7⁄16"	0g 0lb	Nylon Nylon	CE UKCA		32 KM	■ ■■
	Black Marlow 11	MARLOW ROPES		£0 $0 $0 €0	11mm 7⁄16"	0g 0lb	Polyester Polyester	CE UKCA		4 KM	■ ■■
	Static PH-I 11	MARLOW ROPES		£0 $0 $0 €0	11mm 7⁄16"	0g 0lb	Nylon Nylon	CE UKCA		32 KM	■ ■■
	Vega	MARLOW ROPES		£3.10 $4.50 $1.40 €3.60	11.7mm 29⁄64"	101g 6.8lb	Polyester Polyester	CE B UKCA	0.9 10	24 KM	■ ■■
	LSK 12	MARLOW ROPES		£0 $0 $0 €0	12mm 1⁄2"	0g 0lb	Nylon Nylon	CE UKCA		32 KM	■ ■■
	Response LSK	NOVABRAID		n/a	11.7mm 29⁄64"	107g 7.2lb	Polyester Nylon	CE A ANSI	-	48 KM	■

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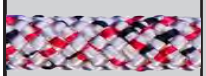
LOW STRETCH ACCESS&RESCUE ROPES

SPECIAL			SUITABLE FOR					MINIMUM BREAK LOAD			ELONGATION %								
FIRE/HEAT RETARD	BONDED SHEATH	HAUL/HIGHLINES	ACCESS	RESCUE	CAVING	CANYONING	TACTICAL	MBL MINIMUM Break Load Spliced Sewn Knotted	SHRINKAGE %	SHEATH SLIPPAGE (MILKING) %	@540 lb/245kg	@10% MBS @50-150 kg @300LB/136K	SHEATH %		OTHER COLOURS				NOTES	WWW.
-				■				35kN 7868lbf 18/20kN 4047/4496lbf			2.3%	42%								husqvarna.com
-				■				34kN 7643lbf 22kN 4946lbf	-	0%	3.8%	46%								liros.com
-				■				43kN 9667lbf	-		1.5%	54%								liros.com
-				■				-	0		0%	0%							0	marlowropes.com
									0		0%	0%							0	marlowropes.com
-				■				-	0		0%	0%							0	marlowropes.com
-				■				-	0		0%	0%							0	marlowropes.com
-				■				-	0		0%	0%							0	marlowropes.com
									0		0%	0%							0	marlowropes.com
									0		0%	0%							0	marlowropes.com
-				■				-	0		0%	0%							0	marlowropes.com
-				■				-	0		0%	0%							0	marlowropes.com
-				■				-	0		0%	0%							0	marlowropes.com
-				■				-	0		1.2%	55.6%							ABL Sewn= 27.8kN 6250 lbf	marlowropes.com
-				■				-	0		0%	0%							0	marlowropes.com
-				■				23.86kN 5360lb 43.6kN 9801lbf	-		2.8%	-							'Response LSK' is a name used by two other companies. Also 11& 10.5mm see Rope Eqpt- BUYERSGUIDE	novabraid.com

rtion of shortest length x10% & rounded up. EASEofTYING: 1-10 from hardest to easiest SHEATH: DB=Double Braid, KM=KernMantle

Images NOT to Scale	MODEL	COMPANY	ORIGIN	COST per Metre /3.28ft per Foot	Ø mm Inches"	WEIGHT g/m lb/100'	MATERIALS: SHEATH CORE	STANDARDS	EASE of TYING Sherrill Rating	SHEATH CARRIER	SPLICEABLE PRE-SPLICED PRE-SEWN
	Max Wear Pit 9	PMI			9						
	EZ Bend 9	PMI			9						
	EZ Bend 10	PMI			10						
	Opus 11	PMI			11mm 7/16"						
	Access Pro	PMI		£0 $4.15 $1.30 €0	11mm 7/16"	84g 5.6lb	Polyester Nylon	CE A NFPA	1.1	32 KM	
	Max Wear Pit 11	PMI			11mm 7/16"						
	DuraShield	PMI			11mm 7/16"		Technora Nylon 66				
	EZ Bend 11	PMI		£0 $4.00 $125 €0	11mm 7/16"	80g 5.4lb	Nylon Nylon	CE A CI NFPA ANSI BERRY	0.9	16 KM	
	Extreme Pro	PMI		£0 $4.00 $1.25 €0	11mm 7/16"	100g 6.7lb	Polyester Nylon	ANSI NFPA		32 KM	■
	Patriot	PMI		£0 $5.20 $1.60 €0	11mm 7/16"	80g 5.4lb	Nylon Nylon	CE A CI NFPA ANSI BERRY	0.9	16 KM	-
	Isostatic 11.5	PMI		£0 $4.50 $1.40 €0	11.5mm 7/16"	96g 6.4lb	Polyester Polyester	ANSI NFPA		32 KM	-
	DuraShield	PMI			12.5mm ½"		Technora Nylon 66				
	EZ Bend 12.5	PMI		£0 $0 $0 €	12.5mm ½"	107g 12.74lb	Nylon Nylon	CE CI ANSI NFPA		16 KM	
	Max Wear Pit 12.5	PMI			12.5mm ½"						
	Isostatic 13	PMI		£0 $6.00 $1.80 €0	13mm ½"	125g 8.4lb	Polyester Polyester	ANSI NFPA		32 KM	-

NOTES: COST: excludes eyes unless specified in NOTES. INCLUDES local taxes/VAT, Some are not sold by m/ft, price shown is a propo

LOW STRETCH ACCESS&RESCUE ROPES

SPECIAL			SUITABLE FOR					MINIMUM BREAK LOAD			ELONGATION %		OTHER COLOURS					NOTES	WWW.
FIRE/HEAT RETARD	BONDED SHEATH	HAUL/HIGHLINES	ACCESS	RESCUE	CAVING	CANYONING	TACTICAL	MBL MINIMUM Break Load Spliced Sewn Knotted	SHRINKAGE %	SHEATH SLIPPAGE (MILKING) %	@10% MBS @50-150 kg @300LB/136K @540 lb/245kg	SHEATH %							
-				■															pmirope.com
-				■															pmirope.com
-				■															pmirope.com
-				■															pmirope.com
-				■				31.1kN 7000lbf	1.8%	1.6%	7.2% 3.4% 5.8%	49.7%							pmirope.com
-				■															pmirope.com
-				■															pmirope.com
-				■				32.7kN 7209lbf	3.2%		3.4-4.4% 1.6%	50.4%						Also solid blue and solid red (no fleck)	pmirope.com
-				■				42.9kN 9644lbf	2%	0	4.7% 1.3%	?						Unicore intertwined sheath & core	pmirope.com
-				■				32.7kN 7209lbf	3.2%	0.1%	3.9%	50.4%						variant of EZ Bend	pmirope.com
-				■				32.8kN 7388lbf		0	1.44-2.2% 1%	?							pmirope.com
-				■															pmirope.com
-				■				-										Unicore intertwined sheath & core	pmirope.com
-				■															pmirope.com
-				■				45.9kN 10319lbf		0	1.44-2.2% 1.2%	?							pmirope.com
-				■															

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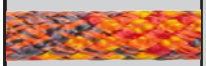
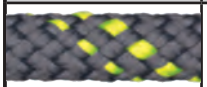
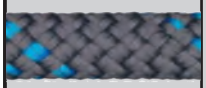
Images NOT to Scale	MODEL	COMPANY	ORIGIN	COST per Metre /3.28ft per Foot	Ø mm Inches"	WEIGHT g/m lb/100'	MATERIALS: SHEATH CORE	STANDARDS	EASE of TYING Sherrill Rating	SHEATH CARRIER	SPLICEABLE PRE-SPLICED PRE-SEWN
	Mercury CE	SAMSON ROPE		£0 $3.75 $1.15 €0	11mm 7/16"	89g 6lb	Polyester Nylon	CE A	8	32 KM	-
	HyperStatic	SAMSON ROPE		£0 $0 $0 €0	11.3mm 7/16"	106g 7.1lb	Polyester Polyester	-		32 KM	-
	HyperStatic	SAMSON ROPE		£0 $0 $0 €0	11.7mm 29/64	106g 7.1lb	Polyester Polyester	-		32 KM	-
	Hyperstatic	SAMSON ROPE		£0 $0 $0 €0	12.5mm ½"	121g 8.1lb	Polyester Polyester	-		32 KM	-
	Tilia 11.5	SINGING ROCK		£0 $4.36 $1.35 €3.92	11.5mm 7/16"	90g 6lb	Polyester Nylon	CE A			■ ■
	Static 9	SINGING ROCK		£0 $0 $0 €0	9mm 3/8"	0g lb	Nylon Nylon	CE A			■ ■
	Speleo 10.5	SINGING ROCK		£0 $0 $0 €0	10.5mm 3/8"	71g lb	Nylon Nylon	CE A			■ ■
	Static 10.5	SINGING ROCK		£0 $0 $0 €0	10.5mm 3/8"	0g lb	Nylon Nylon	CE A			■ ■
	Speleo R44 10.5	SINGING ROCK		£0 $0 $0 €0	10.5mm 3/8"	0g lb	Nylon Nylon	CE A			■ ■
	Static R44 10.5 Static R44 NFPA	SINGING ROCK		£0 $0 $0 €0	10.5mm 3/8"	0g lb	Nylon Nylon	CE A			■ ■
	Static 11	SINGING ROCK		£0 $0 $0 €0	11mm 7/16"	0g lb	Nylon Nylon	CE A			■ ■
	Static R44 11 Static R44 NFPA	SINGING ROCK		£0 $0 $0 €0	11mm 7/16"	0g lb	Nylon Nylon	CE A			■ ■
	Static R44 NFPA 13	SINGING ROCK		£0 $0 $0 €0	13mm ½"	0g lb	Nylon Nylon	CE A			■ ■

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LOW STRETCH ACCESS&RESCUE ROPES

SPECIAL			SUITABLE FOR					MINIMUM BREAK LOAD			ELONGATION %								
FIRE/HEAT RETARD	BONDED SHEATH	HAUL/HIGHLINES	ACCESS	RESCUE	CAVING	CANYONING	TACTICAL	MBL MINIMUM Break Load Spliced Sewn Knotted	SHRINKAGE %	SHEATH SLIPPAGE (MILKING) %	@10% MBS @50-150 kg @300LB/136K @540 lb/245kg	SHEATH %	OTHER COLOURS					NOTES	WWW.
-				■															
-				■				38.25kN 8600lbf			3.7%	?						Heat stabilised nylon core	samsonrope.com
-				■				28.5kN 6400lb	-	-		?						Very tough, low stretch rope more suited for rescue or ziplines	samsonrope.com
-				■				-	-	-	1.2%	?						Very tough, low stretch rope more suited for rescue or ziplines	samsonrope.com
-				■				32kN 7200lbf											samsonrope.com
-				■				30kN 6744lbf 18/15kN 4047/3372lbf		0.5%	3%								singingrock.com
-				■				0kN 0lbf 0/0kN 0/0lbf		0%	0%								singingrock.com
-				■				0kN 0lbf 0/0kN 0/0lbf		0%	0%								singingrock.com
-				■				0kN 0lbf 0/0kN 0/0lbf		0%	0%								singingrock.com
-				■				0kN 0lbf 0/0kN 0/0lbf		0%	0%								singingrock.com
-				■				0kN 0lbf 0/0kN 0/0lbf		0%	0%								singingrock.com
-				■				0kN 0lbf 0/0kN 0/0lbf		0%	0%								singingrock.com
-				■				0kN 0lbf 0/0kN 0/0lbf		0%	0%								singingrock.com
-				■				0kN 0lbf 0/0kN 0/0lbf		0%	0%								singingrock.com
-				■															
-				■															

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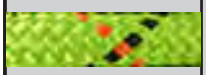
Images NOT to Scale	MODEL	COMPANY	ORIGIN	COST per Metre /3.28ft per Foot	Ø mm Inches"	WEIGHT g/m lb/100'	MATERIALS: SHEATH CORE	STANDARDS	EASE of TYING Sherrill Rating	SHEATH CARRIER	SPLICEABLE PRE-SPLICED PRE-SEWN
	Safety Pro	STERLING ROPE		£0 $0 $0 €0	9mm ⅜"	0g 0lb					
	HTP	STERLING ROPE		£0 $0 $0 €0	9mm ⅜"	0g 0lb	Polyester Polyester	ANSI NFPA	0	32 KM	■
	SuperStatic2	STERLING ROPE		£0 $0 $0 €0	9.5mm ⅜"	0g 0lb					
	Work Pro	STERLING ROPE		£0 $0 $0 €0	10mm ⅜"	0g 0lb					
	Safety Pro	STERLING ROPE		£0 $0 $0 €0	10mm ⅜"	0g 0lb					
	Safety Pro	STERLING ROPE		£0 $0 $0 €0	10.5mm 7/16"	0g 0lb					
	Safety Pro	STERLING ROPE		£0 $0 $0 €0	11mm 7/16"	0g 0lb					
	HTP	STERLING ROPE		£0 $0 $0 €0	10mm 7/16"	0g 0lb	Polyester Polyester	ANSI NFPA	0	32 KM	■
	HTP	STERLING ROPE		£0 $4.33 $1.32 €0	11mm 7/16"	97g 6.5lb	Polyester Polyester	ANSI NFPA	8	32 KM	■
	Sync	STERLING ROPE		£0 $0 $0 €0	11mm 7/16"						
	SuperStatic2	STERLING ROPE		£0 $0 $0 €0	11mm 7/16"	0g 0lb					
	HTP	STERLING ROPE		£0 $4.33 $1.32 €0	11mm 7/16"	97g 6.5lb	Polyester Polyester	ANSI NFPA	8	32 KM	■
	Work Pro	STERLING		£0 $0 $0 €0	11mm 7/16"	83.5g 5.6lb	Polyester Nylon	CE A ANSI NFPA	8	KM	
	HTP	STERLING ROPE		£0 $ $ €0	12.5mm ½"	g lb	Polyester Polyester	ANSI NFPA		32 KM	■
	Work Pro	STERLING		£0 $0 $0 €0	12.5mm ½"	110g 7.4lb	Polyester Nylon	CE A ANSI NFPA	7	KM	-
	SuperStatic2	STERLING ROPE		£0 $0 $0 €0	12.5mm ½"	0g 0lb					

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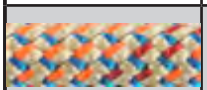
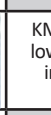
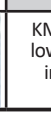
LOW STRETCH ACCESS&RESCUE ROPES

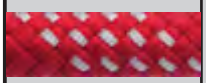
SPECIAL			SUITABLE FOR					MINIMUM BREAK LOAD			ELONGATION %								
FIRE/HEAT RETARD	BONDED SHEATH	HAUL/HIGHLINES	ACCESS	RESCUE	CAVING	CANYONING	TACTICAL	MBL MINIMUM Break Load Spliced Sewn Knotted	SHRINKAGE %	SHEATH SLIPPAGE (MILKING) %	@540 lb/245kg @300LB/136K @50-150 kg @10% MBS	SHEATH %	OTHER COLOURS					NOTES	WWW.
-				■															
-				■				0kN 0b			3.4% 1.9%							Also available in White with black fleck.	sterlingrope.com
-				■															
-				■														Sterling show 10mm as ⅜" we usually show it as 5/16"	
-				■															
-				■															
-				■															
-				■				0kN 0b			3.4% 1.9%							Also available in White with black fleck.	sterlingrope.com
-				■				30.5kN 6856b			3.4% 1.9%							Also available in White with black fleck.	sterlingrope.com
-				■															sterlingrope.com
-				■															sterlingrope.com
-				■				30.5kN 6856b			3.4% 1.9%							Also available in White with black fleck.	sterlingrope.com
-				■				36kN 8092lbf		0.9%	3.6%								sterlingrope.com
-				■				kN b			% %							Also available in White with black fleck.	sterlingrope.com
-				■				45kN 10116lbf			2.2%								sterlingrope.com
-				■															sterlingrope.com

rtion of shortest length x10% & rounded up. EASEofTYING: 1-10 from hardest to easiest SHEATH: DB=Double Braid, KM=KernMantle

Images NOT to Scale	MODEL	COMPANY	ORIGIN	COST per Metre /3.28ft per Foot	Ø mm Inches"	WEIGHT g/m lb/100'	MATERIALS: SHEATH CORE	STANDARDS	EASE of TYING Sherrill Rating	SHEATH CARRIER	SPLICEABLE PRE-SPLICED PRE-SEWN
	Patron	TEUFELBERGER		£0 $0 $0 €3.00	9mm ⅜"	0g 0lb	Nylon Nylon	CE A		32 KM	
	KMIII KMII Max	TEUFELBERGER /MAXIM		£0 $0 $0 €0	9mm ⅜"	0g 0lb	Polyester Nylon	CE A NFPA	7	32 KM	
	Canyon Elite	TEUFELBERGER			9mm ⅜"						
	Canyon Classic	TEUFELBERGER			9.5mm ⅜"						
	Patron	TEUFELBERGER		£0 $0 $0 €3.00	10mm 5/16"	0g 0lb	Nylon Nylon	CE A		32 KM	
	KMIII KMII Max	TEUFELBERGER /MAXIM		£0 $0 $0 €0	10mm 5/16"	0g 0lb	Polyester Nylon	CE A NFPA	7	32 KM	

LOW STRETCH ACCESS&RESCUE ROPES

SPECIAL		SUITABLE FOR						MINIMUM BREAK LOAD			ELONGATION %		OTHER COLOURS					NOTES	WWW.
FIRE/HEAT RETARD	BONDED SHEATH	HAUL/HIGHLINES	ACCESS	RESCUE	CAVING	CANYONING	TACTICAL	MBL MINIMUM Break Load Spliced Sewn Knotted	SHRINKAGE %	SHEATH SLIPPAGE (MILKING) %	@10% MBS @50-150 kg @300LB/136K @540 lb/245kg	SHEATH %							
-				■		■													
-				■				00kN 00lbf 0/0kN 0/0lbf	3%		3%	41%							teufelberger.com
-				■				0kN 0lbf	<5%		1.6% 1.4%	48%						KMIII Max has tighter, low friction sheath for improved descent. *White=$0.00/ft	teufelberger.com maximropes.com
-				■															teufelberger.com
-				■															teufelberger.com
-				■				00kN 00lbf 0/0kN 0/0lbf	4%		3%	40%							teufelberger.com
-				■				0kN 0lbf	<5%		1.6% 1.4%	48%						KMIII Max has tighter, low friction sheath for improved descent. *White=$0.00/ft	teufelberger.com maximropes.com

Images NOT to Scale	MODEL	COMPANY	ORIGIN	COST per Metre /3.28ft per Foot	Ø mm Inches"	WEIGHT g/m lb/100'	MATERIALS: SHEATH CORE	STANDARDS	EASE of TYING Sherrill Rating	SHEATH CARRIER	SPLICEABLE PRE-SPLICED PRE-SEWN
	KMIII KMII Max	TEUFELBERGER /MAXIM		£0 $3.66 $1.25* €0	10.5mm 13/32"	84g 5.65lb	Polyester Nylon	CE A NFPA	7	32 KM	
	Platinum PES/PA Arbor Access	TEUFELBERGER		£4.25 $0 $0 €0	10.5mm 13/32"	78g 5.2lb	Polyester Nylon	CE A	0.80	32 KM	■
	Platinum PA	TEUFELBERGER		£0 $0 $0 €0	10.5mm 13/32"	72g 4.8lb	Nylon Nylon	CE A	0.80	32 KM	■
	Chameleon	TEUFELBERGER		£2.40 $0 $0 €0	10.5mm 13/32"	72g 4.84lb	Nylon Nylon	CE A		32 KM	-
	Patron	TEUFELBERGER		£0 $0 $0 €3.00	10.5mm 13/32"	0g 0lb	Nylon Nylon	CE A		32 KM	
	Chameleon	TEUFELBERGER		£2.55 $0 $0 €3.05	11mm 7/16"	75g 5.04lb	Nylon Nylon	CE A		32 KM	-
	Patron Tree Access	TEUFELBERGER		£0 $0 $0 €3.00	11mm 7/16"	75g 5.04lb	Nylon Nylon	CE A	0.51	32 KM	
	KMIII KMII Max	TEUFELBERGER /MAXIM		£0 $4.12 $1.32* €0	11mm 7/16"	91g 6.12lb	Polyester Nylon	CE A NFPA		32 KM	
	Patron	TEUFELBERGER		£0 $0 $0 €3.00	11mm 7/16"	75g 5.04lb	Nylon Nylon	CE A	0.51	32 KM	
	KM Pro	TEUFELBERGER		£0 $0 $0 €3.00	11mm 7/16"	86g 5.78lb	Nylon Nylon	CE A	0.51	32 KM	
	Fly Firefly, Dragonfly	TEUFELBERGER		£5.20 $0 $0 €0	11.1mm 7/16"	87g 5.9lb	Polyester Nylon	CE A ANSI	0.5 10	24 KM	■ ■■
	Patron	TEUFELBERGER		£0 $0 $0 €3.00	12mm ½"	0g 0lb	Nylon Nylon	CE A		32 KM	
	Xstatic	TEUFELBERGER		£3.80 $4.90 $1.50 €4.50	11.7mm 29/64"	105.6g 7.1lb	Polyester Nylon	CE A ANSI	6	32 KM	■
	drenaLINE*	TEUFELBERGER		£3.30 $4.05 $1.25 €4.27	11.8mm 15/32"	96.5g 6.5lb	Polyester Nylon	CE A ANSI	0.8 7	32 KM	■
	KMIII KMII Max	TEUFELBERGER /MAXIM		£0 $5.54 $1.68* €0	13mm ½"	117.5g 7.9lb	Polyester Nylon	CE A NFPA		32 KM	-

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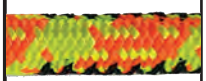
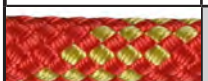
LOW STRETCH ACCESS&RESCUE ROPES

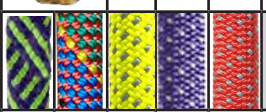
SPECIAL		SUITABLE FOR						MINIMUM BREAK LOAD			ELONGATION %					
FIRE/HEAT RETARD	BONDED SHEATH	HAUL/HIGHLINES	ACCESS	RESCUE	CAVING	CANYONING	TACTICAL	MBL MINIMUM Break Load Spliced Sewn Knotted	SHRINKAGE %	SHEATH SLIPPAGE (MILKING) %	@10% MBS @50-150 kg @300LB/136K @540 lb/245kg	SHEATH %	OTHER COLOURS	NOTES	WWW.
-				■				32.1kN 7215lbf	<5%		1.6% 1.4%	48%		KMIII Max has tighter, low friction sheath for improved descent. *White=$1.11/ft	teufelberger.com maximropes.com
-				■				28kN 6290lbf 23/15kN 5170/3372lbf	<5%	0	2%			intertwined sheath & core	teufelberger.com
-				■				00kN 00lbf 0/0kN 00/0lbf	4%	0	3%			intertwined sheath & core	teufelberger.com
-				■				32kN 7190lbf 18/26kN 4047/5845lbf	4%		3%	46%		Same colours for both rope diameters. Ropes use recycled unused rope	teufelberger.com
-				■				00kN 00lbf 0/0kN 0/0lbf	4%		3%	46%			teufelberger.com
-				■				33kN 7415lbf 18/27kN 4047/6069lbf	4%		3%	35%		Same colours for both rope diameters. Ropes use recycled unused rope	teufelberger.com
-				■				32 33kN 7300lbf 18/27kN 4047/6069lbf	<5%		3%	35%			teufelberger.com
-				■				33.3kN 7485lbf 30.85kN 6935lbf	<5%		1.8% 2.2%	45%		KMIII Max has tighter, low friction sheath for improved descent. *White=$1.26/ft	teufelberger.com maximropes.com
-				■				33kN 7300lbf 18/27kN 4047/6069lbf	4%		3%	35%			teufelberger.com
-				■				35kN 7865lbf 18/30kN 4047/6740lbf	1.1%		2%	47%			teufelberger.com
-				■				26.8kn 6035lbf 15/15kN 3370/3372lbf	<5%		1.6% 3%	57%			teufelberger.com
-				■				00kN 00lbf 0/0kN 0/0lbf	4%		3%	41%			teufelberger.com
-				■				32kN 7194lbf 17kN 3820lbf	<5%		1.4% 1.5%	54%			teufelberger.com
-				■				35kN 7868lbf 18/16.5kN 4047/3709lbf	<5%		2.3% 2.3%	58%		*+Limited edition colours & some unique to stockists: 'Pink', 'Red', 'Jungle' & 'HBROS' & CHARITY-LINE (€4.45/m)	teufelberger.com
-				■				43.4kN 9730lbf 36.8kN 8265lbf	<5%		1.8% 1.4%	47%		KMIII Max has tighter, low friction sheath for improved descent. *White=$1.47/ft	teufelberger.com maximropes.com
-				■											

rtion of shortest length x10% & rounded up. EASEofTYING: 1-10 from hardest to easiest SHEATH: DB=Double Braid, KM=KernMantle

Images NOT to Scale	MODEL	COMPANY	ORIGIN	COST per Metre /3.28ft per Foot	Ø mm Inches"	WEIGHT g/m lb/100'	MATERIALS: SHEATH CORE	STANDARDS	EASE of TYING Sherrill Rating	SHEATH CARRIER	SPLICEABLE PRE-SPLICED PRE-SEWN
	Nebula/ Liana	TREEHOG BY ARBORTEC		£5.05 $0 $8 €0	11.8mm 15/32"	96.5g 6.5lb	Polyester Nylon	CE A	0.8 7	32 KM	■
	Static Climbing	TREERUNNER (GRUBE)		£0 $0 $0 €3.38	11mm 7/16"	80g 5.4lb	Polyester Nylon	CE A		32 KM	-
	Safe +	TREERUNNER (GRUBE)		£0 $0 $0 €3.15	11.5mm 7/16"	100g 6.7lb	Polyester Nylon	CE A	1.1	24 DB	-
	SafeVision	TREERUNNER (GRUBE)		£0 $0 $0 €4.15	11.8mm 15/32"	82g 5.5lb	Polyester Nylon	CE A	0.6	24 DB	■
	Picus	TREERUNNER (GRUBE)		£0 $0 $0 €4.45	11.8mm 15/32"	96.5g 6.5lb	Polyester Nylon	CE A	0.8	32 KM	■
	Static Climbing	TREERUNNER (GRUBE)		£0 $0 $0 €3.38	12mm ½"	80g 5.4lb	Polyester Nylon	CE A		32 KM	-
	XTC-48 R.I.N.G.	YALE CORDAGE		£0 $0 $0 €0	10.5mm 13/32"	92.5g 6.2lb	Polyester/ Technora Nylon	ANSI		48 DB	■
	XTC-48 Kernmaster Phantom x2, Explore, Scandere x3, Kernmaster Code x2	YALE CORDAGE		£0 $0 $0 €0	11mm 7/16"	82/97g 5.5/6.5lb	Polyester Nylon	ANSI		48 KM	■ ■
	XTC-48 BiFrost	YALE CORDAGE		£0 $3.75 $1.15 €0	11mm 7/16"	90g 6.lb	Polyester Polyester	ANSI		48 KM	■
	XTC-48 R.I.N.G.	YALE CORDAGE		£0 $0 $0 €0	11.5mm 7/16"	92.5g 6.2lb	Polyester/ Technora Nylon	ANSI		48 DB	■
	XTC-48 Kernmaster Phantom x2, Explore, Scandere x3, Kernmaster Code x2	YALE CORDAGE		£0 $0 $0 €0	13mm ½"	113g 7.6lb	Polyester Nylon	CE A ANSI		48 KM	■ ■

NOTES: COST: excludes eyes unless specified in NOTES. INCLUDES local taxes/VAT, Some are not sold by m/ft, price shown is a propo

LOW STRETCH ACCESS&RESCUE ROPES

SPECIAL		SUITABLE FOR						MINIMUM BREAK LOAD			ELONGATION %		OTHER COLOURS					NOTES	WWW.
FIRE/HEAT RETARD	BONDED SHEATH	HAUL/HIGHLINES	ACCESS	RESCUE	CAVING	CANYONING	TACTICAL	MBL MINIMUM Break Load Spliced Sewn Knotted	SHRINKAGE %	SHEATH SLIPPAGE (MILKING) %	@10% MBS @50-150 kg @300LB/136K @540 lb/245kg	SHEATH %							
-				■															
-				■															
-				■															
-				■															
-				■				35kN 7868lbf 18/16.5kN 4047/3709lbf	<5%		2.3% 2.3%	58%							treehog.com
-				■				39kN 8767lbf			2.8%								grube.de
-				■				22kN 4946lbf	1.7%		1.5%	46%							grube.de
-				■				37kN 8318lbf 22kN 4946lbf	2.5%		2.5%	54%							grube.de
-				■				35kN 7868lbf 18/16.5kN 4047/3709lbf	<5%		2.3% 2.3%	58%							grube.de
-				■				39kN 8767lbf			2.8%								grube.de
-				■				30kN 6730lbf			2.4%							Red inner braid highlights wear through the outer sheath	yalecordage.com
-				■							3%							Scandere uses higher tenacity sheath	yalecordage.com
-				■							1.5%								yalecordage.com
-				■							2.4%							Red inner braid highlights wear through the outer sheath	yalecordage.com
-				■				36kN 7920lbf			3%							Scandere uses higher tenacity sheath	yalecordage.com
-				■															

rtion of shortest length x10% & rounded up. EASEofTYING: 1-10 from hardest to easiest SHEATH: DB=Double Braid, KM=KernMantle

FOR THOSE WHO EXPECT THE BEST,

EQUIPMENT THAT EXCEEDS

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